

INFORMATION PROCESSING SYSTEM AND METHOD

TECHNICAL FIELD

[0001] Embodiments of this specification relate to the field of computer technologies, and in particular, to an information processing system.

5

BACKGROUND

[0002] With development of Internet technologies, more services can be provided online, and more abundant service types can be implemented on a client web page. However, in a scenario such as user login or a resource flow, when a page is opened by using a browser, a resource loss of a user may be caused when the page is opened again by using the browser. A security risk exists in such a behavior. In the conventional technology, a plug-in is usually installed in a browser to block opening of a page. However, implementation costs of such a manner are relatively high, and operations are relatively cumbersome. Therefore, a simple and effective method is urgently needed to resolve the above-mentioned problem.

SUMMARY

15 [0003] In view of this, embodiments of this specification provide an information processing system. One or more embodiments of this specification further relate to an information processing method, an information processing apparatus, a computing device, a computer-readable storage medium, and a computer program, to resolve a technical disadvantage in the conventional technology.

[0004] According to a first aspect of the embodiments of this specification, an information processing system is provided, including:

a client and a server, where

the server is configured to: determine, based on a page loading request submitted by the client for an initial page, page loading information including loading identification information; and send the page loading information to the client;

25 the client is configured to: update the initial page to a target page based on the page loading information; determine, in response to an operation instruction submitted for the target page, address

change information including operation identification information; and send, to the server, a page operation request that carries the address change information; and

the server is configured to: parse the address change information carried in the page operation request, to obtain the operation identification information; and when the operation identification information is inconsistent with the loading identification information, determine blocking information associated with the target page, and send the blocking information to the client, to generate a blocking reminder on the client.

[0005] According to a second aspect of the embodiments of this specification, a first information processing method is provided, including:

a server determines, based on a page loading request submitted by the client for an initial page, page loading information including loading identification information; and sends the page loading information to the client;

the client updates the initial page to a target page based on the page loading information; determines, in response to an operation instruction submitted for the target page, address change information including operation identification information; and sends, to the server, a page operation request that carries the address change information; and

the server parses the address change information carried in the page operation request, to obtain the operation identification information; and when the operation identification information is inconsistent with the loading identification information, determines blocking information associated with the target page, and sends the blocking information to the client, to generate a blocking reminder on the client.

[0006] According to a third aspect of the embodiments of this specification, a second information processing method is provided, including:

determining, based on a page loading request submitted by the client for an initial page, page loading information including loading identification information; and sending the page loading information to the client;

receiving a page operation request that carries the address change information;

parsing the address change information carried in the page operation request, to obtain the operation identification information; and

when the operation identification information is inconsistent with the loading identification information, determining blocking information associated with the target page, and sending the blocking information to the client, to generate a blocking reminder on the client.

[0007] According to a fourth aspect of the embodiments of this specification, an information processing apparatus is provided, including:

an information determining module, configured to: determine, based on a page loading request submitted by the client for an initial page, page loading information including loading identification information; and send the page loading information to the client;

5 a request receiving module, configured to receive a page operation request that carries the address change information;

an information obtaining module, configured to parse the address change information carried in the page operation request, to obtain the operation identification information; and

10 an information sending module, configured to: when the operation identification information is inconsistent with the loading identification information, determine blocking information associated with the target page, and send the blocking information to the client, to generate a blocking reminder on the client.

[0008] According to a fifth aspect of the embodiments of this specification, a third information processing method is provided, including:

15 generating a page loading request for an initial page, and sending the page loading request to the server;

receiving page loading information that is fed back by the server for the page loading request and that includes loading identification information;

updating the initial page to a target page based on the page loading information;

20 determining, in response to an operation instruction submitted for the target page, address change information including operation identification information; and sending, to the server, a page operation request that carries the address change information; and

receiving blocking information fed back by the server for the page operation request, where the blocking information is used to generate a blocking reminder.

25 **[0009]** According to a sixth aspect of the embodiments of this specification, another information processing apparatus is provided, including:

a page loading request sending module, configured to: generate a page loading request for an initial page, and send the page loading request to the server;

30 a loading identification information receiving module, configured to receive page loading information that is fed back by the server for the page loading request and that includes loading identification information;

an initial page update module, configured to update the initial page to a target page based on the page loading information;

a page operation request sending module, configured to: determine, in response to an operation instruction submitted for the target page, address change information including operation

identification information; and send, to the server, a page operation request that carries the address change information; and

a blocking information receiving module, configured to receive blocking information fed back by the server for the page operation request, where the blocking information is used to generate a blocking reminder.

[0010] According to a seventh aspect of the embodiments of this specification, a computing device is provided, including:

a memory and a processor, where

the memory is configured to store computer-executable instructions, the processor is configured to execute the computer-executable instructions, and when the computer-executable instructions are executed by the processor, steps of the information processing method are implemented.

[0011] According to an eighth aspect of the embodiments of this specification, a computer-readable storage medium is provided. The computer-readable storage medium stores computer-executable instructions, and when the instructions are executed by a processor, steps of the information processing method are implemented.

[0012] According to a ninth aspect of the embodiments of this specification, a computer program is provided. When the computer program is executed on a computer, the computer is enabled to perform steps of the information processing method.

[0013] An information processing system provided in an embodiment of this specification includes a client and a server. The server is configured to: determine, based on a page loading request submitted by the client for an initial page, page loading information including loading identification information; and send the page loading information to the client; the client is configured to: update the initial page to a target page based on the page loading information; determine, in response to an operation instruction submitted for the target page, address change information including operation identification information; and send, to the server, a page operation request that carries the address change information; and the server is configured to: parse the address change information carried in the page operation request, to obtain the operation identification information; and when the operation identification information is inconsistent with the loading identification information, determine blocking information associated with the target page, and send the blocking information to the client, to generate a blocking reminder on the client. Opening of a page detected based on an address is blocked. Opening of the page can be blocked only at a front end, without depending on a back end and user login, to reduce implementation costs and operation complexity.

