

RESOURCE SCHEDULING METHOD AND APPARATUS

TECHNICAL FIELD

[0001] Some embodiments of this specification relate to the field of network technologies, and in particular, to a resource scheduling method.

BACKGROUND

[0002] With continuous development of internet information technologies, more projects are being implemented electronically based on networks, providing support for global development of projects. To meet the development needs of cross-border and cross-organization projects, new infrastructure facilities for cross-border and cross-organization projects are set up to implement autonomous and controllable cross-border and cross-organization resource scheduling.

[0003] To implement different scheduling paths for different projects, a plurality of scheduling paths are accessed. The scheduling paths are complex and have their own specific application scopes. Therefore, how to select an appropriate scheduling path from the plurality of complex scheduling paths to implement efficient resource scheduling during cross-border and cross-organization resource scheduling becomes a focus of attention in project development.

SUMMARY

[0004] In view of the foregoing description, some embodiments of this specification provide a resource scheduling method. One or more embodiments of this specification relate to a payment item-based resource transfer method, a resource scheduling apparatus, a payment item-based resource transfer apparatus, a resource scheduling system, a computing device, a computer-readable storage medium, and a computer program, so as to resolve technical deficiencies in the existing technology.

[0005] According to a first aspect of some embodiments of this specification, a resource scheduling method is provided, including: acquiring a scheduling request, where the scheduling request includes a target resource, scheduling association information, and a key impact factor; determining a plurality of scheduling paths for

the target resource based on the scheduling association information; obtaining impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, where the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship; determining a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and scheduling the target resource based on the target scheduling path.

[0006] According to a second aspect of some embodiments of this specification, a payment item-based resource transfer method is provided, including: acquiring a payment transfer request, where the payment transfer request includes a target resource, remittance path information, and a key impact factor; determining a plurality of remittance paths for the target resource based on the remittance path information; obtaining impact factor data corresponding to each node group in a first remittance path, where the first remittance path is any one of the plurality of remittance paths, and the node group includes two nodes that have a connection relationship; determining a target remittance path from the plurality of remittance paths based on the key impact factor and the impact factor data corresponding to each node group; and transferring the target resource based on the target remittance path.

[0007] According to a third aspect of some embodiments of this specification, a resource scheduling apparatus is provided, including: an acquisition module, configured to acquire a scheduling request, where the scheduling request includes a target resource, scheduling association information, and a key impact factor; a scheduling path module, configured to determine a plurality of scheduling paths for the target resource based on the scheduling association information; an obtaining module, configured to obtain impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, where the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship; a target scheduling path determining module, configured to determine a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and a scheduling module, configured to schedule the target resource based on the target scheduling path.

[0008] According to a fourth aspect of some embodiments of this specification, a

payment item-based resource transfer apparatus is provided, including: a request acquisition module, configured to acquire a payment transfer request, where the payment transfer request includes a target resource, remittance path information, and a key impact factor; a remittance path determining module, configured to determine a plurality of remittance paths for the target resource based on the remittance path information; an impact factor data obtaining module, configured to obtain impact factor data corresponding to each node group in a first remittance path, where the first remittance path is any one of the plurality of remittance paths, and the node group includes two nodes that have a connection relationship; a target remittance path determining module, configured to determine a target remittance path from the plurality of remittance paths based on the key impact factor and the impact factor data corresponding to each node group; and a transfer module, configured to transfer the target resource based on the target remittance path.

[0009] According to a fifth aspect of some embodiments of this specification, a resource scheduling system is provided, including a scheduling platform and a plurality of scheduling checkpoints, where the scheduling platform is configured to: acquire a scheduling request, where the scheduling request includes a target resource, scheduling association information, and a key impact factor; determine a plurality of scheduling paths for the target resource based on the scheduling association information; obtain impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, where the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship; determine a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and schedule the target resource based on the target scheduling path; and the scheduling checkpoint is configured to process the target resource.

[0010] According to a sixth aspect of some embodiments of this specification, a computing device is provided, including: a memory and a processor, where the memory is configured to store a computer-executable instruction, the processor is configured to execute the computer-executable instruction, and the computer-executable instruction is executed by the processor to implement steps of the foregoing resource scheduling method or the foregoing payment item-based resource transfer method.

[0011] According to a seventh aspect of some embodiments of this specification, a

computer-readable storage medium is provided, where the computer-readable storage medium stores a computer-executable instruction, and the instruction is executed by a processor to implement steps of the foregoing resource scheduling method or the foregoing payment item-based resource transfer method.

[0012] According to an eighth aspect of some embodiments of this specification, a computer program is provided, where when the computer program is executed in a computer, the computer is enabled to perform steps of the foregoing resource scheduling method or the foregoing payment item-based resource transfer method.

[0013] Some embodiments of this specification provide a resource scheduling method, including: acquiring a scheduling request, where the scheduling request includes a target resource, scheduling association information, and a key impact factor; determining a plurality of scheduling paths for the target resource based on the scheduling association information; obtaining impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, where the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship; determining a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and scheduling the target resource based on the target scheduling path. The plurality of scheduling paths for the target resource are determined based on the scheduling association information, so that the plurality of determined scheduling paths are all available for the target resource. Further, the target scheduling path is determined from the plurality of scheduling paths for the target resource based on the key impact factor, thereby improving efficiency of scheduling the target resource.

BRIEF DESCRIPTION OF DRAWINGS

[0014] FIG. 1 is a processing flowchart of a resource scheduling method in a resource scheduling system according to some embodiments of this specification;

[0015] FIG. 2 is a flowchart of a resource scheduling method according to some embodiments of this specification;

[0016] FIG. 3 is a flowchart of constructing a directed acyclic graph in a resource scheduling method according to some embodiments of this specification;

[0017] FIG. 4a is a schematic diagram of remittance path routing in a resource

scheduling method according to some embodiments of this specification;

[0018] FIG. 4b is a schematic diagram of a directed acyclic graph in a resource scheduling method according to some embodiments of this specification;

[0019] FIG. 5 is a flowchart of a process of determining a target scheduling path in a resource scheduling method according to some embodiments of this specification;

[0020] FIG. 6 is a flowchart of a processing procedure of a resource scheduling method that is applied to a remittance scenario according to some embodiments of this specification;

[0021] FIG. 7 is a flowchart of a payment item-based resource transfer method according to some embodiments of this specification;

[0022] FIG. 8 is a schematic structural diagram of a resource scheduling apparatus according to some embodiments of this specification;

[0023] FIG. 9 is a schematic structural diagram of a payment item-based resource transfer apparatus according to some embodiments of this specification;

[0024] FIG. 10 is a schematic structural diagram of a resource scheduling system according to some embodiments of this specification; and

[0025] FIG. 11 is a structural block diagram of a computing device according to some embodiments of this specification.

DESCRIPTION OF EMBODIMENTS

[0026] Many specific details are set forth in the following description to facilitate full understanding of this specification. However, this specification can be implemented in many different ways from those described herein, and a person skilled in the art can make similar promotion without departing from the content of this specification, so this specification is not limited to the specific implementations disclosed below.

[0027] The terms used in one or more embodiments of this specification are for the purpose of describing specific embodiments only, and are not intended to limit one or more embodiments of this specification. The terms "a" and "the" of singular forms used in one or more embodiments of this specification and the appended claims are also intended to include plural forms, unless otherwise specified in the context clearly. It should be further understood that the term "and/or" used in one or more embodiments of this specification refers to and includes any or all possible combinations of one or more associated listed items.

[0028] It should be understood that although terms "first", "second", etc. may be used in one or more embodiments of this specification to describe various types of information, the information is not limited to these terms. These terms are used merely to differentiate information of the same type. For example, the first may also be referred to as the second without departing from the scope of one or more embodiments of this specification, and similarly, the second may be referred to as the first. Depending on the context, the word "if" used herein may be interpreted as "when" or "while" or "in response to determining".

[0029] First, terms used in one or more embodiments of this specification are explained.

[0030] Cross-border payment: refers to behavior of cross-country or cross-region transfer of funds completed between two or more countries or regions by using a specific settlement means and payment system due to international credits and debts that are incurred by international trade, international investment, and other activities. For example, in a cross-border e-commerce platform, when Chinese consumers purchase products from overseas merchants on the platform, funds conversion between the seller and the buyer needs to be completed by a cross-border payment institution due to different currencies of the seller and the buyer, thereby implementing transactions.

[0031] Remittance path routing: A cross-border payment process involves transfer of funds between two or more countries. A remittance path refers to a fund flow channel between a financial institution in one country and a financial institution in another country. The channel may involve only financial institutions belonging to two countries, or may involve a plurality of financial institutions. Remittance path routing refers to a process of finding a matching fund flow channel based on a requirement. In addition to information about regions and financial institutions, the remittance path further includes currency information, time limit information, charging information, etc.

[0032] Cut-off: For a traditional bank project, the daily work needs to have an end time, after which unfinished projects of the current day need to be processed in a centralized manner, and the project accounts of the current day need to be cleared. After preparation for accepting projects on the next day is made, the bookkeeping date can be updated to the next day. This process is called cut-off.

[0033] Liquidity: refers to a difficulty level of assets realization. Specifically, it represents a fund operation capability of a financial institution to meet a payment

requirement of a payer. The core idea of liquidity is to avoid and solve the shortage of funds, make efficient use of funds, and achieve better fund utilization.

[0034] Directed acyclic graph (DAG): If a directed graph cannot start from a vertex through several edges to return to this vertex, the graph is referred to as a directed acyclic graph.

[0035] Receiving end and sending end: In a cross-border payment process, a financial institution in a payment country is referred to as a sending end, and a financial institution in a collection country is referred to as a receiving end.

