

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 of the plurality of hash maps mapping a
5 set of keys to particular index values, wherein the hash map associated with the first
6 key is configured to be loaded into on-board memory of an electronic device;
7 determining an index value using the determined hash map, wherein
8 determining the index value includes:
9 hashing a second key to produce a hashed key, wherein the first
10 key and the second key are a same alphanumeric identifier, the first
11 key and the second key being an account identifier;
12 obtaining an additional hash map from among a second plurality
13 of hash maps that map a set of hashed keys to a plurality of index
14 values;
15 inputting the hashed key into the additional hash map; and
16 outputting the index value corresponding to the hashed key;
17 performing a lookup using an indexed list by inputting the determined
18 index value into the indexed list to output transaction processing data associated
19 with the first key, the indexed list providing a mapping of index values to
20 corresponding transaction processing data, the lookup configured to be performed
21 using on-board memory of the electronic device; and
22 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 performing the lookup using
2 the indexed list comprises:
3 obtaining the indexed list, the indexed list comprising an array mapping
4 a plurality of index values to a plurality of transaction processing data, the indexed
5 list being configured to be loaded into the on-board memory of the electronic device;
6 inputting the index value into the indexed list; and
7 outputting the transaction processing data corresponding to the index
8 value.

1 5. 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 6. 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 7. The method of claim 6, 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 8. 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;

transmitting at least a portion of the request message to
one or more worker nodes of the plurality of worker nodes;
receiving a response message associated with the
request message; and
transmitting the response message;
the plurality of worker nodes, a worker node of the plurality of worker
nodes comprising:
a second processor, and
a second computer readable medium coupled to the second
processor, the computer readable medium comprising code, executable by
the second processor, for implementing a second method comprising:
obtaining a first hash map comprising the first key,
wherein the first hash map is configured to be stored in on-board
memory of a plurality of worker nodes;
determining a second hash map utilizing the first key and
the first hash map, from among a plurality of hash maps, individual
hash maps of the plurality of hash maps mapping a set of keys to
particular index values;
obtaining the second hash map, the second hash map
mapping a set of keys to particular index values;
determining an index value using the second hash map,
by:
hashing a second key to produce a hashed key,
wherein the first key and the second key are a same
alphanumeric identifier, the first key and the second key being
an account identifier;
inputting the hashed key into the second hash
map; and
outputting the index value corresponding to the
hashed key;
obtaining transaction processing data using the
determined index value by performing a lookup using an indexed list by
inputting the determined index value into the indexed list to output the

42 transaction processing data, the indexed list providing a mapping of
43 index values to corresponding transaction processing data; and
44 providing the determined transaction processing data.

1 9. The system of claim 8, 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 10. The system of claim 8, 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, the indexed list
5 comprising an array mapping index values to the corresponding transaction
6 processing data; and
7 outputting the transaction processing data corresponding to the index
8 value.

1 11. The system of claim 8, 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 12. The system of claim 8, 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 13. The system of claim 8, 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.