BRIEF DESCRIPTION OF DRAWINGS

[0014] FIG. 1 is a schematic diagram illustrating an information processing system, according to an embodiment of this application;

[0015] FIG. 2 is a schematic structural diagram illustrating an information processing system, according to an embodiment of this specification;

[0016] FIG. 3 is a schematic diagram illustrating interaction of an information processing system, according to an embodiment of this specification;

[0017] FIG. 4 is a flowchart illustrating a first information processing method, according to an embodiment of this specification;

[0018] FIG. 5 is a schematic diagram illustrating interaction of a first information processing method, according to an embodiment of this specification;

[0019] FIG. 6 is a schematic flowchart illustrating an information processing method, according to an embodiment of this specification;

[0020] FIG. 7 is a flowchart illustrating a second information processing method, according to an embodiment of this specification;

[0021] FIG. 8 is a schematic structural diagram illustrating an information processing apparatus, according to an embodiment of this specification;

[0022] FIG. 9 is a flowchart illustrating a third information processing method, according to an embodiment of this specification;

[0023] FIG. 10 is a schematic structural diagram illustrating another information processing apparatus, according to an embodiment of this specification; and

[0024] FIG. 11 is a structural block diagram illustrating a computing device, according to an embodiment of this specification.

DESCRIPTION OF EMBODIMENTS

[0025] 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 manners different from those described herein, and a person skilled in the art can make similar promotion without departing from the content of this specification, so that this specification is not limited to the specific implementations disclosed below.

[0026] Terms used in one or more embodiments of this specification are merely used to describe specific embodiments, and are not intended to limit the 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.

5 [0027] 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.
10 Depending on the context, the word "if" used herein may be interpreted as "when" or "while" or "in response to determining".

[0028] In a special application with a relatively high user security requirement such as an e-banking application, when a user opens a plurality of pages to perform a resource exchange operation, a plurality of resource exchange orders are generated simultaneously, resulting in a resource loss of
15 the user and a security compliance risk. Therefore, from a perspective of product security and user experience, only one application page can be operated at a front end each time. FIG. 1 is a schematic diagram illustrating an information processing system, according to an embodiment of this application. As shown in FIG. 1, the information processing system includes a client and a server. The client submits a page loading request to the server. The server determines, based on the page
20 loading request submitted by the client for a browser page, page loading information including loading identification information, and sends the page loading information to the client. The client updates an initial page to a target page based on the page loading information, to implement loading and display of an application home page; determines, in response to an operation instruction submitted for the target page, address change information including operation identification
25 information; and sends, to the server, a page operation request that carries the address change information. The server parses the address change information carried in the page operation request, to obtain the operation identification information; and when the operation identification information is inconsistent with the loading identification information, which indicates that the client is to open another application home page, further determines that such an operation needs to be blocked.
30 Therefore, blocking information associated with the target page is determined and sent to the client. After receiving the blocking information, the client generates prompt information, and displays the prompt information to the user, to notify the user that a current behavior is risky, and the user needs to determine a next operation. Opening of a page detected based on an address is blocked. Opening

of the page can be blocked only at a front end, without depending on a back end and user login, to reduce implementation costs and operation complexity.

[0029] This specification provides an information processing system. This specification further relates to an information processing method, an information processing apparatus, a computing device, a computer-readable storage medium, and a computer program. The information processing system, the information processing method, the information processing apparatus, the computing device, the computer-readable storage medium, and the computer program are described in detail one by one in the following embodiments.

[0030] FIG. 2 is a schematic structural diagram illustrating an information processing system, according to an embodiment of this specification. The information processing system 200 includes a server 210 and a client 220. The server 210 is configured to: determine, based on a page loading request submitted by the client 220 for an initial page, page loading information including loading identification information; and send the page loading information to the client 220; the client 220 is configured to: update the initial page to a target page based on the page loading information; determine, in response to an operation instruction submitted for the target page, address change information including operation identification information; and send, to the server 210, a page operation request that carries the address change information; and the server 210 is configured to: parse the address change information carried in the page operation request, to obtain the operation identification information; and when the operation identification information is inconsistent with the loading identification information, determine blocking information associated with the target page, and send the blocking information to the client 220, to generate a blocking reminder on the client 220.

[0031] Specifically, the client 220 includes but is not limited to a mobile terminal that can be connected to a network, for example, a mobile phone, a tablet computer, or a notebook computer. The server 210 is configured to: receive, process, and send data, provide a corresponding service to the client 220, and implement page loading and update of the client 220. The initial page can be a home page of a browser installed on the client 220, or can be a home page, a login interface, etc. of an application or a website. The page loading request is a computer command that is submitted by a user to the client 220 based on an operable control at a web address or on the initial page after the user enters the web address and that is used to obtain a web page corresponding to the web address or an application page. The page loading information is information that is fed back by the server 210 based on the page loading request after the server 210 receives the page loading request and that is used to implement page generation or page update. Correspondingly, the target page is a page generated by the client 220 based on the received page loading information. A loading identifier is identification information corresponding to the target page, and is used to indicate a page opening time

corresponding to the target page. Therefore, an association relationship between the loading identification information and the target page is established. The loading identification information can be used as a token of a browser tab corresponding to the target page. The token is the loading identification information, and is used to indicate corresponding timestamp information existing when the target page is loaded. The operation instruction can be a computer command submitted by the user for a control on the target page, or can be a computer command used by the user to open, in the browser, another home page or login interface that is of an application or a website and that is the same as the target page. Correspondingly, the operation identification information is identification information generated by the server 210 based on a receiving time of the operation instruction after the server 210 receives the operation instruction. The address change information is address information of a new tab corresponding to the operation instruction, or address information existing after the target page is updated. The page operation request is a computer command used to load a page corresponding to the operation instruction. The blocking information is information that is used to be displayed on the client 220 and that has a prompt function. Correspondingly, the blocking reminder is reminder information generated based on the blocking information. A reminder manner of the blocking reminder includes but is not limited to a pop-up window prompt, a text prompt, a voice prompt, etc. A pop-up window can display corresponding reminder information based on a reminder requirement.

[0032] Based on this, the client 220 loads the initial page by using the browser, and submits the page loading request to the server 210 based on the initial page and a link address. After receiving the page loading request, the server 210 determines, based on the page loading request submitted by the client 220 for the initial page and the link address, the page loading information including the loading identification information, and sends the page loading information to the client 220. The client 220 updates the initial page to the target page based on the page loading information; determines, in response to an operation instruction submitted for an operable control on the target page, the address change information including the operation identification information; and sends, to the server 210, the page operation request that carries the address change information. After receiving the page operation request, the server 210 parses the address change information carried in the page operation request, to obtain the operation identification information. The operation identification information and the loading identification information are compared. When the operation identification information is inconsistent with the loading identification information, the blocking information associated with the target page is determined and sent to the client 220. The blocking information is used to generate the blocking reminder on the client 220, and the blocking reminder can be displayed to the user in a pop-up window form in a target interface of the client 220.