[0036] With continuous development of internet information technologies, in a process of carrying out cross-border payment projects (which refer to payment scenarios in a broad sense, including transfer, cash withdrawing, agency payment, etc.), funds flow between different commercial entities, between different countries or regions, and between different financial institutions. To provide customers with more convenient, faster, and low-cost payment experience, efficiency of fund flow needs to be maximized and costs of fund flow need to be minimized. However, underlying capital networks supporting fund flow are complex with diversified remittance paths. Most of common remittance path routing methods are based on availability of remittance paths, that is, focus on finding a channel that can meet a fund transfer requirement. This significantly affects customer service experience. In addition, when resource scheduling is performed through a channel that is determined by using this method, resource scheduling efficiency is extremely low.

[0037] To resolve the foregoing problem, some embodiments of this specification provide a resource scheduling method, including: acquiring a scheduling request, where the scheduling request includes a target resource, scheduling association information, and a key impact factor; determining a plurality of scheduling paths for the target resource based on the scheduling association information; obtaining impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, where the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship; determining a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and scheduling the target resource based on the target scheduling path. A target resource, scheduling association information, and a key impact factor that are carried in a scheduling request submitted

by a customer are acquired. First, a plurality of scheduling paths that can be used for scheduling the target resource are determined based on a remittance path on which a user needs to make payment and information about the remittance path. Next, impact factor data corresponding to a scheduling checkpoint group in each of the plurality of scheduling paths is obtained. Then, a scheduling path meeting a key impact factor that the user is concerned about is determined as a target scheduling path based on the key impact factor that the user is concerned about, and the target scheduling path is used to schedule a target resource that needs to be scheduled by the user. As such, the path for scheduling the target resource of the user meets a rule for the key impact factor that the user is concerned about, thereby significantly improving customer service experience.

[0038] This specification provides a resource scheduling method, and relates to a payment item-based resource transfer method, a resource scheduling apparatus, a payment item-based resource transfer apparatus, a resource scheduling system, a computing device, and a computer-readable storage medium. Details are described one by one in the following embodiments.

[0039] FIG. 1 is a processing flowchart of a resource scheduling method in a resource scheduling system according to some embodiments of this specification. As shown in FIG. 1, the system includes a terminal 0101 and a server 0102.

[0040] A server 0102 acquires a scheduling request from a terminal 0101, determines a plurality of scheduling paths based on the scheduling request, determines impact factor data of each scheduling checkpoint group in any one of the plurality of scheduling paths, determines a target scheduling path from the plurality of scheduling paths, and then performs resource scheduling based on the target scheduling path, and sends a scheduling result to the terminal 0101.

[0041] A specific process includes: acquiring a scheduling request, where the scheduling request includes a target resource, scheduling association information, and a key impact factor; determining a plurality of scheduling paths for the target resource based on the scheduling association information; obtaining impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, where the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship; determining a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and scheduling the target resource

based on the target scheduling path. The plurality of scheduling paths for the target resource are determined based on the scheduling association information, so that the plurality of determined scheduling paths are all available for the target resource. Further, the target scheduling path is determined from the plurality of scheduling paths for the target resource based on the key impact factor, thereby improving efficiency of scheduling the target resource.

[0042] FIG. 2 is a flowchart of a resource scheduling method according to some embodiments of this specification. The method specifically includes the following steps:

[0043] Step 202: Acquire a scheduling request, where the scheduling request includes a target resource, scheduling association information, and a key impact factor.

[0044] Specifically, the scheduling request is a scheduling request generated based on a resource scheduling requirement, and the scheduling request includes the target resource, the scheduling association information, and the key impact factor. The target resource is a resource that needs to be scheduled. For example, the target resource may be a remittance amount, a payment currency, a package that needs to be scheduled, or the like. The scheduling association information is information about a scheduling attribute. For example, the scheduling association information may be a payment financial institution, a payment region, a payment currency, a collection financial institution, a collection region, or a collection currency. For example, an amount of 1,000 yuan of a currency type aa paid by a financial institution a in a region A is converted into yyy yuan of a currency type bb through foreign exchange, and transferred to a financial institution b in a region B. The key impact factor is a key factor that affects a method for determining a scheduling path. For example, the key impact factor may be a time limit, a cost, a cut-off time, or an allowable quota. A specific selection is performed based on an actual situation. This is not limited in some embodiments of this specification.

[0045] It should be noted that there are many sources for acquiring the scheduling request. In some possible implementations, a scheduling request submitted by the user can be acquired based on a requirement of the user for performing resource scheduling. For example, a scheduling request that the user wants to remit 1,000 yuan of a currency type bb from a financial institution c in a region C to a financial institution d in a region D within two hours is acquired. In some other possible implementations, it may be that an organization to which the scheduling platform belongs has a requirement for investment or financing, and initiates a scheduling request. For example, a scheduling

request that the financial institution d in the region D wants to remit 10 million yuan to a financial institution e in a region E at the cost of a minimum remittance handling fee so that 10 million yuan is invested into a company aa is acquired. A specific selection is performed based on an actual situation. This is not limited in some embodiments of this specification.

[0046] In practice, based on different scheduling requests, the scheduling association information may include two different pieces of content. One piece of content includes only a collection financial institution, a collection region, and a collection currency. The other piece of content includes not only the collection financial institution, the collection region, and the collection currency, but also a payment financial institution, a payment region, and a payment currency. A specific selection is performed based on an actual situation. This is not limited in some embodiments of this specification.

[0047] According to the solutions in some embodiments of this specification, a scheduling request is acquired, and the scheduling request includes a target resource, scheduling association information, and a key impact factor, so that a plurality of scheduling paths for the target resource can be subsequently determined based on the scheduling association information. Then, a target scheduling path is determined from the plurality of available scheduling paths based on the key impact factor, so that the target resource can be scheduled by using the target scheduling path, thereby meeting a scheduling requirement and improving accuracy of resource scheduling for the target resource.

[0048] Step 204: Determine a plurality of scheduling paths for the target resource based on the scheduling association information.

[0049] Specifically, the scheduling path is a path for scheduling the target resource. For example, when a financial institution A needs to schedule a resource to a financial institution B, the scheduling path may be from the financial institution A to the financial institution B, or may be from the financial institution A to a financial institution C, and then to the financial institution B. A specific selection is performed based on an actual situation. This is not limited in some embodiments of this specification.

[0050] The scheduling association information is carried in the acquired scheduling request. The acquired scheduling request further carries the target resource and the key impact factor. Because the target resource needs to be scheduled, a plurality of scheduling paths for the target resource need to be first determined based on the scheduling association information related to the target resource, so that the target

scheduling path is subsequently determined from the plurality of scheduling paths based on the key impact factor.

[0051] For example, 1,000 yuan of the currency type aa needs to be remitted from a financial institution a in a region A to a financial institution b in a region B in a shortest time. A plurality of scheduling paths can be determined based on the foregoing requirement. One scheduling path may be that the financial institution a first remits 1,000 yuan of the currency type aa to a financial institution d, and the financial institution d converts 1,000 yuan of the currency type aa into xxx yuan of a currency type bb, and then remits xxx yuan to the financial institution b to obtain yyy yuan of a currency type cc. Another scheduling path may be that the financial institution a directly remits 1,000 yuan of the currency type aa to the financial institution b to obtain yyy yuan of the currency type cc.

[0052] It should be noted that, first, a directed acyclic graph corresponding to the scheduling association information needs to be determined based on the scheduling association information, and then a plurality of scheduling paths for the target resource are determined based on the directed acyclic graph, where the plurality of scheduling paths are scheduling paths that can be used for scheduling the target resource.

[0053] According to the solutions in some embodiments of this specification, a plurality of scheduling paths for a target resource are determined based on scheduling association information, so that the plurality of determined scheduling paths are paths that can be used for scheduling the target resource. Further, a target scheduling path can be subsequently determined from the plurality of scheduling paths for the target resource by using a key impact factor, and the target resource is scheduled based on the target scheduling path, thereby improving accuracy of resource scheduling for the target resource.

[0054] In some optional implementations, the step of determining a plurality of scheduling paths for the target resource based on the scheduling association information includes the following specific steps:

[0055] determining, based on the scheduling association information, a start scheduling checkpoint and an end scheduling checkpoint for scheduling the target resource;

[0056] determining a target directed acyclic graph based on the start scheduling checkpoint and the end scheduling checkpoint; and

[0057] determining the plurality of scheduling paths for the target resource based on

the target directed acyclic graph.

[0058] Specifically, the start scheduling checkpoint and the end scheduling checkpoint are a start point and an end point of scheduling in a scheduling path. For example, in a scheduling path of scheduling checkpoint a → scheduling checkpoint c → scheduling checkpoint e, the start scheduling checkpoint is the scheduling checkpoint a, and the end scheduling checkpoint is the scheduling checkpoint e. The target directed acyclic graph is a directed acyclic graph that is obtained through determining based on the scheduling association information and includes a scheduling path for scheduling the target resource. The target directed acyclic graph includes at least a plurality of scheduling checkpoints, a plurality of scheduling checkpoint groups, and impact factor data corresponding to each scheduling checkpoint group.

[0059] A start scheduling checkpoint and an end scheduling checkpoint for scheduling the target resource are determined based on the information carried in the scheduling association information. The user determines a target directed acyclic graph for the target resource, so as to determine a plurality of scheduling paths for the target resource by using the target directed acyclic graph.

[0060] It should be noted that there are many methods for determining the target directed acyclic graph based on the start scheduling checkpoint and the end scheduling checkpoint. In some possible implementations, the directed acyclic graph can be established in advance by the scheduling platform. For example, the directed acyclic graph may be a directed acyclic graph that includes all scheduling checkpoints. When the start scheduling checkpoint and the end scheduling checkpoint are known, the target directed acyclic graph corresponding to the start scheduling checkpoint and the end scheduling checkpoint can be extracted based on the directed acyclic graph that includes all scheduling checkpoints. Alternatively, a directed acyclic graph of any two of the plurality of scheduling checkpoints can be established in advance. When the start scheduling checkpoint and the end scheduling checkpoint are known, the target directed acyclic graph corresponding to the start scheduling checkpoint and the end scheduling checkpoint can be determined based on the plurality of directed acyclic graphs.

