

WHAT IS CLAIMED IS:

- 1 1. A computer-implemented method, comprising:
2 receiving a first key;
3 determining a hash map associated with the first key from among a
4 plurality of hash maps, individual hash maps mapping a partition of a set of keys to
5 particular index values, wherein the hash map associated with the first key is
6 configured to be loaded into on-board memory of an electronic device;
7 determining an index value associated with a second key using the
8 determined hash map;
9 determining transaction processing data associated with the first key
10 using the determined index value, wherein utilizing the plurality of hash maps
11 enables a lookup to be performed using on-board memory of an electronic device;
12 and
13 providing the determined transaction processing data.
- 1 2. The method of claim 1, wherein receiving the first key,
2 determining the hash map, determining the index value, and determining the
3 transaction processing data are performed by a worker node of the distributed
4 computing system.
- 1 3. The method of claim 1, wherein obtaining the hash map
2 associated with the first key from among the plurality of hash maps comprises:
3 hashing the first key to produce a hashed key;
4 obtaining an additional hash map that maps a set of hashed keys to the
5 plurality of hash maps, the additional hash map being configured to be loaded into
6 on-board memory of the electronic device;
7 inputting the hashed key into the additional hash map; and
8 outputting an identifier of the hash map corresponding to the hashed
9 key.
- 1 4. The method of claim 1, wherein determining the index value
2 associated with the second key comprises:
3 hashing the second key to produce a hashed key;

4 obtaining an additional hash map that maps a set of hashed keys to a
5 plurality of index values, the additional hash map being configured to be loaded into
6 on-board memory of the electronic device;
7 inputting the hashed key into the additional hash map; and
8 outputting the index value corresponding to the hashed key.

1 5. The method of claim 1, wherein determining transaction
2 processing data associated with the first key using the determined index value
3 comprises:
4 obtaining an indexed list, the indexed list mapping a plurality of index
5 values to a plurality of transaction processing data, the indexed list being configured
6 to be loaded into on-board memory of the electronic device;
7 inputting the index value into the indexed list; and
8 outputting the transaction processing data corresponding to the index
9 value.

1 6. The method of claim 1, wherein utilizing the plurality of hash
2 maps enables the lookup to be performed according to a constant $O(1)$ algorithmic
3 complexity.

1 7. The method of claim 1, wherein individual hash maps of the
2 plurality of hash maps corresponds to a subset of data of a dataset.

1 8. The method of claim 7, wherein the transaction processing
2 data associated with a first key is determined faster using the plurality of hash maps
3 than by searching for the transaction processing data in the data set.

1 9. A system, comprising:
2 one or more manager nodes, a manager node comprising:
3 a first processor, and
4 a first computer readable medium coupled to the first processor,
5 the computer readable medium comprising code, executable by the first
6 processor, for implementing a first method comprising:
7 receiving a request message, the request message
8 comprising a first key;

9 transmitting at least a portion of the request message to
10 one or more worker nodes of the plurality of worker nodes;
11 receiving a response message associated with the
12 request message; and
13 transmitting the response message;
14 the plurality of worker nodes, a worker node of the plurality of worker
15 nodes comprising:
16 a second processor, and
17 a second computer readable medium coupled to the second
18 processor, the computer readable medium comprising code, executable by
19 the second processor, for implementing a second method comprising:
20 obtaining a first hash map comprising the first key,
21 wherein the first hash map is configured to be stored in on-board
22 memory of a plurality of worker nodes;
23 determining a second hash map utilizing the first key and
24 the first hash map, wherein utilizing the second hash map enables the
25 index value to be determined using on-board memory of the worker
26 node;
27 obtaining the second hash map, the second hash map
28 mapping a set of keys to particular index values;
29 determining an index value associated with a second key
30 using the second hash map;
31 obtaining transaction processing data using the
32 determined index value; and
33 providing the determined transaction processing data.

1 10. The system of claim 9, wherein the first key and the second
2 key are a same alphanumeric identifier.

1 11. The system of claim 9, wherein determining a second hash
2 map utilizing the first key comprises:
3 hashing the first key to produce a hashed key;
4 inputting the hashed key into the first hash map; and

5 outputting an identifier of the second hash map corresponding to the
6 hashed key.

1 12. The system of claim 9, wherein determining the index value
2 associated with the second key comprises:

3 hashing the second key to produce a hashed key;
4 inputting the hashed key into the second hash map; and
5 outputting the index value corresponding to the hashed key.

1 13. The system of claim 9, wherein determining transaction
2 processing data associated with the first key using the determined index value
3 comprises:

4 inputting the index value into the indexed list; and
5 outputting the transaction processing data corresponding to the index
6 value.

1 14. The system of claim 9, wherein utilizing the first hash map, the
2 second hash map, and the indexed list enables the transaction processing data to be
3 determined according to a constant $O(1)$ algorithmic complexity.

1 15. The system of claim 9, wherein the first hash map, the second
2 hash map, and the indexed list individually correspond to a subset of data of a
3 dataset.

1 16. The system of claim 9, wherein the transaction processing data
2 associated with the first key is determined faster using the first hash map, the
3 second hash map, and the indexed list than by searching for the transaction
4 processing data in the data set.

1 17. An electronic device, comprising:
2 a processor, and
3 a computer readable medium coupled to the processor, the computer
4 readable medium comprising code, executable by the processor, for implementing a
5 method comprising:
6 receiving an identifier associated with a data set;

7 generating an indexed list corresponding to a subset of the data
8 set;
9 storing the indexed list; and
10 for each entry of the indexed list:
11 determining a first key associated with an entry of the
12 indexed list;
13 updating a first hash map with the first key and an index
14 value associated with the entry of the indexed list; and
15 updating a second hash map with the a second key and
16 an identifier of the first hash map.

1 18. The electronic device of claim 17, wherein the subset of the
2 data corresponds to the transaction processing data of the dataset.

1 19. The electronic device of claim 17, wherein the method further
2 comprises, for each entry of the index list:
3 obtaining additional data of the data set; and
4 updating the indexed list, the first hash map, and the second hash map
5 with portions of the additional data.

1 20. The electronic device of claim 17, wherein the first hash map
2 and the indexed list are stored in on-board memory of a single electronic device.