[0033] For example, when the user browses the application page in the browser, the application page can be loaded by entering an application home page address in an address bar of the browser tab, and further, user login and a subsequent operation are implemented based on the application page. However, in an application or a website in which operation security management of the user is relatively strict, a case in which two tabs are opened simultaneously to open two application home pages or website home pages is not allowed. In this case, when the user enters an application home page address into the browser tab and submits the page loading request to the server based on the entered address, the server determines, for the address information carried in the page loading request, the page loading information including the loading identification information, and sends the page loading information to a client that is currently used by the user. In other words, the page loading information is sent to the user resided client device. The page loading information is a token 1 corresponding to the target page, and is used to indicate a loading time corresponding to the target page. After receiving the page loading information, the client generates the application home page based on the page loading information, and displays the application home page to the user. The application home page is the target page. In this case, when the user taps on the target page to open a control of the application home page or open the new tab in the browser, enters address information corresponding to the application home page again, and submits the page operation request to the server, the server parses information carried in the page operation request, to obtain a token 2, and compares the token 1 and the token 2. When a comparison result is that the token 1 is inconsistent with the token 2, it indicates that the user opens another application home page, and performs a repeated page opening operation. In this case, the server generates the blocking information, and sends the blocking information to the client. The client can generate the blocking reminder in a form of a pop-up window, a voice, etc. based on the blocking information, and display the blocking reminder to the user or play the blocking reminder for the user, to implement a blocking prompt of repeated page opening.

[0034] In conclusion, the operation identification information and the loading identification information are compared, to determine whether a to-be-opened page needs to be blocked. Opening of a page detected based on an address is blocked. Opening of the page can be blocked only at a front end, without depending on a back end and user login, to reduce implementation costs and operation complexity.

[0035] Further, in consideration that the client 220 can simultaneously display different pages or the same page in different browser windows when the client 220 displays a page, a page address changes when a new page is opened and another operation is continued based on the current page. Page opening can be blocked in a timely manner by monitoring an address change. In this

embodiment, the client 220 is further configured to: obtain the address information, generate the page loading request that carries the address information, send the page loading request to the server 210, invoke a blocking program corresponding to the page loading request, and generate the address change information based on the operation instruction.

5 [0036] Specifically, the address information is URL information corresponding to the target page. The target page can be loaded based on the address information. The blocking program is blocking logic injected after the client 220 opens a new page. The browser provides system methods pushstate and replacestate. The front end can rewrite the two methods by using JS code (Javascript code) to inject the blocking logic. Correspondingly, after the loading request for the target page is received, a
10 new address corresponding to the operation instruction is generated. The new address is the address change information, and the address change information is used to generate a new page or update the target page.

[0037] Based on this, the client 220 obtains the address information, generates the page loading request that carries the address information, and sends the page loading request to the server 210.
15 After receiving the operation instruction for the target page, the client 220 invokes the blocking program corresponding to the page loading request, and generates the address change information based on the operation instruction.

[0038] The above-mentioned example is still used. After the client displays the application home page to the user, the user can submit the operation instruction for the operable control displayed on
20 the application home page. The operable control includes but is not limited to "Home page", "Next", "Me", etc. When the user taps any operable control, address rewriting is implemented by invoking the pushstate or replacestate method provided by the browser. When the user selects "Home page", because repeated page opening is performed, opening of the page is blocked when an address change is detected.

25 [0039] In conclusion, after receiving the page loading request, the server invokes the blocking program, to modify the address information in a method in the blocking program, and generate the address change information, so as to subsequently generate the new page based on the address change information.

[0040] Further, because two pages cannot be opened at the same moment in one browser, a
30 corresponding timestamp existing when each page is opened is different, and a page opening sequence can be determined based on timestamp information corresponding to the page. Therefore, the timestamp information corresponding to the page can be used as an identifier corresponding to the page. In this embodiment, the server 210 is further configured to: receive the page loading request submitted by the client 220 for the initial page; generate, based on timestamp information

corresponding to the page loading request, the page loading information including the loading identification information; and send the page loading information to the client 220. The client 220 is further configured to: update the initial page to the target page based on the page loading information; establish the association relationship between the loading identification information and the target page; and send the association relationship to the server 210. The server 210 is further configured to: when the operation identification information is inconsistent with the loading identification information, determine, based on the association relationship, the blocking information associated with the target page, and send the blocking information to the client 220.

[0041] Based on this, the server 210 receives the page loading request submitted by the client 220 for the initial page; generates, based on the timestamp information obtained when the page loading request is received, the page loading information including the loading identification information; and sends the page loading information to the client 220. The client 220 updates the initial page to the target page based on the page loading information. The association relationship between the loading identification information and the target page is established, and the association relationship is sent to the server 210. The server 210 compares the operation identification information and the loading identification information, and when the operation identification information is inconsistent with the loading identification information, determines, based on the association relationship, the blocking information associated with the target page, and sends the blocking information to the client 220.

[0042] The above-mentioned example is still used. When the client displays the application home page, the client generates a token 1: 202005061820 of the application home page and a token 2: 202005061850 of a to-be-opened new page based on an opening time information of the application home page; and when determining that the token 1 and the token 2 are inconsistent, generates blocking information "A window "www.abc.com" already exists. Are you sure you do not want to open a new window?" corresponding to the application home page, to display the blocking information in a pop-up window form, and provide two options "Cancel" and "OK" in a pop-up window, so that the user performs selection.

[0043] In conclusion, when the operation identification information is inconsistent with the loading identification information, the blocking information corresponding to the target page can be generated and displayed on a blocking page of the client, thereby implementing a page blocking reminder and avoiding repeated page opening.

[0044] Further, because two pages cannot be opened at the same moment in one browser, a corresponding timestamp existing when each page is opened is different. In this embodiment, the client 220 is further configured to: generate the operation identification information based on

timestamp information corresponding to the operation instruction; create the address change information including the operation identification information; and send, to the server 210, the page operation request that carries the address change information.

[0045] Based on this, the client 220 generates the operation identification information based on the timestamp information corresponding to the operation instruction; creates the address change information including the operation identification information; and sends, to the server 210, the page operation request that carries the address change information.

[0046] The above-mentioned example is still used. When the client displays the application home page to the user, the user can continue to perform a subsequent resource exchange operation on the application home page, or can open a new application home page again by opening a new browser tab. However, a security risk exists in a behavior of repeatedly opening the application home page. Therefore, before the user submits the page operation request to the server for a currently opened application home page, after the client receives the operation instruction, the client generates a token 2 corresponding to the operation instruction based on the timestamp information of the operation instruction. The operation instruction is used to update the application home page or open a new application home page.