[0061] In some other possible implementations, after the start scheduling checkpoint and the end scheduling checkpoint are obtained, the target directed acyclic graph can be constructed based on the start scheduling checkpoint, the end scheduling checkpoint, and data stored in the scheduling platform.

[0062] According to the solutions in some embodiments of this specification, a target

directed acyclic graph is determined based on a start scheduling checkpoint and an end scheduling checkpoint that are used for scheduling a target resource and are determined from scheduling association information, and then a plurality of scheduling paths for the target resource are determined based on the target directed acyclic graph, so that the plurality of determined scheduling paths are determined based on the target directed acyclic graph, thereby improving efficiency of determining the plurality of scheduling paths for the target resource.

[0063] In some optional implementations, the step of determining a target directed acyclic graph based on the start scheduling checkpoint and the end scheduling checkpoint includes the following specific steps:

[0064] determining an intermediate scheduling checkpoint between the start scheduling checkpoint and the end scheduling checkpoint;

[0065] constructing a node corresponding to each scheduling checkpoint based on checkpoint information of the start scheduling checkpoint, the end scheduling checkpoint, and the intermediate scheduling checkpoint;

[0066] determining a node pair corresponding to a scheduling checkpoint group based on the checkpoint information of the start scheduling checkpoint, the end scheduling checkpoint, and the intermediate scheduling checkpoint; and

[0067] constructing, for two nodes in the node pair, a directed edge between the two nodes, to obtain the target directed acyclic graph.

[0068] Specifically, the intermediate scheduling checkpoint is another scheduling checkpoint in a scheduling path except the start scheduling checkpoint and the end scheduling checkpoint. For example, in a scheduling path of scheduling checkpoint a → scheduling checkpoint b → scheduling checkpoint c - scheduling checkpoint d, financial institutions b and c are intermediate scheduling checkpoints. Checkpoint information is element information corresponding to each scheduling checkpoint, and includes at least a region, a financial institution, and a currency. For example, element information of a scheduling checkpoint a is a region A, a financial institution a, and a currency type aa. Element information of a scheduling checkpoint b is a region B, a financial institution b, and a currency type bb. A node includes a scheduling checkpoint that carries checkpoint information. For example, the node may be the scheduling checkpoint a that carries the region A, the financial institution a, and the currency type aa, or may be the scheduling checkpoint b that carries the region B, the financial institution b, and the currency type bb. A node pair is formed by mapping a scheduling

checkpoint group to a directed acyclic graph. For example, a scheduling checkpoint e and a scheduling checkpoint f are one scheduling checkpoint group, and therefore a node e and a node f that are determined based on the scheduling checkpoint e and the scheduling checkpoint f are one node pair. A directed edge is an edge that connects each node pair in the directed acyclic graph, and is a directed edge that connects intermediate nodes and that is determined based on a feature that the start scheduling checkpoint is a sending end and the end scheduling checkpoint is a receiving end. A specific selection is performed based on an actual situation. This is not limited in some embodiments of this specification.

[0069] A plurality of nodes are determined based on the start scheduling checkpoint and the checkpoint information carried, the end scheduling checkpoint and the checkpoint information carried, and the intermediate scheduling checkpoint and the checkpoint information carried, and a plurality of node pairs and directed edges between the plurality of node pairs are obtained based on mapping of the scheduling checkpoint group pair, so as to construct the target directed acyclic graph.

[0070] According to the solutions in some embodiments of this specification, an intermediate scheduling checkpoint between a start scheduling checkpoint and an end scheduling checkpoint is first determined, and then a node is constructed based on checkpoint information carried in each scheduling checkpoint, and a directed edge between node pairs is determined, so as to construct a directed acyclic graph. As such, the constructed directed acyclic graph is closely correlated with an obtained scheduling request, so that a plurality of scheduling paths subsequently determined based on the directed acyclic graph better meet an initial requirement, thereby improving accuracy of the determined scheduling path and further improving resource scheduling efficiency.

[0071] In some optional implementations, the step of constructing, for two nodes in the node pair, a directed edge between the two nodes includes the following specific steps:

[0072] obtaining, for the two nodes in the node pair, impact factor data of a plurality of impact types between two scheduling checkpoints represented by the two nodes; and

[0073] constructing a weighted directed edge between the two nodes based on the impact factor data of the plurality of impact types, where the impact factor data of the plurality of impact types is set as weight information of the weighted directed edge.

[0074] Specifically, an impact type is a type of an impact factor. For example, the impact factor may be a time limit, a cost, stability, or an allowable quota. A weighted

directed edge is a directed edge that has weight data. For example, the weighted directed edge may be a directed edge that carries time limit and cost impact factor data between a node a and a node b, or a directed edge that carries stability and allowable quota impact factor data between the node b and a node c. Weight information is information carried on a directed edge in the weighted directed edge, that is, impact factor data of a plurality of impact types. For example, the weight information may be cost impact factor data of 100 yuan, time limit impact factor data of 2 hours, or the like carried on the directed edge between the node a and the node b. A specific selection is performed based on an actual situation. This is not limited in some embodiments of this specification.

[0075] For example, for the node a and the node b in the directed acyclic graph, the cost impact factor data of 100 yuan and the time limit impact factor data of 1 hour between the node a and the node b are obtained, and the cost impact factor data of 100 yuan and the time limit impact factor data of 1 hour are set as the weight information on the directed edge between the node a and the node b, so as to successfully construct a weighted directed edge between the node a and the node b.

[0076] According to the solutions in some embodiments of this specification, impact factor data of a plurality of impact types between two nodes in any node pair is represented, and the impact factor data of the plurality of impact types is used as weight information of a directed edge between the two nodes, so as to successfully construct a weighted directed edge, so that the constructed weighted directed edge includes a plurality of pieces of impact factor data of a plurality of impact types, thereby improving efficiency of constructing a target directed acyclic graph, and further improving resource scheduling efficiency.

[0077] Step 206: Obtain impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, where the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship.

[0078] Specifically, the first scheduling path is any scheduling path for scheduling the target resource. A scheduling checkpoint group is a combination of any two scheduling checkpoints that have a connection relationship in a scheduling path. For example, funds need to be remitted from a scheduling checkpoint f to a scheduling checkpoint g, and a scheduling path is scheduling checkpoint f → scheduling checkpoint h → scheduling checkpoint j → scheduling checkpoint g. In the scheduling path, the

scheduling checkpoint f and the scheduling checkpoint h may be one scheduling checkpoint group, and the scheduling checkpoint h and the scheduling checkpoint j may be one scheduling checkpoint group. Impact factor data is data corresponding to a factor that affects a method for determining a scheduling path. For example, the impact factor data may be time limit impact factor data of 2 hours or cost impact factor data of ccc yuan. Impact factor data corresponding to a scheduling checkpoint group is impact factor data corresponding to any two scheduling checkpoints that have a connection relationship. For example, the impact factor data corresponding to the scheduling checkpoint group may be a cost of bbb yuan or a time limit of 0.5 hour. A specific selection is performed based on an actual situation. This is not limited in some embodiments of this specification.

[0079] For example, in an obtained path from the scheduling checkpoint f to the scheduling checkpoint h, then to the scheduling checkpoint j, and finally to the scheduling checkpoint g, a cost and a time limit corresponding to the scheduling checkpoint f and the scheduling checkpoint h are bbb yuan and 0.5 hour, respectively.

[0080] According to the solutions in some embodiments of this specification, impact factor data corresponding to a scheduling checkpoint group of a first scheduling path in a plurality of scheduling paths for a target resource is obtained, so that impact factor data corresponding to each scheduling checkpoint group can be directly used to subsequently calculate a comprehensive impact parameter in the first scheduling path, thereby simplifying a process of calculating the comprehensive impact parameter, further increasing a speed of determining a target scheduling path, and improving resource scheduling efficiency.

[0081] With reference to FIG. 3, FIG. 4a, and FIG. 4B, the following further describes the resource scheduling method by using an example in which a directed acyclic graph is constructed based on a scheduling request according to the resource scheduling method provided in this specification. FIG. 3 is a flowchart of constructing a directed acyclic graph in a resource scheduling method according to some embodiments of this specification. FIG. 4a is a schematic diagram of remittance path routing in a resource scheduling method according to some embodiments of this specification. FIG. 4b is a schematic diagram of a directed acyclic graph in a resource scheduling method according to some embodiments of this specification. The method specifically includes the following steps:

[0082] Step 302: Find, based on the scheduling request, the start scheduling

checkpoint, and the end scheduling checkpoint, a remittance path set R that can connect the start scheduling checkpoint and the end scheduling checkpoint.

[0083] In step 302, for a schematic diagram of remittance path routing of the remittance path set that is found based on the start scheduling checkpoint and the end scheduling checkpoint and that can connect the start scheduling checkpoint and the end scheduling checkpoint, references can be made to FIG. 4a.

[0084] Step 304: Traverse any remittance path $R_i = \{ \langle \text{FromArea}_i, \text{FromBank}_i, \text{FromCcy}_i, \text{ToArea}_i, \text{ToBank}_i, \text{ToCcy}_i \rangle \}$ in R , where i belongs to $[1, m]$, and m is a total quantity of remittance paths }.

[0085] $\langle \text{FromArea}_i, \text{FromBank}_i, \text{FromCcy}_i \rangle$ represents a region, a bank, and a currency of the start scheduling checkpoint, respectively; $\langle \text{ToArea}_i, \text{ToBank}_i, \text{ToCcy}_i \rangle$ represents a region, a bank, and a currency of the end scheduling checkpoint, respectively.

