OUTPUT:

SFO Branch :{Aksarben=Omaha,10000, Richmond Street=Minneapolis,1254676, Gandhi Street=Bangalore,15125, Broadway=New York,1000, Chinatown=San Francisco,500, A Street=Houston,50000, 102 Street=Omaha,20000}

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OMA account :{1={A10301=Aksarben:20000, A10302=Aksarben:12457, A10303=Aksarben:1547786, A10304=Aksarben:1547862, A10300=Aksarben:10000, A10309=Aksarben:15478, A10305=Aksarben:145246, A10306=Aksarben:10002, A10307=Aksarben:15426, A10308=Aksarben:12563}, 2={A10341=102 Street:24000, A10340=102 Street:2600, A10339=102 Street:2500}}

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SFO ACCOunt :{1={A10334=Chinatown:14520, A10335=Chinatown:4000, A10336=Chinatown:40000, A10337=Chinatown:5000, A10338=Chinatown:52000}}

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NYC depositor :{1={A10301=Niluka Karunaratne, A10312=Shah Hussain Shah, A10302=Chamara Repiyallage, A10313=Ghulam Mustafa Bashir, A10303=Mangala Samarakoon, A10314=Minhal Sohail, A10304=Matthew Abeysinghe, A10310=Mehboob Ali, A10300=Sumeda Ranasinghe, A10311=Najma Parveen, A10309=Mohammad Tawfiq Bakhshi, A10305=Kimiko Raheem, A10306=Sudesh Peiris, A10307=Abdul Wahib Zahiri, A10308=Kamia Yousufi}, 2={A10323=Marestella Torres , A10324=Rogen Ladon, A10325=Charly Suarez, A10315=Haris Bandey, A10326=Miguel Tabuena , A10320=Sonia Aktar, A10321=Eric Shauwn Cray, A10322=Mary Joy Tabal, A10316=Lianna Swan, A10327=Kodo Nakano, A10317=Shamoli Ray, A10328=Jessie Lacuna, A10318=Masbah Ahmmed, A10329=Jasmine Alkhaldi, A10319=Mahfizur Rahman Sagor}, 3={A10334=Haziq Kamaruddin, A10335=Khairul Anuar Mohamad, A10336=Mohd Akmal Nor Hasrin, A10337=Nauraj Singh Randhawa, A10330=Ian Lariba, A10341=Tan Wee Kiong, A10331=Kirstie Alora, A10342=Tee Jing Yi, A10332=Nestor Colonia, A10343=Vivian Hoo Kah Mun, A10333=Hidilyn Diaz, A10344=Woon Khe Wei, A10338=Zaidatul Husniah Zulkifli , A10339=Lee Chong Wei, A10340=Goh V Shem}, 4={A10345=Chan Peng Soon, A10346=Goh Liu Ying, A10347=Fatehah Mustapa, A10348=Azizulhasni Awang, A10352=Ng Yan Yee, A10353=Pandelela Rinong, A10354=Warren Buffet, A10350=Ooi Tze Liang, A10351=Cheong Jun Hoong, A10349=Ahmad Amsyar Azman}}