[0047] In conclusion, the operation identification information is generated based on the timestamp information corresponding to the operation instruction, so that whether a page is repeatedly opened can be confirmed by comparing the operation identification information and the loading identification information, thereby improving accuracy of confirming that a page is repeatedly opened and confirm efficiency.

[0048] Further, in consideration that the user can perform a plurality of operations on the target page, when the target page is opened, a page corresponding to the target page can be further opened again by creating a new browser tab. To facilitate page comparison and management, each time a page is opened or a page is updated, page generation and update situations can be both recorded, to detect a repeatedly opened page. In this embodiment, the client 220 is further configured to: generate a page display record based on the target page, and send the page display record to the server 210. The server 210 is further configured to: when the operation identification information is inconsistent with the loading identification information, generate, based on the page display record, the blocking information associated with the target page; and send the blocking information to the client 220. The client 220 is further configured to: generate reminder information based on the blocking information, and display the reminder information on the target page; and/or generate, based on the address change information and the blocking information, a reminder page including the blocking reminder.

[0049] Specifically, the page display record is a log record used to record page opening information, and the page display record includes page address information, page opening time information, etc. The reminder page is a page that is displayed on the client 220 and that includes the blocking information. The reminder page includes page content on the target page and reminder information in a pop-up window form, and is used to display a page including a pop-up window on the client 220.

[0050] Based on this, the client 220 generates the page display record based on the target page, and sends the page display record to the server 210. The server 210 compares the operation identification information and the loading identification information; and when determining that the operation identification information is inconsistent with the loading identification information, generates, based on the page display record, the blocking information associated with the target page, and sends the blocking information to the client 220. After receiving the blocking information, the client 220 generates the reminder information based on the blocking information, and displays the reminder information on the target page; or generates, based on the address change information and the blocking information, the reminder page including the blocking reminder, and displays the reminder page on the client 220. The client 220 can further generate, based on only the address change information and the blocking information, the reminder page including the blocking reminder, and display the reminder page on the client 220; or generate the reminder information based on only the blocking information, and display the reminder information on the target page. Therefore, the blocking information is displayed on the client 220 in a plurality of manners.

[0051] The above-mentioned example is still used. When the client displays the application home page, a page display record www.abc.com 202005061820 is generated based on home page address information and the opening time information of the application home page, is stored in a log, and is sent to the server. The server compares the token 1: 202005061820 of the application home page and the token 2: 202005061850 of the to-be-opened new page; and when determining that the token 1 and the token 2 are inconsistent, generates the blocking information "A window "www.abc.com" already exists. Are you sure you do not want to open a new window?" corresponding to the application home page based on a page display record www.abc.com 202005061820, to display the blocking information in a pop-up window form, and provide two options "Cancel" and "OK" in a pop-up window, so that the user performs selection. In addition, the server can further generate the blocking information "A window "www.abc.com" already exists. Is a current window to be closed?", and send the blocking information to the client. The client generates a reminder page of the blocking information "A window "www.abc.com" already exists. Is a current window to be closed?" based on the blocking information and address information of a new page, displays the blocking information

in the pop-up window form on the reminder page, and provides two options "Cancel" and "OK" in a pop-up window, so that the user performs selection.

[0052] In conclusion, the page display record corresponding to the target page is generated, and when the operation identification information is inconsistent with the loading identification information, the blocking information corresponding to the target page can be generated based on the page display record, and is displayed on the blocking page of the client, thereby implementing a page blocking reminder and avoiding repeated page opening.

[0053] Further, after the reminder information is displayed on the target page, in consideration that the user needs to confirm the reminder information and provides a feedback on the reminder information, because repeated page opening is performed after the reminder page including the blocking reminder is generated, a subsequent page operation can be performed only when the user further performs an operation on the reminder information on the reminder page. In this embodiment, the client 220 is further configured to: receive a confirm instruction for the blocking reminder on the reminder page, generate a confirm request based on the confirm instruction, send the confirm request to the server 210, receive page processing information fed back by the server 210 for the confirm request, and update the reminder page based on the page processing information; receive a selection instruction for the reminder information on the target page, generate a selection request based on the selection instruction, send the selection request to the server 210, receive page selection information fed back by the server 210 for the selection request, and update the target page based on the page selection information.

[0054] Specifically, the confirm instruction is a computer command generated for the blocking reminder or an operation control that corresponds to the blocking reminder and that is displayed on the reminder page. The confirm instruction can be a feedback instruction of a feedback provided by the user on the blocking reminder after the user reads the blocking reminder. The confirm instruction can be an instruction such as a tap or a slide that is submitted for a reminder control corresponding to the blocking reminder. Correspondingly, the confirm request is a computer command that is generated by the client 220 based on the confirm instruction and that is to be sent to the server 210. The page processing information is information that corresponds to the confirm request and the confirm instruction and that is used to update the reminder page. The selection instruction is a computer command that is selected and determined for the reminder information and then submitted to the client 220 after the client 220 displays the reminder information. Correspondingly, the selection request is a computer command that is generated based on the selection instruction and that corresponds to the selection instruction, and is to be sent to the client 220, to implement processing

of the reminder information. The page selection information is information that is fed back by the server 210 for the selection request and that is used to update the target page.

[0055] Based on this, the client 220 receives the confirm instruction for the operation control corresponding to the blocking reminder on the reminder page, generates the confirm request based on the confirm instruction, and sends the confirm request to the server 210. After receiving the confirm request, the server 210 feeds back page processing information to the client 220 based on the confirm request. After receiving the page processing information fed back by the server 210 for the confirm request, the client 220 updates the reminder page based on the page processing information. The client 220 receives the selection instruction for the reminder information on the target page, generates the selection request based on the selection instruction, and sends the selection request to the server 210. After receiving the selection request from the client 220, the server 210 generates the page selection information corresponding to the selection request, and sends the page selection information to the client 220. After receiving the page selection information fed back by the server 210 for the selection request, the client 220 updates the target page based on the page selection information.

