SUMMARY

[7] According to a first aspect of the present disclosure, there is provided a method for adaptively executing a plurality of tasks, comprising: defining, by one or more processors, a schema representing a plurality of tasks, each task comprising a data retrieval and/or data evaluation operation, the schema comprising task information indicating how to execute each of the plurality of tasks; generating, by the one or more processors, a graph representation of the plurality of tasks based on the schema, the graph representation comprising a plurality of nodes, each node of the plurality of nodes corresponding to one of the plurality of tasks; executing, by the one or more processors, the plurality of tasks based on the graph representation and the task information; generating a matrix based on the graph representation, the matrix indicating, for each node of the plurality of nodes, whether there is a dependency on another node of the plurality of nodes; generating a frequency map based on the matrix, the frequency map indicating a total number of dependencies for each node of the plurality of nodes; and determining an execution order for the plurality of tasks based on the frequency map.

[8] According to a second aspect of the present disclosure, there is provided a system for adaptively executing a plurality of tasks, comprising: at least one processor; and at least one memory including computer program code; the at least one memory and the computer program code configured to, with the at least one processor, cause the system at least to: define, by one or more processors, a schema representing a plurality of tasks, each task comprising a data retrieval and/or data evaluation operation, the schema comprising task information indicating how to execute each of the plurality of tasks; generate, by the one or more processors, a graph representation of the plurality of tasks based on the schema, the graph representation comprising a plurality of nodes, each node of the plurality of nodes corresponding to one of the plurality of tasks; execute, by the one or more processors, the plurality of tasks based on the graph representation and the task information; generate a matrix based on the graph representation, the matrix indicating, for each node of the plurality of nodes, whether there is a dependency on another node of the plurality of nodes; generate a frequency map based on the matrix, the frequency map indicating a total number of dependencies for each node of the plurality of nodes; and determine an execution order for the plurality of tasks based on the frequency map.

CLAIMS

What is claimed is:

1. A method for adaptively executing a plurality of tasks, comprising:

defining, by one or more processors, a schema representing a plurality of tasks, each task comprising a data retrieval and/or data evaluation operation, the schema comprising task information indicating how to execute each of the plurality of tasks;

generating, by the one or more processors, a graph representation of the plurality of tasks based on the schema, the graph representation comprising a plurality of nodes, each node of the plurality of nodes corresponding to one of the plurality of tasks;

executing, by the one or more processors, the plurality of tasks based on the graph representation and the task information;

generating a matrix based on the graph representation, the matrix indicating, for each node of the plurality of nodes, whether there is a dependency on another node of the plurality of nodes;

generating a frequency map based on the matrix, the frequency map indicating a total number of dependencies for each node of the plurality of nodes; and

determining an execution order for the plurality of tasks based on the frequency map.

2. A method according to claim 1, wherein two or more tasks of the plurality of tasks are executed in parallel by one or more processors.

3. The method of claim 1 or claim 2, wherein the task information further indicates data to be retrieved and a data source for a data retrieval operation of the plurality of tasks, wherein executing the task further comprises retrieving the indicated data from the data source.

4. The method of claim 1, wherein determining the execution order further comprises:

identifying a node with zero dependencies from the frequency map; and

adding the identified node to an execution queue.

5. The method of claim 4, further comprising:

executing a task corresponding to the identified node;

reducing the total number of dependencies for each node that is dependent on the identified node by one in the frequency map; and

removing the identified node from the execution queue.

6. A system for adaptively executing a plurality of tasks, comprising:

at least one processor; and

at least one memory including computer program code;

the at least one memory and the computer program code configured to, with the at least one processor, cause the system at least to:

define, by one or more processors, a schema representing a plurality of tasks, each task comprising a data retrieval and/or data evaluation operation, the schema comprising task information indicating how to execute each of the plurality of tasks;

generate, by the one or more processors, a graph representation of the plurality of tasks based on the schema, the graph representation comprising a plurality of nodes, each node of the plurality of nodes corresponding to one of the plurality of tasks;

execute, by the one or more processors, the plurality of tasks based on the graph representation and the task information;

generate a matrix based on the graph representation, the matrix indicating, for each node of the plurality of nodes, whether there is a dependency on another node of the plurality of nodes;

generate a frequency map based on the matrix, the frequency map indicating a total number of dependencies for each node of the plurality of nodes; and

determine an execution order for the plurality of tasks based on the frequency map.

7. The system according to claim 6, wherein two or more tasks of the plurality of tasks are executed in parallel by one or more processors.

8. The system of claim 6 or claim 7, wherein the task information further indicates data to be retrieved and a data source for a data retrieval operation of the plurality of tasks, wherein executing the task further comprises retrieving the indicated data from the data source.

9. The system of claim 6, wherein determining the execution order further comprises:

identifying a node with zero dependencies from the frequency map; and

adding the identified node to an execution queue.

10. The system of claim 9, further configured to:

execute a task corresponding to the identified node;

reduce the total number of dependencies for each node that is dependent on the identified node by one in the frequency map; and

remove the identified node from the execution queue.