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HOU customer :{1={Anuradha Cooray=1 Street:Omaha, Niluka Geethani Rajasekara=2 Street:Omaha, Chamara Repiyallage=5 Street:Omaha, Niluka Karunaratne=4 Street:Omaha, Matthew Abeysinghe=102 Street:Omaha, Sumeda Ranasinghe=3 Street:Omaha, Mangala Samarakoon=6 Street:Omaha, Kimiko Raheem=110 Street:Omaha}, 2={Kamia Yousufi=8 Street:Omaha, Abdul Wahib Zahiri=6 Street:Omaha, Mohammad Tawfiq Bakhshi=72 Street:Omaha, Najma Parveen=8 Street:Omaha, Ghulam Mustafa Bashir=6 Street:Omaha, Mehboob Ali=5 Street:Omaha, Shah Hussain Shah=4 Street:Omaha, Sudesh Peiris=8 Street:Omaha}, 3={Minhal Sohail=45 Street:Omaha, Abdullah Hel Baki=D Street:Houston, Lianna Swan=15 Street:Omaha, Shamoli Ray=132 Street:Omaha, Masbah Ahmmed=A Street:Houston, Haris Bandey=32 Street:Omaha, Siddikur Rahman=C Street:Houston, Shirin Akter=B Street:Houston}, 4={Eric Shauwn Cray=D Street:Houston, Charly Suarez=C Street:Houston, Mahfizur Rahman Sagor=C Street:Houston, Miguel Tabuena =Z Street:Houston, Sonia Aktar=C Street:Houston, Rogen Ladon=D Street:Houston, Mary Joy Tabal=Z Street:Houston, Marestella Torres =A Street:Houston}, 5={Ian Lariba=Z Street:Houston, Jasmine Alkhaldi=U Street:Houston, Jessie Lacuna=L Street:Houston, Nestor Colonia=A Street:Houston, Haziq Kamaruddin=F Street:Houston, Kodo Nakano=U Street:Houston, Hidilyn Diaz=C Street:Houston, Kirstie Alora=D Street:Houston}, 6={Goh V Shem=Broadway:New York, Zaidatul Husniah Zulkifli =Yuba Street:San Francisco, Khairul Anuar Mohamad=Mono Street:San Francisco, Lee Chong Wei=Sonoma Street:San Francisco, Tan Wee Kiong=Broadway:New York, Mohd Akmal Nor Hasrin=Mono Street:San Francisco, Tee Jing Yi=Broadway:New York, Nauraj Singh Randhawa=Napa Street:San Francisco}, 7={Ooi Tze Liang=Richmond street:Minneapolis, Vivian Hoo Kah Mun=Broadway:New York, Woon Khe Wei=Fulton Street:New York, Chan Peng Soon=Rockfeller center:New York, Fatehah Mustapa=Broadway:New York, Azizulhasni Awang=Golden Street:New York, Ahmad Amsyar Azman=Broadway:New York, Goh Liu Ying=Fulton Street:New York}, 8={Cheong Jun Hoong=Richmond street:Minneapolis, Warren Buffet=Patel Nagar:Bangalore, Ng Yan Yee=Rajaji Street:Bangalore, Pandelela Rinong=Gandhi Street:Bangalore}}

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NYC ACCOunt :{1={A10301=Aksarben:20000, A10302=Aksarben:12457, A10303=Aksarben:1547786, A10304=Aksarben:1547862, A10300=Aksarben:10000, A10309=Aksarben:15478, A10305=Aksarben:145246, A10306=Aksarben:10002, A10307=Aksarben:15426, A10308=Aksarben:12563}, 2={A10312=A Street:1457862, A10313=A Street:1000, A10314=A Street:145875, A10315=A Street:2000, A10310=A Street:15263, A10311=A Street:147856, A10316=A Street:20000, A10317=A Street:145200, A10318=A Street:154200, A10319=A Street:1478500}, 3={A10323=Broadway:145200, A10324=Broadway:20000, A10325=Broadway:10000, A10326=Broadway:12000, A10320=Broadway:145230, A10321=Broadway:741800, A10322=Broadway:145000, A10327=Broadway:15000, A10328=Broadway:36000, A10329=Broadway:35000}, 4={A10334=Chinatown:14520, A10335=Chinatown:4000, A10336=Chinatown:40000, A10337=Chinatown:5000, A10330=Broadway:358000, A10331=Broadway:15600, A10332=Broadway:15200, A10333=Broadway:145200, A10338=Chinatown:52000, A10339=102 Street:2500}, 5={A10345=Gandhi Street:1000, A10346=Gandhi Street:12000, A10347=Gandhi Street:1200, A10348= Richmond Street:3200, A10341=102 Street:24000, A10342=Gandhi Street:15200, A10343=Gandhi Street:14500, A10344=Gandhi Street:15200, A10340=102 Street:2600, A10349=Richmond Street:3200}, 6={A10352=Richmond Street:21000, A10353=Richmond Street:14200, A10354=Richmond Street:20000, A10350=Richmond Street:32100, A10351=Richmond Street:14200}}

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OMA dep :{1={A10301=Niluka Karunaratne, A10302=Chamara Repiyallage, A10303=Mangala Samarakoon, A10304=Matthew Abeysinghe, A10341=Tan Wee Kiong, A10300=Sumeda Ranasinghe, A10309=Mohammad Tawfiq Bakhshi, A10305=Kimiko Raheem, A10306=Sudesh Peiris, A10339=Lee Chong Wei, A10307=Abdul Wahib Zahiri, A10308=Kamia Yousufi, A10340=Goh V Shem}}

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NYC branch :{Aksarben=Omaha,10000, Richmond Street=Minneapolis,1254676, Gandhi Street=Bangalore,15125, Broadway=New York,1000, Chinatown=San Francisco,500, A Street=Houston,50000, 102 Street=Omaha,20000}