[0056] The above-mentioned example is still used. The blocking information "A window "www.abc.com" already exists. Are you sure you do not want to open a new window?" is displayed in the pop-up window form on the application home page of the client. When the two options "Cancel" and "OK" are provided in the pop-up window, the user can perform selection based on a requirement. When the user selects "OK", a new page is not be opened. If the user selects "Cancel", it indicates that the user ignores such a prompt. When the reminder page of the blocking information "A window "www.abc.com" already exists. Is a current window to be closed?" is displayed on the client, the blocking information is displayed in the pop-up window form on the reminder page, and the two options "Cancel" and "OK" are provided in the pop-up window. When the user selects "OK", the new page is not opened. If the user selects "Cancel", it indicates that the user ignores such a prompt.

[0057] In conclusion, after receiving the page processing information fed back by the server for the confirm request, the client updates the reminder page based on the page processing information, to provide a feedback on the blocking reminder, and implement a response to the blocking reminder, thereby closing the reminder page or updating the reminder page, and implementing closing or update processing of the repeatedly opened page.

[0058] Further, in consideration that after the client 220 displays the target page, the user continues to perform a page operation on the target page directly in most cases, when the operation identification information and the loading identification information are compared, a comparison result is usually that the operation identification information and the loading identification

information are consistent. In this case, the page update information corresponding to the target page can be determined and is sent to the client 220. In this embodiment, the server 210 is further configured to: when the operation identification information is consistent with the loading identification information, determine the page update information based on the address change information, and send the page update information to the client 220.

[0059] Specifically, the page update information is used to implement updating of the target page, and is determined by the server 210 based on the page operation request submitted by the client 220. The page update information can be information used to render the target page when content such as text, a picture, audio, or a video displayed on the page is updated.

[0060] Based on this, the server 210 compares the operation identification information and the loading identification information. When the operation identification information is consistent with the loading identification information, it indicates that opening of a new page corresponding to the target page is not implemented based on the page operation request submitted by the client 220. That is, the operation instruction received by the client 220 is a compliance operation instruction for the target page. In this case, the page update information corresponding to the target page can be determined based on the address change information, and is sent to the client 220. The client 220 updates the target page based on the page update information when receiving the page update information.

[0061] The above-mentioned example is still used. When the client displays the application home page, a page display record www.abc.com 202005061820 is generated based on home page address information and the opening time information of the application home page, is stored in a log, and is sent to the server. The server compares the token 1: 202005061820 of the application home page and the token 2: 202005061820 of the to-be-opened new page. If it is determined that the token 1 and the token 2 are consistent, it indicates that an operation performed by the user is a compliance operation performed based on the application home page, and there is no risk in repeated page opening. Therefore, the application home page can be updated based on the application home page.

[0062] In conclusion, an information processing system provided in an embodiment of this specification includes a client and a server. The server is configured to: determine, based on a page loading request submitted by the client for an initial page, page loading information including loading identification information; and send the page loading information to the client; the client is configured to: update the initial page to a target page based on the page loading information; determine, in response to an operation instruction submitted for the target page, address change information including operation identification information; and send, to the server, a page operation request that carries the address change information; and the server is configured to: parse the address change

information carried in the page operation request, to obtain the operation identification information; and when the operation identification information is inconsistent with the loading identification information, determine blocking information associated with the target page, and send the blocking information to the client, to generate a blocking reminder on the client. Opening of a page detected
5 based on an address is blocked. Opening of the page can be blocked only at a front end, without depending on a back end and user login, to reduce implementation costs and operation complexity.

[0063] With reference to FIG. 3, the following further describes the information processing system by using an example in which the information processing system provided in this specification is applied to page loading. FIG. 3 is a schematic diagram illustrating interaction of an information
10 processing system, according to an embodiment of this specification. The information processing system includes a client and a server. The following steps are specifically included.

[0064] Step S302: The client sends a page loading request to the server.

[0065] In a scenario in which an application page is opened by using a browser, the page loading request is an application home page loading request, and is used to implement loading of an
15 application home page.

[0066] Step S304: The server determines page loading information in response to the page loading request.

[0067] After determining page loading information corresponding to the application home page, the server sends the page loading information to the client, to implement loading of the application
20 home page.

[0068] Step S306: The server sends the page loading information to the client.

[0069] Step S308: The client updates an initial page to a target page based on the page loading information.

[0070] The client updates a browser home page to the application home page, that is, opens a tab
25 in the browser, and displays the application home page on the tab.

[0071] Step S310: The client receives an operation instruction submitted for the target page, generates a page operation request based on the operation instruction, and sends the page operation request to the server.

[0072] The client receives an application home page opening instruction submitted by a user for
30 a control that may be tapped and that is provided on the application home page, generates the page operation request, and sends the page operation request to the server, to implement page opening.

[0073] Step S312: The server performs identification information comparison in response to the page operation request, and determines blocking information based on a comparison result.

[0074] After receiving the page operation request, the server compares a locally stored token identifier corresponding to an opened application home page and a token identifier of a current window. When the token identifier corresponding to the application home page is consistent with the token identifier of the current window, it indicates that no risk exists in an operation performed by the user, and the target page can be updated based on the operation performed by the user. When the token identifier corresponding to the application home page is inconsistent with the token identifier of the current window, it indicates that there is a risk of repeated page opening, and an operation needs to be blocked, thereby determining that the blocking information is to be sent to the client.

[0075] Step S314: The server sends the blocking information to the client.

[0076] Step S316: The client generates a pop-up window prompt based on the blocking information, and displays the pop-up window prompt.

[0077] In conclusion, identification comparison is performed for a page, to determine whether a to-be-opened page needs to be blocked. Opening of a page detected based on an address is blocked. Opening of the page can be blocked only at a front end, without depending on a back end and user login, to reduce implementation costs and operation complexity.

[0078] Corresponding to the system embodiment, this specification further provides an embodiment of a first information processing method. FIG. 4 is a flowchart illustrating a first information processing method, according to an embodiment of this specification. As shown in FIG. 4, the method includes the following steps.

[0079] Step S402: a server determines, based on a page loading request submitted by a client for an initial page, page loading information including loading identification information; and sends the page loading information to the client.

[0080] Step S404: The client updates the initial page to a target page based on the page loading information; determines, in response to an operation instruction submitted for the target page, address change information including operation identification information; and sends, to the server, a page operation request that carries the address change information.

[0081] Step S406: The server parses the address change information carried in the page operation request, to obtain the operation identification information; and when the operation identification information is inconsistent with the loading identification information, determines blocking information associated with the target page, and sends the blocking information to the client, to generate a blocking reminder on the client.