[0086] Step 306: Traverse financial institutions involved in the remittance path R_i , and construct a node (if not already constructed) based on information about three elements (region, bank, and currency) of the institution, where the node is represented as node n : $\langle \text{Area}_i, \text{Bank}_i, \text{Ccy}_i \rangle$.

[0087] n represents any node, and $\langle \text{Area}_i, \text{Bank}_i, \text{Ccy}_i \rangle$ represents three elements of the institution corresponding to the node n .

[0088] Step 308: For any node pair $\langle n1, n2 \rangle$ in R_i , if there is a remittance path (that is, a connection) between a financial institution represented by $n1$ and a financial institution represented by $n2$, construct a directed edge between $n1$ and $n2$.

[0089] Step 310: Extract values corresponding to impact factors (that is, a time limit, a fee, and availability) from the remittance path from $n1$ to $n2$.

[0090] Step 312: Create a weighted directed edge $\langle n1, n2 \rangle$ between nodes, where a weight is corresponding impact factor data.

[0091] Return to step 304, so as to create a weighted directed edge of any node pair in any remittance path R_i in the remittance path set R .

[0092] Step 314: Determine a corresponding node A based on the final start scheduling checkpoint information $\langle \text{Area}_A, \text{Bank}_A, \text{Ccy}_A \rangle$, and determine a corresponding node B based on the end scheduling checkpoint information $\langle \text{Area}_B, \text{Bank}_B, \text{Ccy}_B \rangle$. A directed acyclic graph G is denoted.

[0093] In step 314, for a schematic diagram of the directed acyclic graph G , references can be made to FIG. 4b.

[0094] Step 316: For all path sets S from the node A to the node B in G , traverse a path S_i $\{i \text{ belongs to } [0, n], \text{ where } n \text{ represents a total quantity of paths}\}$, and calculate comprehensive impact data of each impact type in the path S_i according to different calculation rules for different impact types, to obtain $f_i = \langle t_i, c_i, s_i \rangle$, which is added to a set F .

[0095] Return to step 316 until all paths in the path set S are traversed. f_i corresponding to each path is added to the set F to obtain a final set F .

[0096] t_i , c_i , and s_i represent comprehensive impact data of a time limit impact type, a cost impact type, and a cut-off impact type in the path S_i .

[0097] In FIG. 4a, "A1" represents a start scheduling checkpoint, "C1" and "D1" represent intermediate scheduling checkpoints, and "B1" represents an end scheduling checkpoint; "R1", "R2", and "R3" represent scheduling paths of "A1 to B1"; "→" represents a scheduling path that connects any two scheduling checkpoints; the "R1" scheduling path is A1-B1, the "R2" scheduling path is A1-C1-B1, and the "R3" scheduling path is A1-D1-B1.

[0098] In FIG. 4b, "A" represents a source node, "C" and "D" represent intermediate nodes, and "B" represents a destination node; "A-C: $\langle t, c, s \rangle$ " represents a weight of a weighted directed edge between A-C, "C-B: $\langle t, c, s \rangle$ " represents a weight of a weighted directed edge between C-B, "A-D: $\langle t, c, s \rangle$ " represents a weight of a weighted directed edge between A-D, "A-B: $\langle t, c, s \rangle$ " represents a weight of a weighted directed edge between A-B, and "D-B: $\langle t, c, s \rangle$ " represents a weight of a weighted directed edge between D-B, where t , c , and s represent comprehensive impact data of a time limit impact type, a cost impact type, and a cut-off impact type in a path.

[0099] According to the solutions in some embodiments of this specification, when a scheduling request is received, a directed acyclic graph is established based on the scheduling request, so that the established directed acyclic graph corresponds to the scheduling request. As such, a target scheduling path is subsequently determined from a plurality of scheduling paths based on a target directed acyclic graph, and then resource scheduling is performed on a target resource based on the target scheduling path, thereby improving resource scheduling efficiency.

[0100] In some optional implementations, the step of obtaining impact factor data corresponding to each scheduling checkpoint group in a first scheduling path includes the following specific step:

[0101] reading weight information of each weighted directed edge on the first

scheduling path from the target directed acyclic graph, to obtain the impact factor data corresponding to each scheduling checkpoint group.

[0102] Specifically, each scheduling checkpoint group in the first scheduling path corresponds to a node pair in the target directed acyclic graph, weight information on a weighted directed edge between the node pair corresponding to each scheduling checkpoint group is read, and then impact factor data corresponding to each scheduling checkpoint group is obtained based on the weight information between each node pair.

[0103] According to the solutions in some embodiments of this specification, weight information is read from a weighted directed edge between each node pair in the target directed acyclic graph, so as to obtain impact factor data corresponding to each scheduling checkpoint group. As such, the determined impact factor data corresponding to each scheduling checkpoint group is extracted from the target directed acyclic graph, thereby increasing a speed of determining a target scheduling path and further improving resource scheduling efficiency.

[0104] Step 208: Determine a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group.

[0105] Specifically, the target scheduling path is a scheduling path for performing resource scheduling on the target resource. For example, resource scheduling needs to be performed on the target resource for remittance from a scheduling checkpoint f to a scheduling checkpoint g. An available scheduling path 1: scheduling checkpoint f → scheduling checkpoint h → scheduling checkpoint j → scheduling checkpoint g. An available scheduling path 2: scheduling checkpoint f → scheduling checkpoint g. A scheduling path for remittance from the scheduling checkpoint f to the scheduling checkpoint g is determined through calculation as the target scheduling path, and resource scheduling is performed on the target resource by using the scheduling path for remittance from the scheduling checkpoint f to the scheduling checkpoint g.

[0106] For example, resource scheduling needs to be performed on a target resource of 100,000 yuan for remittance from the scheduling checkpoint f to the scheduling checkpoint g. There are two available scheduling paths. Based on a key impact factor of a cost, a cost for resource scheduling performed on 100,000 yuan in a scheduling path 1 is 100 yuan, and a cost for resource scheduling performed on 100,000 yuan in a scheduling path 2 is 150 yuan. Based on the foregoing content, the scheduling path 1

may be determined as the target scheduling path.

[0107] It should be noted that the key impact factor may be one impact factor that includes one impact type, or may be a plurality of impact factors that include a plurality of impact types.

[0108] When the key impact factor is one impact factor that includes one impact type, the scheduling path 1 may be determined as the target scheduling path based on the foregoing determining of costs of the scheduling path 1 and the scheduling path 2.

[0109] When the key impact factor is a plurality of impact factors that include a plurality of impact types, there are many methods for determining the target scheduling path. In some possible implementations, the key impact factor includes a plurality of impact types, and different impact types correspond to different weights. For example, a weight coefficient corresponding to a time limit is a_1 , a weight coefficient corresponding to a cost is a_2 , and a weight coefficient corresponding to a cut-off time is a_3 . In such case, impact factor data that matches the key impact factors of the plurality of impact types is found based on the key impact factors of the plurality of impact types, the impact factor data is weighted based on a weight corresponding to each impact type, and the target scheduling path is determined based on a weighting result. Comprehensive impact parameter = $h_1(\text{scoring parameter for the time limit impact factor}) \times a_1 + k_1(\text{scoring parameter for the cost impact factor}) \times a_2 + f_1(\text{scoring parameter for the cut-off time impact factor}) \times a_3$.

[0110] For example, resource scheduling is performed on a target resource for remittance from the scheduling checkpoint f to the scheduling checkpoint g. An available scheduling path 1: $f \rightarrow g$. An available scheduling path 2: $f \rightarrow h \rightarrow j \rightarrow g$. An available scheduling path 3: $f \rightarrow h \rightarrow p \rightarrow q \rightarrow g$. The scheduling path 1 is used as an example. Impact factor data corresponding to a time limit, a cost, and a cut-off time for remittance from the scheduling checkpoint f to the scheduling checkpoint g is {0.5 hour, 20 yuan, 20:00}. A scoring result corresponding to the scheduling path 1 is determined to be {6, 3, 2} by using different scoring mechanisms corresponding to different impact types. Based on the foregoing same scoring mechanism, a scoring result corresponding to the scheduling path 2 is determined to be {5, 6, 3}, and a scoring result corresponding to the scheduling path 3 is determined to be {4, 4, 1}. If a_1 is 0.5, a_2 is 0.2, and a_3 is 0.3, a calculation result is as follows: A comprehensive impact parameter of the scheduling path 1 is 4.2, a comprehensive impact parameter of the scheduling path 2 is 4.6, and a

comprehensive impact parameter of the scheduling path 2 is 3.1. In such case, the scheduling path 2 is finally determined as the target scheduling path.

[0111] In some other possible implementations, a plurality of impact factors of a plurality of impact types included in the key impact factor respectively correspond to different priorities. For example, a priority corresponding to a time limit is a first priority, a priority corresponding to a cost is a second priority, and a priority corresponding to a cut-off time is a third priority. In such case, a target scheduling path is determined based on the plurality of impact factors of the plurality of impact types and impact factor data corresponding to each scheduling checkpoint group in each scheduling path. For example, resource scheduling is performed on the target resource for remittance from the scheduling checkpoint f to the scheduling checkpoint g. An available scheduling path 1: $f \rightarrow h \rightarrow j \rightarrow g$. An available scheduling path 2: $f \rightarrow g$. An available scheduling path 3: $f \rightarrow h \rightarrow p \rightarrow q \rightarrow g$. The scheduling path 1 is used as an example. Impact factor data corresponding to the scheduling checkpoint f and the scheduling checkpoint h is {0.2 hour, 5 yuan, 20:00}. Impact factor data corresponding to the scheduling checkpoint h and the scheduling checkpoint j is {0.4 hour, 5 yuan, 20:30}. Impact factor data corresponding to the scheduling checkpoint j and the scheduling checkpoint g is {0.5 hour, 5 yuan, 21:00}. According to the foregoing method, impact factor data corresponding to each scheduling checkpoint group in the scheduling path 2 and the scheduling path 3 is also determined. Considering that the time limit is the first priority, a calculation result is that the scheduling path 1 and the scheduling path 2 have the same comprehensive impact parameter of the time limit, and the scheduling path 3 has the largest comprehensive impact parameter of the time limit. In such case, the scheduling path 3 is excluded. Further, considering that the cost is the second priority, a calculation result is that a comprehensive impact factor parameter of a cost impact factor in the scheduling path 1 is 15 yuan, and a comprehensive impact factor parameter of a cost impact factor in the scheduling path 2 is 20 yuan. Because 15 yuan is less than 20 yuan, the scheduling path 1 is determined as the target scheduling path.

