

CLAIMS

1. A computer-implemented method for blockchain-based notification, comprising:
 - obtaining information in a block of a blockchain to determine a current state of a workflow, wherein a blockchain contract deployed in the blockchain is executable to update the current state among one or more states of the workflow;
 - updating a locally-maintained state machine based on the determined current state, wherein:
 - the locally-maintained state machine comprises one or more local states respectively mapped to the one or more states of the workflow;
 - the one or more local states are configured in a cyclic trigger flow;
 - the one or more states are configured in another cyclic trigger flow;
 - the another cyclic trigger flow starts with a starting state of the one or more states, passes through each of the one or more states once in one direction till an ending state, and returns to the starting state;
 - each of the one or more states is triggered by completion of a preceding state in the another cyclic trigger flow;
 - the starting state is mapped to a starting local state of the cyclic trigger flow; and
 - before obtaining the information in the block of the blockchain to determine the current state of the workflow, the method further comprises executing the blockchain contract to initiate the current state to be the starting state; and
 - in response to determining that the updated state machine corresponds to one of the one or more states, transmitting a notification message to one or more subscribers subscribing to the one state.
2. The method of claim 1, wherein obtaining the information in the block of the blockchain to determine the current state of the workflow comprises:
 - obtaining a blockchain transaction in one or more blocks of the blockchain, wherein the blockchain transaction triggers execution of the blockchain contract to update the current state of the workflow; and
 - determining the current state of the workflow according to the obtained blockchain transaction.

3. The method of any of claims 1-2, before obtaining the information in the block of the blockchain to determine the current state of the workflow, further comprising:
 - obtaining a reply message indicating completion of a preceding state among the one or more states.
4. The method of any of claims 1-3, before obtaining the information in the block of the blockchain to determine the current state of the workflow, further comprising:
 - obtaining an update of a preceding state of the one state;
 - generating a blockchain transaction for updating the preceding state; and
 - transmitting the blockchain transaction to one or more blockchain nodes to add to the blockchain and cause the current state of the workflow to update to the one state.
5. The method of any of claims 1-4, wherein:
 - the notification message includes a message indicating that the one state is current and a result returned from completion of a preceding state among the one or more states.
6. The method of any of claims 1-5, wherein:
 - the cyclic trigger flow starts with the starting local state of the one or more local states, passes through each of the one or more local states once in one direction till an ending local state, and returns to the starting local state.
7. The method of claim 6, further comprising:
 - obtaining a request for deactivating the one state; and
 - in response to the request for deactivating the one state:
 - generating a blockchain transaction for shortcutting the one state from the another cyclic trigger flow, and transmitting the generated blockchain transaction to one or more blockchain nodes to add to the blockchain; and
 - shortcutting a local state mapped to the one state from the cyclic trigger flow.
8. The method of claim 7, further comprising:
 - obtaining a request for reactivating the one state; and

in response to the request for reactivating the one state:
generating a blockchain transaction for restoring the one state in the another cyclic trigger flow, and transmitting the generated blockchain transaction to one or more blockchain nodes to add to the blockchain; and
restoring the local state mapped to the one state in the cyclic trigger flow.

9. The method of any of claims 1-8, wherein:
the current state is configurable by a subscriber of one or more sub-states to comprise the one or more sub-states; and
the method further comprises: establishing an association between the subscriber and the one or more sub-states for transmitting notifications associated with the one or more sub-states to the subscriber.

10. The method of claim 9, wherein:
the one or more sub-states form a cyclic trigger flow;
the current state is public to the one or more subscribers; and
the one or more sub-states are private to the subscriber of the one or more sub-states.

11. The method of any of claims 1-10, wherein transmitting the notification message to the one or more subscribers subscribing to the one state comprises:
placing a notification message into a message queue for one or more computing devices associated with the one or more subscribers to obtain the notification message.

12. A system for blockchain-based notification, comprising:
one or more processors; and
one or more computer-readable memories coupled to the one or more processors and having instructions stored thereon that are executable by the one or more processors to perform the method of any of claims 1 to 11.

13. An apparatus for blockchain-based notification, comprising a plurality of modules for performing the method of any of claims 1 to 11.

14. A non-transitory computer-readable medium having stored therein instructions that, when executed by a processor of a device, cause the device to perform the method of any of claims 1 to 11.