[0082] In actual applications, FIG. 5 is a schematic diagram illustrating interaction of an information processing method, according to an embodiment of this specification. When a user opens a page such as an application home page or a web page of a website on a client for the first time,

before a page 1 is rendered, system methods pushstate and replacestate provided by a browser are rewritten by rewriting JS code, thereby injecting blocking logic of a page. After blocking logic is injected, the browser jumps to a new link to invoke the system methods pushstate and replacestate. "Backward" and "Forward" of the browser trigger pushstate, and replacestate is triggered by manually entering a network address. In this case, two messages popstate and hashchange are monitored to monitor a change in a URL, and popstate and hashchange events are both browser history APIs. When a segment identifier of the URL changes, the hashchange event is triggered. When the page 1 is successfully opened, the token 1 is generated based on a timestamp corresponding to the page 1, and stored in local storage space. The browser provides a page global object window, to record a timestamp of opening a current page. An event is customized, and all pages of the same domain name can receive time broadcast. When a new page is opened, opening of the new page is notified to a previously opened page of the same domain name. A message body can be defined as follows: {source: 'openbank', message: 'new tab'}. When an event of opening a new page 2 is detected, the token 1 of the page 1 is compared with a token 2 of the new page 2. If the token 2 does not exist on the new page 2, page update is performed based on the currently displayed page 1, and the new page 2 is displayed. If the token 2 exists on the new page 2, and a comparison result shows that the token 1 is inconsistent with the token 2, it indicates that the client has a repeatedly opened page, and further generates a pop-up window prompt, to notify the page 1 in a message notification manner. In addition, a pop-up window prompt is performed on the new page 2, and the user chooses to close the new page 2 or perform another operation. Such a page blocking method can be implemented in the browser, does not require access/deployment performed at a serving end, and does not depend on a login operation performed by the user. When the user opens a plurality of pages of an application in the browser, a front end blocks and prompts the user of a risk of a repeated operation.

[0083] FIG. 6 is a schematic flowchart illustrating an information processing method, according to an embodiment of this specification. As shown in FIG. 6, after a user opens a browser, an application home page is opened by using the browser, blocking logic is injected before the application home page is rendered, a change in a URL of a page is monitored, and a token is generated based on a timestamp corresponding to the application home page (a page 1). When a new page (a page 2) is opened, a token of the new page is compared with the token corresponding to the application home page. If the new page has no corresponding token, update can be performed based on the application home page. If a token exists on the new page, the new page is opened, and prompt information is displayed on the new page, to prompt the user with a case in which a current page is a repeatedly opened page; and prompt information can be further displayed on the application home page, to prompt the user with a case in which there is a repeatedly opened page other than the current

application home page. A system route sends a message corresponding to popstate or hashchange to a monitoring module. It should be noted that a plurality of pages of the same domain name can access the same block of storage. The token is written to record a page that is opened for the first time. If the new page is opened and it is learned through a check that a token is stored, the new page can be determined as a repeatedly opened page.

[0084] Optionally, the client obtains address information, generates a page loading request that carries the address information, sends the page loading request to the server, invokes a blocking program corresponding to the page loading request, and generates address change information based on the operation instruction.

[0085] Optionally, the server receives the page loading request submitted by the client for the initial page; generates, based on timestamp information corresponding to the page loading request, the page loading information including the loading identification information; and sends the page loading information to the client. The client updates the initial page to the target page based on the page loading information; establishes the association relationship between the loading identification information and the target page; and sends the association relationship to the server. When the operation identification information is inconsistent with the loading identification information, the server determines, based on the association relationship, the blocking information associated with the target page, and sends the blocking information to the client.

[0086] Optionally, the client generates the operation identification information based on the timestamp information corresponding to the operation instruction; creates the address change information including the operation identification information; and sends, to the server, the page operation request that carries the address change information.

[0087] Optionally, the client generates a page display record based on the target page, and sends the page display record to the server. The server is further configured to: when the operation identification information is inconsistent with the loading identification information, generate, based on the page display record, the blocking information associated with the target page; and send the blocking information to the client. The client is further configured to: generate reminder information based on the blocking information, and display the reminder information on the target page; and/or generate, based on the address change information and the blocking information, a reminder page including the blocking reminder.

[0088] Optionally, the client receives a confirm instruction for the blocking reminder on the reminder page, generates a confirm request based on the confirm instruction, sends the confirm request to the server, receives page processing information fed back by the server for the confirm request, and updates the reminder page based on the page processing information; receives a selection

instruction for the reminder information on the target page, generates a selection request based on the selection instruction, sends the selection request to the server, receives page selection information fed back by the server for the selection request, and updates the target page based on the page selection information.

5 **[0089]** Optionally, when the operation identification information is consistent with the loading identification information, the server determines page update information based on the address change information, and sends the page update information to the client.

[0090] In conclusion, identification comparison is performed for a page, to determine whether a to-be-opened page needs to be blocked. Opening of a page detected based on an address is blocked.
10 Opening of the page can be blocked only at a front end, without depending on a back end and user login, to reduce implementation costs and operation complexity.

[0091] A schematic solution of the first information processing method in the embodiments is described above. It should be noted that the technical solution of the information processing method and the technical solution of the information processing system belong to the same concept. For
15 detailed content not described in detail in the technical solution of the information processing method, references can be made to the descriptions of the technical solution of the information processing system.

[0092] In conclusion, identification comparison is performed for a page, to determine whether a to-be-opened page needs to be blocked. Opening of a page detected based on an address is blocked.
20 Opening of the page can be blocked only at a front end, without depending on a back end and user login, to reduce implementation costs and operation complexity.

[0093] A schematic solution of the first information processing apparatus in the embodiments is described above. It should be noted that the technical solution of the information processing apparatus and the technical solution of the information processing method belong to the same concept. For
25 detailed content not described in detail in the technical solution of the information processing apparatus, references can be made to the descriptions of the technical solution of the information processing method.

[0094] Corresponding to the system embodiment, this specification further provides an embodiment of an information processing method. FIG. 7 is a flowchart illustrating a second
30 information processing method, according to an embodiment of this specification. As shown in FIG. 7, the method includes the following steps.

[0095] Step S702: Determine, based on a page loading request submitted by the client for an initial page, page loading information including loading identification information; and send the page loading information to the client.

[0096] Step S704: Receive a page operation request that carries the address change information.

[0097] Step S706: Parse the address change information carried in the page operation request, to obtain the operation identification information.

[0098] Step S708: When the operation identification information is inconsistent with the loading
5 identification information, determine blocking information associated with the target page, and send the blocking information to the client, to generate a blocking reminder on the client.