[0112] According to the solutions in some embodiments of this specification, a target scheduling path is determined from a plurality of scheduling paths for a target resource based on a key impact factor and impact factor data corresponding to each scheduling checkpoint group, so that the target scheduling path is determined from the plurality of scheduling paths based on the key impact factor, thereby improving accuracy of determining the target scheduling path.

[0113] In some optional implementations, the step of determining a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group includes the following specific steps:

[0114] determining a comprehensive impact parameter of the first scheduling path based on the impact factor data corresponding to each scheduling checkpoint group in the first scheduling path; and

[0115] determining the target scheduling path from the plurality of scheduling paths based on the key impact factor and a comprehensive impact parameter of each scheduling path.

[0116] Specifically, the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship. A comprehensive impact parameter is an impact parameter obtained through calculation based on impact factor data corresponding to each scheduling checkpoint in any scheduling path. For example, in a scheduling path of scheduling checkpoint h $\rightarrow$ scheduling checkpoint g $\rightarrow$ scheduling checkpoint a, impact factor data between the scheduling checkpoint h and the scheduling checkpoint g is {a cost of 100 yuan, a time limit of 0.5 hour, an allowable quota of 50 million}, and impact factor data between the scheduling checkpoint g and the scheduling checkpoint a is {a cost of 200 yuan, a time limit of 0.5 hour, an allowable quota of 10 million}. In such case, a comprehensive impact parameter of the scheduling path is {a cost of 300 yuan, a time limit of 1 hour, an allowable quota of 10 million}.

[0117] For example, based on the scheduling path 1: scheduling checkpoint h $\rightarrow$ scheduling checkpoint g $\rightarrow$ scheduling checkpoint a, it is determined that impact factor data between the scheduling checkpoint h and the scheduling checkpoint g is {a cost of 100 yuan, a time limit of 0.5 hour, an allowable quota of 50 million}, and impact factor data between the scheduling checkpoint g and the scheduling checkpoint a is {a cost of 200 yuan, a time limit of 0.5 hour, an allowable quota of 10 million}. In such case, a comprehensive impact parameter of the scheduling path 1 is {a cost of 300 yuan, a time limit of 1 hour, an allowable quota of 10 million}. Based on the scheduling path 2: scheduling checkpoint h $\rightarrow$ scheduling checkpoint f $\rightarrow$ scheduling checkpoint a, it is determined that impact factor data between the scheduling checkpoint h and the scheduling checkpoint f is {a cost of 200 yuan, a time limit of 1 hour, an allowable

quota of 80 million}, and impact factor data between the scheduling checkpoint f and the scheduling checkpoint a is {a cost of 200 yuan, a time limit of 2 hours, an allowable quota of 60 million}. In such case, a comprehensive impact parameter of the scheduling path 2 is {a cost of 400 yuan, a time limit of 3 hours, an allowable quota of 60 million}. If the key impact factor is a cost, the scheduling path 1 is used as the target scheduling path. If the key impact factor is a time limit, the scheduling path 2 is used as the target scheduling path. If the target resource is 50 million, the scheduling path 2 is used as the target scheduling path.

[0118] According to the solutions in some embodiments of this specification, an comprehensive impact parameter corresponding to a first scheduling path is obtained based on impact factor data corresponding to each scheduling checkpoint group in the scheduling path, and then a scheduling path corresponding to the comprehensive impact parameter that meets the key impact factor is determined as the target scheduling path based on the comprehensive impact parameter corresponding to each scheduling path and the key impact factor. As such, the finally determined target scheduling path is a target scheduling path meeting a scheduling request among the plurality of paths that can be used for scheduling the target resource.

[0119] In some optional implementations, the impact factor data is the impact factor data of the plurality of impact types; and the step of determining a comprehensive impact parameter of the first scheduling path based on the impact factor data corresponding to each scheduling checkpoint group in the first scheduling path includes the following specific steps:

[0120] calculating, for any impact type, a comprehensive impact parameter of the impact type of the first scheduling path based on impact factor data of the impact type corresponding to each scheduling checkpoint group in the first scheduling path and by using a calculation rule corresponding to the impact type; and

[0121] recording a comprehensive impact parameter of each impact type of the first scheduling path.

[0122] Specifically, a calculation rule is a rule that corresponds to an impact type and that is used for calculating impact factor data. Different impact types have corresponding different calculation rules. For example, a calculation rule for a cost may be addition, a calculation rule for a time limit is addition, and a calculation rule for an allowable quota is determining a minimum value. A specific selection is performed based on an actual situation. This is not limited in some embodiments of this

specification.

[0123] For example, in a scheduling path: scheduling checkpoint h $\rightarrow$ scheduling checkpoint f $\rightarrow$ scheduling checkpoint a, impact factor data between the scheduling checkpoint h and the scheduling checkpoint f is {a cost of 200 yuan, a time limit of 1 hour, an allowable quota of 80 million}, and impact factor data between the scheduling checkpoint f and the scheduling checkpoint a is {a cost of 200 yuan, a time limit of 2 hours, an allowable quota of 60 million}. According to the calculation rule for a cost, it may be determined that a comprehensive impact parameter of the cost corresponding to the scheduling path is $200 + 200 = 400$ yuan. According to the calculation rule for a time limit, it may be determined that a comprehensive impact parameter of the time limit corresponding to the scheduling path is $1 \text{ hour} + 2 \text{ hours} = 3 \text{ hours}$. According to the calculation rule for an allowable quota, it can be determined that a comprehensive impact parameter of the allowable quota corresponding to the scheduling path is 60 million yuan. In such case, {a cost of 400 yuan, a time limit of 3 hours, an allowable quota of 60 million} is recorded as the comprehensive impact parameter of the cost, time limit, and allowable quota of the scheduling path.

[0124] According to the solutions in some embodiments of this specification, an comprehensive impact parameter of each impact type in a first scheduling path is obtained through calculation based on impact factor data of each impact type corresponding to each scheduling checkpoint group in the first scheduling path and a calculation rule for the impact type, and the comprehensive impact parameter is recorded, so that a target scheduling path can be directly determined from a plurality of scheduling paths based on the recorded comprehensive impact parameter, thereby increasing a speed of determining the target scheduling path and improving resource scheduling efficiency.

[0125] In some optional implementations, the step of determining the target scheduling path from the plurality of scheduling paths based on the key impact factor and a comprehensive impact parameter of each scheduling path includes the following specific steps:

[0126] determining a first comprehensive impact parameter of a key impact type of the key impact factor from the comprehensive impact parameter based on the key impact type; and

[0127] searching the plurality of scheduling paths for a target scheduling path whose first comprehensive impact parameter meets a first predetermined routing condition

corresponding to the key impact type.

[0128] Specifically, a first predetermined routing condition is a condition predetermined to limit a first comprehensive impact parameter corresponding to a key impact type of a key impact factor and further limit selection of a scheduling path. For example, if the key impact type of the key impact factor is a cost, the first predetermined routing condition may be that the cost should not exceed 100 yuan. If the key impact type of the key impact factor is an allowable quota, the first predetermined routing condition may be that the allowable quota should not be less than 10,000 yuan.

[0129] For example, in a scheduling path 1: scheduling checkpoint h → scheduling checkpoint g → scheduling checkpoint a, a comprehensive impact parameter of the scheduling path 1 is {a cost of 300 yuan, a time limit of 3 hours, an allowable quota of 10 million}. In a scheduling path 2: scheduling checkpoint h - scheduling checkpoint f → scheduling checkpoint a, a comprehensive impact parameter of the scheduling path 2 is {a cost of 400 yuan, a time limit of 1 hour, an allowable quota of 60 million}. Considering that the key impact type of the key impact factor is a cost, and the first predetermined routing condition is that the cost should not exceed 300 yuan, the scheduling path 1 is used as the target scheduling path. If the key impact type of the key impact factor is a time limit, and the first predetermined routing condition is that the time limit should not exceed 2 hours, the scheduling path 2 is used as the target scheduling path.

[0130] According to the solutions in some embodiments of this specification, a first comprehensive impact parameter of a key impact type of a key impact factor is determined from a comprehensive impact parameter, and then a target scheduling path is determined from a plurality of scheduling paths based on a first predetermined routing condition corresponding to the key impact type, so that the determined target scheduling path meets a scheduling request, and accuracy is higher, thereby further improving resource scheduling efficiency.

[0131] In some optional implementations, the steps of determining a first comprehensive impact parameter of a key impact type of the key impact factor from the comprehensive impact parameter based on the key impact type; and searching the plurality of scheduling paths for a target scheduling path whose first comprehensive impact parameter meets a first predetermined routing condition corresponding to the key impact type further include the following specific step:

[0132] if there are a plurality of target scheduling paths whose first comprehensive impact parameter meets the first predetermined routing condition corresponding to the key impact type, selecting a target scheduling path whose second comprehensive impact parameter meets a second predetermined routing condition, where the second comprehensive impact parameter is a comprehensive impact parameter of another impact type except the first comprehensive impact parameter among the comprehensive impact parameters of all impact types.

