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(71) Applicant: ALIBABA GROUP HOLDING LIMITED

[—/CN]; Fourth Floor, One Capital Place, P.O. BOX 847, George Town, Grand Cayman (KY).

(72) Inventor: TIAN, Shikun; Alibaba Group Legal Department

5/F, Building 3, No.969 West Wen Yi Road, Yu Hang District, Hangzhou, Zhejiang 311121 (CN).

(74) Agent: BEIJING BESTIPR INTELLECTUAL PROPERTY LAW CORPORATION;

Room 409, Tower B, Ka Wah Building, No. 9 Shangdi 3rd Street, Haidian District, Beijing 100085 (CN).

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(54) Title: LOG-STRUCTURED STORAGE SYSTEMS

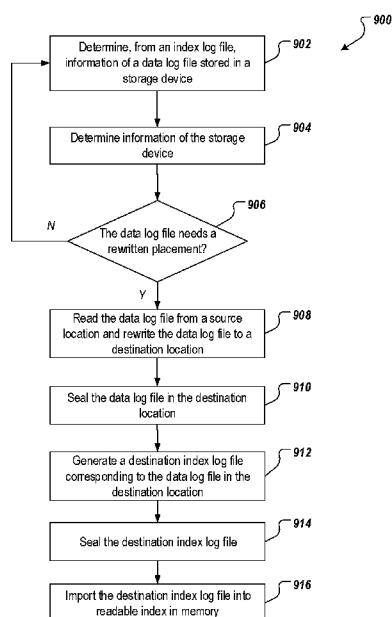


FIG. 9

(57) Abstract: Disclosed herein are methods, systems, and apparatus, including computer programs encoded on computer storage devices, for data processing. One of the methods includes determining, by a storage system from an index log file, information of a data log file stored in a storage device. The data log file includes one or more of block data, transaction data, or state data generated by a blockchain network. The storage system determines whether the data log file needs a rewritten placement. In response to determining that the data log file needs a rewritten placement, the storage system determines a source storage location of the data log file, reads the data log file from the source storage location, rewrites the data log file to a destination storage location; and generates a destination index log file that indicates the destination storage location corresponding to the data log file.

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INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

G06F 16/22(2019.01)i; G06F 16/17(2019.01)n; G06F 16/13(2019.01)n

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC, CNPAT, CNKI, IEEE, ISI: blockchain, block chain, DLS, Distributed ledger, log, file, index, rewrite, storage, block, transaction, data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2016371291 A1 (MICROSOFT CORPORATION) 22 December 2016 (2016-12-22) claims 1-15, description, paragraphs [0016], [0027], [0058]-[0061], [0069]-[0070], [0088]	1-11
Y	CN 107967291 A (TENCENT TECHNOLOGY SHENZHEN CO., LTD.) 27 April 2018 (2018-04-27) description, paragraph [0050]	1-11
A	CN 110622149 A (ALIBABA GROUP HOLDING LTD.) 27 December 2019 (2019-12-27) the whole document	1-11
A	CN 109614806 A (BEIJING UNIVERSITY OF TECHNOLOGY) 12 April 2019 (2019-04-12) the whole document	1-11
A	CN 110062034 A (ZHONGKE TIANYU SUZHOU TECHNOLOGY CO., LTD.) 26 July 2019 (2019-07-26) the whole document	1-11
A	US 2018157700 A1 (INTERNATIONAL BUSINESS MACHINES CORPORATION) 07 June 2018 (2018-06-07) the whole document	1-11



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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“&” document member of the same patent family

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Name and mailing address of the ISA/CN

National Intellectual Property Administration, PRC
6, Xitucheng Rd., Jimen Bridge, Haidian District, Beijing
100088
China

Authorized officer

OU,Xiaodan

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INTERNATIONAL SEARCH REPORT
Information on patent family members

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Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
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				WO	2019072284	A2	18 April 2019
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CN	109614806	A	12 April 2019	None			
CN	110062034	A	26 July 2019	None			
US	2018157700	A1	07 June 2018	None			