[0099] Based on this, the server determines, based on the page loading request submitted by the
client for the initial page, the page loading information including the loading identification
information, and sends the page loading information to the client; receives the page operation request
10 that carries the address change information; parses the address change information carried in the page
operation request, to obtain the operation identification information; and when the operation
identification information is inconsistent with the loading identification information, determines the
blocking information associated with the target page, and sends the blocking information to the client,
to generate the blocking reminder on the client.

15 [0100] In conclusion, identification comparison is performed for a page, to determine whether a
to-be-opened page needs to be blocked. Opening of a page detected based on an address is blocked.
Opening of the page can be blocked only at a front end, without depending on a back end and user
login, to reduce implementation costs and operation complexity.

[0101] A schematic solution of the second information processing method in the embodiments is
20 described above. It should be noted that the technical solution of the information processing method
and the technical solution of the information processing system belong to the same concept. For
detailed content not described in detail in the technical solution of the information processing method,
references can be made to the descriptions of the technical solution of the information processing
system.

25 [0102] Corresponding to the method embodiments, this specification further provides an
embodiment of an information processing apparatus. FIG. 8 is a schematic structural diagram
illustrating an information processing apparatus, according to an embodiment of this specification.
As shown in FIG. 8, the apparatus includes:

an information determining module 802, configured to: determine, based on a page
30 loading request submitted by the client for an initial page, page loading information including loading
identification information; and send the page loading information to the client;

a request receiving module 804, configured to receive a page operation request that carries
the address change information;

an information obtaining module 806, configured to parse the address change information carried in the page operation request, to obtain the operation identification information; and

an information sending module 808, configured to: when the operation identification information is inconsistent with the loading identification information, determine blocking information associated with the target page, and send the blocking information to the client, to generate a blocking reminder on the client.

[0103] In conclusion, identification comparison is performed for a page, to determine whether a to-be-opened page needs to be blocked. Opening of a page detected based on an address is blocked. Opening of the page can be blocked only at a front end, without depending on a back end and user login, to reduce implementation costs and operation complexity.

[0104] A schematic solution of the second information processing apparatus in the embodiments is described above. It should be noted that the technical solution of the information processing apparatus and the technical solution of the information processing method belong to the same concept. For detailed content not described in detail in the technical solution of the information processing apparatus, references can be made to the descriptions of the technical solution of the information processing method.

[0105] Corresponding to the system embodiment, this specification further provides an embodiment of an information processing method. FIG. 9 is a flowchart illustrating a third information processing method, according to an embodiment of this specification. As shown in FIG. 9, the method includes the following steps.

[0106] Step S902: Generate a page loading request for an initial page, and send the page loading request to the server.

[0107] Step S904: Receive page loading information that is fed back by the server for the page loading request and that includes loading identification information.

[0108] Step S906: Update the initial page to a target page based on the page loading information.

[0109] Step S908: Determine, in response to an operation instruction submitted for the target page, address change information including operation identification information; and send, to the server, a page operation request that carries the address change information.

[0110] Step S910: Receive blocking information fed back by the server for the page operation request, where the blocking information is used to generate a blocking reminder.

[0111] Based on this, the page loading request is generated for the initial page and sent to the server; the page loading information that is fed back by the server for the page loading request and that includes the loading identification information is received; the initial page is updated to the target page based on the page loading information; the address change information including the operation

identification information is determined in response to the operation instruction submitted for the target page, and the page operation request that carries the address change information is sent to the server; and the blocking information that is fed back by the server for the page operation request is received. The blocking information is used to generate the blocking reminder.

5 [0112] In conclusion, identification comparison is performed for a page, to determine whether a to-be-opened page needs to be blocked. Opening of a page detected based on an address is blocked. Opening of the page can be blocked only at a front end, without depending on a back end and user login, to reduce implementation costs and operation complexity.

[0113] A schematic solution of the third information processing method in the embodiments is described above. It should be noted that the technical solution of the information processing method and the technical solution of the information processing system belong to the same concept. For detailed content not described in detail in the technical solution of the information processing method, references can be made to the descriptions of the technical solution of the information processing system.

15 [0114] Corresponding to the method embodiments, this specification further provides an embodiment of an information processing apparatus. FIG. 10 is a schematic structural diagram illustrating another information processing apparatus, according to an embodiment of this specification. As shown in FIG. 10, the apparatus includes:

a page loading request sending module 1002, configured to: generate a page loading request for an initial page, and send the page loading request to the server;

a loading identification information receiving module 1004, configured to receive page loading information that is fed back by the server for the page loading request and that includes loading identification information;

25 an initial page update module 1006, configured to update the initial page to a target page based on the page loading information;

a page operation request sending module 1008, configured to: determine, in response to an operation instruction submitted for the target page, address change information including operation identification information; and send, to the server, a page operation request that carries the address change information; and

30 a blocking information receiving module 1010, configured to receive blocking information fed back by the server for the page operation request, where the blocking information is used to generate a blocking reminder.

[0115] In conclusion, identification comparison is performed for a page, to determine whether a to-be-opened page needs to be blocked. Opening of a page detected based on an address is blocked.

Opening of the page can be blocked only at a front end, without depending on a back end and user login, to reduce implementation costs and operation complexity.

[0116] A schematic solution of another information processing apparatus in the embodiments is described above. It should be noted that the technical solution of the information processing apparatus and the technical solution of the information processing method belong to the same concept. For detailed content not described in detail in the technical solution of the information processing apparatus, references can be made to the descriptions of the technical solution of the information processing method.

[0117] FIG. 11 is a structural block diagram illustrating a computing device 1100, according to an embodiment 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.

[0118] 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 access network (PAN), or a combination of communication networks such as the Internet. The access device 1140 can include one or more of any types of wired or wireless network interfaces (for example, a network interface controller (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.

[0119] In an embodiment of the present application, the components of the computing device 1100 and other components not shown in FIG. 11 may also 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 application. A person skilled in the art can add or replace other components as needed.

[0120] 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 smart watch or smart glasses), or other types of mobile devices, or a stationary computing device such as a desktop computer or a personal computer (PC). The computing device 1100 can alternatively be a mobile or stationary server. The processor 1120 is configured to execute computer-executable instructions, and when the

computer-executable instructions are executed by the processor, steps of the information processing method are implemented.