[0133] Specifically, a second comprehensive impact parameter may mean that impact factors other than the key impact type of the key impact factor corresponding to the first comprehensive impact parameter have their own different weight coefficients or different priorities, and a corresponding comprehensive impact parameter is used as the second comprehensive impact parameter.

[0134] According to the solutions in some embodiments of this specification, selection is performed on a plurality of target paths corresponding to a first comprehensive impact parameter that meets a first predetermined routing condition based on a second predetermined routing condition, so that a finally determined target scheduling path is a unique scheduling path that meets a requirement. As such, a target resource can be accurately scheduled by using the target scheduling path, thereby improving resource scheduling efficiency.

[0135] Step 210: Schedule the target resource based on the target scheduling path.

[0136] Specifically, the target resource is scheduled from the start scheduling checkpoint to the end scheduling checkpoint based on the target scheduling path.

[0137] It should be noted that, when the target resource is scheduled from the start scheduling checkpoint to an intermediate scheduling checkpoint 1, the target resource carries path information of the target scheduling path, and the path information is used to instruct the intermediate scheduling checkpoint 1 to schedule the target resource to an intermediate scheduling checkpoint 2 at a next step, and so on. An intermediate scheduling checkpoint n is a previous intermediate scheduling checkpoint of the end scheduling checkpoint, and after the intermediate scheduling checkpoint n schedules the target resource to the end scheduling checkpoint, the target resource reaches the end scheduling checkpoint, and the end scheduling checkpoint can determine a source, namely, detailed information about the start scheduling checkpoint, of the target resource by using the target scheduling path carried in the target resource.

[0138] For example, a package is scheduled from an organization A to an organization

B, and a target scheduling path is $A \rightarrow X \rightarrow E \rightarrow U \rightarrow B$. In such case, when the package is scheduled from the organization A to an organization X, the package carries a target scheduling path of $A \rightarrow X \rightarrow E \rightarrow U \rightarrow B$, so as to instruct the organization X to schedule the package to an organization E at a next step, and so on, until an organization U schedules the package to the organization B. In such case, the organization B can determine, based on the target scheduling path carried in the package, that the package arrives through the scheduling path.

[0139] Application of the solutions in some embodiments of this specification includes: acquiring a scheduling request, where the scheduling request includes a target resource, scheduling association information, and a key impact factor; determining a plurality of scheduling paths for the target resource based on the scheduling association information; obtaining impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, where the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship; determining a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and scheduling the target resource based on the target scheduling path. The plurality of scheduling paths for the target resource are determined based on the scheduling association information, so that the plurality of determined scheduling paths are all available for the target resource. Further, the target scheduling path is determined from the plurality of scheduling paths for the target resource based on the key impact factor, thereby improving efficiency of scheduling the target resource.

[0140] FIG. 5 is a flowchart of a process of determining a target scheduling path in a resource scheduling method according to some embodiments of this specification. The process of determining a target scheduling path based on a condition that among a plurality of impact types, a priority of a time limit is a first priority, a priority of a cost is a second priority, and a priority of a cut-off time is a third priority specifically includes the following steps:

[0141] Step 502: Obtain a key impact factor x based on a scheduling request.

[0142] Step 504: A set F includes comprehensive impact parameters of a time limit impact type, a cost impact type, and a cut-off impact type that correspond to all scheduling paths.

[0143] Step 506: Determine whether the key impact factor x is a time limit, and if yes,

go to step 508, or if no, go to step 510.

[0144] Step 508: Traverse values in the set F to find F_i with a smallest t_i value; and if there are a plurality of scheduling paths with a smallest t_i value, find F_i with a smallest c_i value and a largest s_i value from these scheduling paths, and perform step 520.

[0145] Step 510: Determine whether the key impact factor x is a cost, and if yes, go to step 512, or if no, go to step 514.

[0146] Step 512: Traverse values in the set F to find F_i with a smallest c_i value; and if there are a plurality of scheduling paths with a smallest c_i value, find F_i with a smallest t_i value and a largest s_i value from these scheduling paths, and perform step 520.

[0147] Step 514: Determine whether the key impact factor x is a cut-off time, and if yes, go to step 516, or if no, go to step 518.

[0148] Step 516: Traverse values in the set F to find F_i with a largest s_i value; and if there are a plurality of scheduling paths with a largest s_i value, find F_i with a smallest t_i value and a smallest c_i value from these scheduling paths, and perform step 520.

[0149] Step 518: Perform sorting based on a priority, and output the scheduling path F_i obtained in step 508.

[0150] Step 520: Find a scheduling path R_i corresponding to F_i , where R_i is a target scheduling path.

[0151] According to the solutions in some embodiments of this specification, priorities are classified in advance for impact factors of a plurality of impact types. When a key impact factor is one of the existing impact factors of a plurality of impact types, a target scheduling path can be obtained by directly determining the key impact factor. When the key impact factor is not any one of the existing impact factors of a plurality of impact types, a relative target scheduling path is also obtained directly based on a priority of the predetermined impact factor for output. Based on this, regardless of whether the key impact factor is any one of the existing impact factors of a plurality of impact types, a target scheduling path is output, thereby improving resource scheduling on the target resource by using the target scheduling path.

[0152] FIG. 6 is a flowchart of a processing procedure of a resource scheduling method that is applied to a remittance scenario according to some embodiments of this specification. The method specifically includes the following steps:

[0153] Step 602: Obtain a remittance request, where the remittance request includes remitting 20,000 yuan from a bank a in a region A to a bank b in a region B, and a remittance cost should not exceed 20 yuan.

[0154] Step 604: Determine that the remittance of 20,000 yuan is scheduled from the bank a to the bank b.

[0155] Step 606: Determine that a bank through which the remittance from the bank a to the bank b needs to pass may be a bank c or a bank d.

[0156] Step 608: Construct nodes corresponding to banks based on regions, banks, and currencies of the bank a, the bank b, the bank c, and the bank d.

[0157] Step 610: Determine node pairs between the bank a and the bank b, between the bank a and the bank c, between the bank a and the bank d, between the bank c and the bank b, and between the bank d and the bank b based on the regions, banks, and currencies of the bank a, the bank b, the bank c, and the bank d.

[0158] The bank a - the bank b is used as a scheduling path 1, the bank a - the bank c - the bank b is used as a scheduling path 2, and the bank a - the bank d - the bank b is used as a scheduling path 3.

[0159] Step 612: Construct, for any two nodes in the node pair, a directed edge between the two nodes, to obtain the target directed acyclic graph.

[0160] Step 614: Determine that a cost between the bank a and the bank b in the scheduling path 1 is 10 yuan, and a time limit is 2 hours.

[0161] The scheduling path 2 and the scheduling path 3 are determined by using a method the same as that of the scheduling path 1.

[0162] Step 616: Based on the fact that the cost between the bank a and the bank b in the scheduling path 1 is 10 yuan, and the time limit is 2 hours, determine that comprehensive impact parameters of a cost and a time limit are 10 yuan and 2 hours for the scheduling path 1, 30 yuan and 1 hour for the scheduling path 2, and 50 yuan and 2 hours for the scheduling path 3.

[0163] The scheduling path 2 and the scheduling path 3 are determined by using a method the same as that of the scheduling path 1.

[0164] Step 618: Determine the scheduling path 1 as the target scheduling path based on the fact that the cost should not exceed 20 yuan and costs of the scheduling paths 1, 2, and 3 are 10 yuan, 30 yuan, and 50 yuan, respectively.

[0165] Application of the solutions in some embodiments of this specification includes: acquiring a scheduling request, where the scheduling request includes a target resource, scheduling association information, and a key impact factor; determining a plurality of scheduling paths for the target resource based on the scheduling association information; obtaining impact factor data corresponding to each scheduling checkpoint

group in a first scheduling path, where the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship; determining a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and scheduling the target resource based on the target scheduling path. The plurality of scheduling paths for the target resource are determined based on the scheduling association information, so that the plurality of determined scheduling paths are all available for the target resource. Further, the target scheduling path is determined from the plurality of scheduling paths for the target resource based on the key impact factor, thereby improving efficiency of scheduling the target resource.

[0166] FIG. 7 is a flowchart of a payment item-based resource transfer method according to some embodiments of this specification. The method specifically includes the following steps:

[0167] Step 702: Acquire a payment transfer request, where the payment transfer request includes a target resource, remittance path information, and a key impact factor.

[0168] Step 704: Determine a plurality of remittance paths for the target resource based on the remittance path information.

[0169] Step 706: Obtain impact factor data corresponding to each node group in a first remittance path, where the first remittance path is any one of the plurality of remittance paths, and the node group includes two nodes that have a connection relationship.

[0170] Step 708: Determine a target remittance path from the plurality of remittance paths based on the key impact factor and the impact factor data corresponding to each node group.

[0171] Step 710: Transfer the target resource based on the target remittance path.

[0172] Step 702 to step 710 are the same as or similar to step 202 to step 210 in the embodiment shown in FIG. 2. For details, references can be made to the embodiment shown in FIG. 2. Details are not described herein again.

[0173] Application of the solutions in some embodiments of this specification includes: acquiring a payment transfer request, where the payment transfer request includes a target resource, remittance path information, and a key impact factor; determining a plurality of remittance paths for the target resource based on the remittance path information; obtaining impact factor data corresponding to each node group in a first remittance path, where the first remittance path is any one of the plurality

of remittance paths, and the node group includes two nodes that have a connection relationship; determining a target remittance path from the plurality of remittance paths based on the key impact factor and the impact factor data corresponding to each node group; and transferring the target resource based on the target remittance path. The plurality of remittance paths for the target resource are determined based on the remittance path information, so that the plurality of determined remittance paths are all available for the target resource. Further, the target remittance path is determined from the plurality of remittance paths for the target resource based on the key impact factor, thereby improving efficiency of transferring the target resource.

[0174] Corresponding to the foregoing resource scheduling method embodiments corresponding to FIG. 2, this specification further provides some resource scheduling apparatus embodiments. FIG. 8 is a schematic structural diagram of a resource scheduling apparatus according to some embodiments of this specification. As shown in FIG. 8, the apparatus includes:

[0175] an acquisition module 802, configured to acquire a scheduling request, where the scheduling request includes a target resource, scheduling association information, and a key impact factor;

[0176] a scheduling path determining module 804, configured to determine a plurality of scheduling paths for the target resource based on the scheduling association information;

[0177] an obtaining module 806, configured to obtain impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, where the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship;

[0178] a target scheduling path determining module 808, configured to determine a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and

[0179] a scheduling module 810, configured to schedule the target resource based on the target scheduling path.

[0180] Optionally, the scheduling path determining module 804 is further configured to: determine, based on the scheduling association information, a start scheduling checkpoint and an end scheduling checkpoint for scheduling the target resource;

determine a target directed acyclic graph based on the start scheduling checkpoint and the end scheduling checkpoint; and determine the plurality of scheduling paths for the target resource based on the target directed acyclic graph.

[0181] Optionally, the scheduling path determining module 804 is further configured to: determine an intermediate scheduling checkpoint between the start scheduling checkpoint and the end scheduling checkpoint; construct a node corresponding to each scheduling checkpoint based on checkpoint information of the start scheduling checkpoint, the end scheduling checkpoint, and the intermediate scheduling checkpoint; determine a node pair corresponding to a scheduling checkpoint group based on the checkpoint information of the start scheduling checkpoint, the end scheduling checkpoint, and the intermediate scheduling checkpoint; and construct, for two nodes in the node pair, a directed edge between the two nodes, to obtain the target directed acyclic graph.

[0182] Optionally, the scheduling path determining module 804 is further configured to: obtain, for the two nodes in the node pair, impact factor data of a plurality of impact types between two scheduling checkpoints represented by the two nodes; and construct a weighted directed edge between the two nodes based on the impact factor data of the plurality of impact types, where the impact factor data of the plurality of impact types is set as weight information of the weighted directed edge.

[0183] Optionally, the obtaining module 806 is further configured to read weight information of each weighted directed edge on the first scheduling path from the target directed acyclic graph, to obtain the impact factor data corresponding to each scheduling checkpoint group.

[0184] Optionally, the target scheduling path determining module 808 is further configured to: determine a comprehensive impact parameter of the first scheduling path based on the impact factor data corresponding to each scheduling checkpoint group in the first scheduling path; and determine the target scheduling path from the plurality of scheduling paths based on the key impact factor and a comprehensive impact parameter of each scheduling path.

[0185] Optionally, the impact factor data is the impact factor data of the plurality of impact types; and the target scheduling path determining module 808 is further configured to: calculate, for any impact type, a comprehensive impact parameter of the impact type of the first scheduling path based on impact factor data of the impact type corresponding to each scheduling checkpoint group in the first scheduling path and by

using a calculation rule corresponding to the impact type; and record a comprehensive impact parameter of each impact type of the first scheduling path.

[0186] Optionally, the target scheduling path determining module 808 is further configured to: determine a first comprehensive impact parameter of a key impact type of the key impact factor from the comprehensive impact parameter based on the key impact type; and search the plurality of scheduling paths for a target scheduling path whose first comprehensive impact parameter meets a first predetermined routing condition corresponding to the key impact type.

[0187] Optionally, the target scheduling path determining module 808 is further configured to: if there are a plurality of target scheduling paths whose first comprehensive impact parameter meets the first predetermined routing condition corresponding to the key impact type, select a target scheduling path whose second comprehensive impact parameter meets a second predetermined routing condition, where the second comprehensive impact parameter is a comprehensive impact parameter of another impact type except the first comprehensive impact parameter among the comprehensive impact parameters of all impact types.

[0188] The schematic solution for the resource scheduling apparatus in some embodiments has been described above. It should be noted that the technical solutions of the resource scheduling apparatus are of the same concept as the technical solutions of the foregoing resource scheduling method. For details that are not described in detail in the technical solutions of the resource scheduling apparatus, references can be made to the descriptions of the technical solutions of the foregoing resource scheduling method.

[0189] Corresponding to the foregoing payment item-based resource transfer method embodiments corresponding to FIG. 7, this specification further provides some payment item-based resource transfer apparatus embodiments. FIG. 9 is a schematic structural diagram of a payment item-based resource transfer apparatus according to some embodiments of this specification. As shown in FIG. 9, the apparatus includes:

[0190] a request acquisition module 902, configured to acquire a payment transfer request, where the payment transfer request includes a target resource, remittance path information, and a key impact factor;

[0191] a remittance path determining module 904, configured to determine a plurality of remittance paths for the target resource based on the remittance path information;

[0192] an impact factor data obtaining module 906, configured to obtain impact factor

data corresponding to each node group in a first remittance path, where the first remittance path is any one of the plurality of remittance paths, and the node group includes two nodes that have a connection relationship;

[0193] a target remittance path determining module 908, configured to determine a target remittance path from the plurality of remittance paths based on the key impact factor and the impact factor data corresponding to each node group; and

[0194] a transfer module 910, configured to transfer the target resource based on the target remittance path.

[0195] The schematic solution for the payment item-based resource transfer apparatus in some embodiments has been described above. It should be noted that the technical solutions of the payment item-based resource transfer apparatus are of the same concept as the technical solutions of the foregoing payment item-based resource transfer method. For details that are not described in detail in the technical solutions of the payment item-based resource transfer apparatus, references can be made to the descriptions of the technical solutions of the foregoing payment item-based resource transfer method.

[0196] Corresponding to the foregoing method embodiments, this specification further provides some resource scheduling system embodiments. FIG. 10 is a schematic structural diagram of a resource scheduling system according to some embodiments of this specification. As shown in FIG. 10, the system includes:

[0197] a scheduling platform 1001 and a plurality of scheduling checkpoints.

[0198] The scheduling platform is configured to: acquire a scheduling request, where the scheduling request includes a target resource, scheduling association information, and a key impact factor; determine a plurality of scheduling paths for the target resource based on the scheduling association information; obtain impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, where the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group includes two scheduling checkpoints that have a connection relationship; determine a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and schedule the target resource based on the target scheduling path.

[0199] The foregoing resource scheduling system embodiments are the same as or similar to step 202 to step 210 in the embodiment shown in FIG. 2. For details,

references can be made to the embodiment shown in FIG. 2. Details are not described herein again.

[0200] The scheduling checkpoint is configured to process the target resource.

[0201] Specifically, the scheduling checkpoint is a checkpoint on the scheduling path, and is used to transfer a target resource from a current scheduling checkpoint to a next scheduling checkpoint.

[0202] In FIG. 10, the scheduling platform 1001 is connected to a scheduling checkpoint 1, a scheduling checkpoint 2, a scheduling checkpoint 3, ..., and a scheduling checkpoint n, and is configured to control resource scheduling between scheduling checkpoints. The scheduling checkpoints are connectable, which is represented by a dashed line in the figure. Selection may be performed subsequently based on an actual requirement.

[0203] The schematic solution for the resource scheduling system in some embodiments has been described above. It should be noted that the technical solutions of the resource scheduling system are of the same concept as the technical solutions of the foregoing resource scheduling method. For details that are not described in detail in the technical solutions of the resource scheduling system, references can be made to the descriptions of the technical solutions of the foregoing resource scheduling method corresponding to FIG. 2.

[0204] FIG. 11 is a structural block diagram of a computing device according to some embodiments of this specification. Components of the computing device 1100 include but are not limited to a memory 1110 and a processor 1120. The processor 1120 and the memory 1110 are connected by using a bus 1130, and a database 1150 is configured to store data.

[0205] The computing device 1100 further includes an access device 1140. The access device 1140 enables the computing device 1100 to communicate via one or more networks 1160. Examples of these networks include a public switched telephone network (PSTN), a local area network (LAN), a wide area network (WAN), a personal area network (PAN), or a combination of communication networks such as the Internet. The access device 1140 may include one or more of any type of wired or wireless network interfaces (for example, a network interface card (NIC)), such as an IEEE 802.11 wireless local area network (WLAN) wireless interface, a worldwide interoperability for microwave access (Wi-MAX) interface, an Ethernet interface, a universal serial bus (USB) interface, a cellular network interface, a Bluetooth interface,

and a near field communication (NFC) interface.

[0206] In some embodiments of this specification, the foregoing components of the computing device 1100 and other components not shown in FIG. 11 can alternatively be connected to each other, for example, through a bus. It should be understood that the structural block diagram of the computing device shown in FIG. 11 is for an illustrative purpose only and is not intended to limit the scope of this specification. A person skilled in the art can add or replace other components as needed.

[0207] The computing device 1100 may be any type of stationary or mobile computing device, including a mobile computer or a mobile computing device (for example, a tablet computer, a personal digital assistant, a laptop computer, a notebook computer, or a netbook), a mobile phone (for example, a smartphone), a wearable computing device (for example, a smartwatch or smart glasses), or another type of mobile device, or a stationary computing device such as a desktop computer or a PC. The computing device 1100 may alternatively be a mobile or stationary server.

[0208] The processor 1120 is configured to execute a computer-executable instruction, and the computer-executable instruction is executed by the processor to implement steps of the foregoing resource scheduling method or the foregoing payment item-based resource transfer method.

[0209] The schematic solution for the computing device in some embodiments has been described above. It should be noted that the technical solutions of the computing device are of the same concept as the technical solutions of the foregoing resource scheduling method or payment item-based resource transfer method. For details that are not described in detail in the technical solutions of the computing device, references can be made to the descriptions of the technical solutions of the resource scheduling method corresponding to FIG. 2 or the payment item-based resource transfer method corresponding to FIG. 7.