[0121] A schematic solution of the computing device in the embodiments is described above. It should be noted that the technical solution of the computing device and the technical solution of the information processing system belong to the same concept. For detailed content not described in detail in the technical solution of the computing device, references can be made to the descriptions of the technical solution of the information processing system.

[0122] An embodiment of this specification further provides a computer-readable storage medium. The computer-readable storage medium stores computer-executable instructions, and when the computer-executable instructions are executed by a processor, steps of the information processing method are implemented.

[0123] A schematic solution of the computer-readable storage medium in the embodiments is described above. It should be noted that the technical solution of the storage medium and the technical solution of the information processing system belong to the same concept. For detailed content not described in detail in the technical solution of the storage medium, references can be made to descriptions of the technical solution of the information processing system.

[0124] An embodiment of this specification further provides a computer program. When the computer program is executed on a computer, the computer is enabled to perform steps of the information processing method.

[0125] A schematic solution of the computer program in the embodiments is described above. It should be noted that the technical solution of the computer program and the technical solution of the information processing system belong to the same concept. For detailed content not described in detail in the technical solution of the computer program, references can be made to the descriptions of the technical solution of the information processing system.

[0126] Specific embodiments of this specification are described above. Other embodiments fall within the scope of the appended claims. In some cases, the actions or steps described in the claims can be performed in an order different from that in the embodiments, and the desired results can still be achieved. In addition, processes described in the accompanying drawings do not necessarily need a specific order or a sequential order shown to achieve the desired results. In some implementations, multi-tasking and concurrent processing are feasible or may be advantageous.

[0127] 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, etc. The computer-readable medium can include any entity or apparatus that can carry 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 telecommunication 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 telecommunication signals in accordance with the legislation and patent practice.

[0128] 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.

[0129] In the above-mentioned 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.

[0130] 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. An information processing system, comprising a client and a server, wherein

the server is configured to: determine, based on a page loading request submitted by the
5 client for an initial page, page loading information comprising loading identification
information; and send the page loading information to the client;

the client is configured to: update the initial page to a target page based on the page loading
information; determine, in response to an operation instruction submitted for the target page,
address change information comprising operation identification information; and send, to the
10 server, a page operation request that carries the address change information; and

the server is configured to: parse the address change information carried in the page
operation request, to obtain the operation identification information; and when the operation
identification information is inconsistent with the loading identification information, determine
blocking information associated with the target page, and send the blocking information to the
15 client, to generate a blocking reminder on the client.

2. The system according to claim 1, wherein the client is further configured to: obtain
address information, generate the page loading request that carries the address information,
send the page loading request to the server, invoke a blocking program corresponding to the
page loading request, and generate the address change information based on the operation
20 instruction.

3. The system according to claim 1, wherein the server is further configured to: receive the
page loading request submitted by the client for the initial page; generate, based on timestamp
information corresponding to the page loading request, the page loading information comprising
the loading identification information; and send the page loading information to the client;

25 the client is further configured to: update the initial page to the target page based on the
page loading information; establish an association relationship between the loading
identification information and the target page; and send the association relationship to the server;
and

the server is further configured to: when the operation identification information is
30 inconsistent with the loading identification information, determine, based on the association
relationship, the blocking information associated with the target page; and send the blocking
information to the client.

4. The system according to claim 1, wherein the client is further configured to: generate
the operation identification information based on timestamp information corresponding to the

operation instruction; create the address change information comprising the operation identification information; and send, to the server, the page operation request that carries the address change information.

5. The system according to claim 1, wherein the client is further configured to: generate a page display record based on the target page, and send the page display record to the server;

the server is further configured to: when the operation identification information is inconsistent with the loading identification information, generate, based on the page display record, the blocking information associated with the target page; and send the blocking information to the client; and

the client is further configured to: generate reminder information based on the blocking information, and display the reminder information on the target page; and/or generate, based on the address change information and the blocking information, a reminder page comprising the blocking reminder.

6. The system according to claim 5, wherein the client is further configured to: receive a confirm instruction for the blocking reminder on the reminder page, generate a confirm request based on the confirm instruction, send the confirm request to the server, receive page processing information fed back by the server for the confirm request, and update the reminder page based on the page processing information; and

receive a selection instruction for the reminder information on the target page, generate a selection request based on the selection instruction, send the selection request to the server, receive page selection information fed back by the server for the selection request, and update the target page based on the page selection information.

7. The system according to claim 1, wherein the server is further configured to: when the operation identification information is consistent with the loading identification information, determine page update information based on the address change information, and send the page update information to the client.

8. An information processing method, applied to a server, comprising:

determining, based on a page loading request submitted by a client for an initial page, page loading information comprising loading identification information; and sending a page loading information to the client;

receiving a page operation request that carries the address change information;

parsing the address change information carried in the page operation request, to obtain an operation identification information; and

when the operation identification information is inconsistent with the loading identification information, determining blocking information associated with a target page, and sending the blocking information to the client, to generate a blocking reminder on the client.

9. An information processing method, applied to a client, comprising:

5 generating a page loading request for an initial page, and sending the page loading request to a server;

receiving page loading information that is fed back by the server for the page loading request and that comprises loading identification information;

updating the initial page to a target page based on the page loading information;

10 determining, in response to an operation instruction submitted for the target page, address change information comprising operation identification information; and sending, to the server, a page operation request that carries the address change information; and

receiving blocking information fed back by the server for the page operation request, wherein the blocking information is used to generate a blocking reminder.

15 10. An information processing method, comprising a server and a client, wherein

the server determines, based on a page loading request submitted by the client for an initial page, page loading information comprising loading identification information; and sends the page loading information to the client;

20 the client updates the initial page to a target page based on the page loading information; determines, in response to an operation instruction submitted for the target page, address change information comprising operation identification information; and sends, to the server, a page operation request that carries the address change information; and

25 the server parses the address change information carried in the page operation request, to obtain the operation identification information; and when the operation identification information is inconsistent with the loading identification information, determines blocking information associated with the target page, and sends the blocking information to the client, to generate a blocking reminder on the client.

11. A computing device, comprising:

a memory and a processor, wherein

30 the memory is configured to store computer-executable instructions, the processor is configured to execute the computer-executable instructions, and when the computer-executable instructions are executed by the processor, steps of the information processing method according to any one of claim 8, 9, or 10 are implemented.

12. A computer-readable storage medium, wherein the computer-readable storage medium stores computer-executable instructions, and when the computer-executable instructions are executed by a processor, steps of the information processing method according to any one of claim 8, 9, or 10 are implemented.