[0210] Some embodiments of this specification further provide a computer-readable storage medium, where the computer-readable storage medium stores a computer-executable instruction, and the computer-executable instruction is executed by a processor to implement steps of the resource scheduling method corresponding to FIG. 2 or the payment item-based resource transfer method corresponding to FIG. 7.

[0211] The schematic solution for the computer-readable storage medium in some embodiments has been described above. It should be noted that the technical solutions of the storage medium are of the same concept as the technical solutions of the

foregoing resource scheduling method or payment item–based resource transfer method. For details that are not described in detail in the technical solutions of the storage medium, references can be made to the descriptions of the technical solutions of the resource scheduling method corresponding to FIG. 2 or the payment item–based resource transfer method corresponding to FIG. 7.

[0212] Some embodiments of this specification further provide a computer program, where when the computer program is executed in a computer, the computer is enabled to perform steps of the foregoing resource scheduling method or the foregoing payment item–based resource transfer method.

[0213] The schematic solution for the computer program in some embodiments has been described above. It should be noted that the technical solutions of the computer program are of the same concept as the technical solutions of the foregoing resource scheduling method or payment item–based resource transfer method. For details that are not described in detail in the technical solutions of the computer program, references can be made to the descriptions of the technical solutions of the resource scheduling method or the payment item–based resource transfer method.

[0214] Some specific embodiments of this specification are described above. Other embodiments fall within the scope of the appended claims. In some cases, actions or steps described in the claims may be performed in a sequence different from that in some embodiments and desired results can still be achieved. In addition, processes described in the accompanying drawings do not necessarily require a specific order or a sequential order shown to achieve the desired results. In some implementations, multitasking and parallel processing are also possible or may be advantageous.

[0215] The computer instructions include computer program code, and the computer program code may be in a source code form, an object code form, an executable file form, some intermediate forms, or the like. The computer-readable medium may include any entity or apparatus capable of carrying the computer program code, a recording medium, a USB flash drive, a removable hard disk, a magnetic disk, an optical disc, a computer memory, a read-only memory (ROM), a random access memory (RAM), an electrical carrier signal, a telecommunications signal, a software distribution medium, etc. It should be noted that the content contained in the computer-readable medium can be appropriately increased or decreased in accordance with the requirements of the legislation and patent practice in the jurisdiction, for example, in some jurisdictions, the computer-readable medium does not include electrical carrier

signals or telecommunications signals in accordance with the legislation and patent practice.

[0216] It should be noted that, for a brief description, the above-mentioned method embodiments are represented as a series of actions. However, a person skilled in the art should understand that some embodiments of this specification are not limited to the described order of the actions, because according to some embodiments of this specification, some steps can be performed in another order or simultaneously. In addition, a person skilled in the art should also understand that all the embodiments described in this specification are example embodiments, and the related actions and modules are not necessarily mandatory to some embodiments of this specification.

[0217] In the foregoing embodiments, the descriptions of the embodiments have respective focuses. For a part that is not described in detail in an embodiment, references can be made to related descriptions in other embodiments.

[0218] The example embodiments of this specification disclosed above are intended merely to help describe this specification. The optional embodiments do not describe all the details in detail, nor do they limit the present invention to the specific implementations described. Clearly, many modifications and changes can be made based on the content of some embodiments of this specification. These embodiments are selected and described in detail in this specification in order to better explain the principles and practical applications of some embodiments of this specification, so that a person skilled in the art can well understand and use this specification. This specification is limited only by the claims and their full scope and equivalents.

CLAIMS

What is claimed is:

1. A resource scheduling method, comprising:

acquiring a scheduling request, wherein the scheduling request comprises a target resource, scheduling association information, and a key impact factor;

determining a plurality of scheduling paths for the target resource based on the scheduling association information;

obtaining impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, wherein the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group comprises two scheduling checkpoints that have a connection relationship;

determining a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and

scheduling the target resource based on the target scheduling path.

2. The method according to claim 1, wherein the determining a plurality of scheduling paths for the target resource based on the scheduling association information comprises:

determining, based on the scheduling association information, a start scheduling checkpoint and an end scheduling checkpoint for scheduling the target resource;

determining a target directed acyclic graph based on the start scheduling checkpoint and the end scheduling checkpoint; and

determining the plurality of scheduling paths for the target resource based on the target directed acyclic graph.

3. The method according to claim 2, wherein the determining a target directed acyclic graph based on the start scheduling checkpoint and the end scheduling checkpoint comprises:

determining an intermediate scheduling checkpoint between the start scheduling checkpoint and the end scheduling checkpoint;

constructing a node corresponding to each scheduling checkpoint based on checkpoint information of the start scheduling checkpoint, the end scheduling checkpoint, and the intermediate scheduling checkpoint;

determining a node pair corresponding to a scheduling checkpoint group based on

the checkpoint information of the start scheduling checkpoint, the end scheduling checkpoint, and the intermediate scheduling checkpoint; and

constructing, for two nodes in the node pair, a directed edge between the two nodes, to obtain the target directed acyclic graph.

4. The method according to claim 3, wherein the constructing, for two nodes in the node pair, a directed edge between the two nodes comprises:

obtaining, for the two nodes in the node pair, impact factor data of a plurality of impact types between two scheduling checkpoints represented by the two nodes; and

constructing a weighted directed edge between the two nodes based on the impact factor data of the plurality of impact types, wherein the impact factor data of the plurality of impact types is set as weight information of the weighted directed edge.

5. The method according to claim 4, wherein the obtaining impact factor data corresponding to each scheduling checkpoint group in a first scheduling path comprises:

reading weight information of each weighted directed edge on the first scheduling path from the target directed acyclic graph, to obtain the impact factor data corresponding to each scheduling checkpoint group.

6. The method according to any one of claims 1 to 5, wherein the determining a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group comprises:

determining a comprehensive impact parameter of the first scheduling path based on the impact factor data corresponding to each scheduling checkpoint group in the first scheduling path; and

determining the target scheduling path from the plurality of scheduling paths based on the key impact factor and a comprehensive impact parameter of each scheduling path.

7. The method according to claim 6, wherein the impact factor data is the impact factor data of the plurality of impact types; and

the determining a comprehensive impact parameter of the first scheduling path based on the impact factor data corresponding to each scheduling checkpoint group in the first scheduling path comprises:

calculating, for any impact type, a comprehensive impact parameter of the impact type of the first scheduling path based on impact factor data of the impact type corresponding to each scheduling checkpoint group in the first scheduling path and by

using a calculation rule corresponding to the impact type; and

recording a comprehensive impact parameter of each impact type of the first scheduling path.

8. The method according to claim 7, wherein the determining the target scheduling path from the plurality of scheduling paths based on the key impact factor and a comprehensive impact parameter of each scheduling path comprises:

determining a first comprehensive impact parameter of a key impact type of the key impact factor from the comprehensive impact parameter based on the key impact type; and

searching the plurality of scheduling paths for a target scheduling path whose first comprehensive impact parameter meets a first predetermined routing condition corresponding to the key impact type.

9. The method according to claim 8, further comprising:

if there are a plurality of target scheduling paths whose first comprehensive impact parameter meets the first predetermined routing condition corresponding to the key impact type, selecting a target scheduling path whose second comprehensive impact parameter meets a second predetermined routing condition, wherein the second comprehensive impact parameter is a comprehensive impact parameter of another impact type except the first comprehensive impact parameter among the comprehensive impact parameters of all impact types.

10. A payment item-based resource transfer method, comprising:

acquiring a payment transfer request, wherein the payment transfer request comprises a target resource, remittance path information, and a key impact factor;

determining a plurality of remittance paths for the target resource based on the remittance path information;

obtaining impact factor data corresponding to each node group in a first remittance path, wherein the first remittance path is any one of the plurality of remittance paths, and the node group comprises two nodes that have a connection relationship;

determining a target remittance path from the plurality of remittance paths based on the key impact factor and the impact factor data corresponding to each node group; and

transferring the target resource based on the target remittance path.

11. A resource scheduling apparatus, comprising:

an acquisition module, configured to acquire a scheduling request, wherein the

scheduling request comprises a target resource, scheduling association information, and a key impact factor;

a scheduling path determining module, configured to determine a plurality of scheduling paths for the target resource based on the scheduling association information;

an obtaining module, configured to obtain impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, wherein the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group comprises two scheduling checkpoints that have a connection relationship;

a target scheduling path determining module, configured to determine a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and

a scheduling module, configured to schedule the target resource based on the target scheduling path.

12. A resource scheduling system, comprising a scheduling platform and a plurality of scheduling checkpoints, wherein

the scheduling platform is configured to: acquire a scheduling request, wherein the scheduling request comprises a target resource, scheduling association information, and a key impact factor; determine a plurality of scheduling paths for the target resource based on the scheduling association information; obtain impact factor data corresponding to each scheduling checkpoint group in a first scheduling path, wherein the first scheduling path is any one of the plurality of scheduling paths, and the scheduling checkpoint group comprises two scheduling checkpoints that have a connection relationship; determine a target scheduling path from the plurality of scheduling paths based on the key impact factor and the impact factor data corresponding to each scheduling checkpoint group; and schedule the target resource based on the target scheduling path; and

the scheduling checkpoint is configured to process the target resource.

13. A computing device, comprising:

a memory and a processor, wherein

the memory is configured to store a computer-executable instruction, the processor is configured to execute the computer-executable instruction, and the computer-executable instruction is executed by the processor to implement steps of the resource scheduling method according to any one of claims 1 to 9 or the payment item-based

resource transfer method according to claim 10.

14. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer-executable instruction, and the computer-executable instruction is executed by a processor to implement steps of the resource scheduling method according to any one of claims 1 to 9 or the payment item-based resource transfer method according to claim 10.