================================================

Query is submitted at NYC

allocating 2 blocks of data to outer block and 2 blocks of data for inner block

set/reset outer blocks in buffer

4 Street:Omaha

5 Street:Omaha

6 Street:Omaha

102 Street:Omaha

3 Street:Omaha

output buffer is full, writing in to file

4 Street:Omaha

6 Street:Omaha

5 Street:Omaha

8 Street:Omaha

72 Street:Omaha

output buffer is full, writing in to file

6 Street:Omaha

8 Street:Omaha

Fetching two customer blocks of data from Houston

45 Street:Omaha

32 Street:Omaha

15 Street:Omaha

output buffer is full, writing in to file

A Street:Houston

A Street:Houston

D Street:Houston

C Street:Houston

Z Street:Houston

output buffer is full, writing in to file

D Street:Houston

Z Street:Houston

C Street:Houston

Fetching two customer blocks of data from Houston

U Street:Houston

L Street:Houston

output buffer is full, writing in to file

Fetching two customer blocks of data from Houston

set/reset outer blocks in buffer

Fetching two customer blocks of data from Houston

Fetching two customer blocks of data from Houston

F Street:Houston

Z Street:Houston

D Street:Houston

A Street:Houston

C Street:Houston

output buffer is full, writing in to file

Mono Street:San Francisco

Napa Street:San Francisco

Broadway:New York

Broadway:New York

Yuba Street:San Francisco

output buffer is full, writing in to file

Broadway:New York

Fetching two customer blocks of data from Houston

Broadway:New York

Fulton Street:New York

Rockfeller center:New York

Fulton Street:New York

output buffer is full, writing in to file

Golden Street:New York

Richmond street:Minneapolis

Broadway:New York

Rajaji Street:Bangalore

Gandhi Street:Bangalore

output buffer is full, writing in to file

Richmond street:Minneapolis

Total number of block transfers 20

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Interchanging inner and outer blocks

Query is submitted at NYC

allocating 2 blocks of data to outer block and 2 blocks of data for inner block

set/reset outer blocks in buffer

5 Street:Omaha

4 Street:Omaha

102 Street:Omaha

3 Street:Omaha

6 Street:Omaha

output buffer is full, writing in to file

8 Street:Omaha

6 Street:Omaha

72 Street:Omaha

8 Street:Omaha

6 Street:Omaha

output buffer is full, writing in to file

4 Street:Omaha

8 Street:Omaha

Fetching two customer blocks of data from Houston

set/reset outer blocks in buffer

45 Street:Omaha

15 Street:Omaha

132 Street:Omaha

output buffer is full, writing in to file

32 Street:Omaha

D Street:Houston

C Street:Houston

C Street:Houston

Z Street:Houston

output buffer is full, writing in to file

D Street:Houston

Z Street:Houston

A Street:Houston

Fetching two customer blocks of data from Houston

set/reset outer blocks in buffer

U Street:Houston

L Street:Houston

output buffer is full, writing in to file

Fetching two customer blocks of data from Houston

Z Street:Houston

A Street:Houston

F Street:Houston

C Street:Houston

D Street:Houston

output buffer is full, writing in to file

Yuba Street:San Francisco

Mono Street:San Francisco

Sonoma Street:San Francisco

Broadway:New York

Mono Street:San Francisco

output buffer is full, writing in to file

Napa Street:San Francisco

set/reset outer blocks in buffer

Fetching two customer blocks of data from Houston

Broadway:New York

Fulton Street:New York

Richmond street:Minneapolis

Rockfeller center:New York

output buffer is full, writing in to file

Golden Street:New York

Broadway:New York

Fulton Street:New York

Richmond street:Minneapolis

Patel Nagar:Bangalore

output buffer is full, writing in to file

Gandhi Street:Bangalore

Total number of block transfers is 20

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Executing Query 2

Fetching 3 blocks of Depositor blocks from NYC

Fetching 1 block of Account table from SFO

Chinatown:14520

Chinatown:4000

Chinatown:40000

Chinatown:5000

Chinatown:52000

Fetching remaining block of Depositor blocks from NYC

Fetching block of Account table from SFO

size of result of query 2 is 5

writing output into file

Total number of block transfers 3

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Executing Query 3

Bring Account block from SFO in to buffer

Fetching Three blocks of NYC Depositor table in to buffer

Fetching remaining block of NYC Depositor table into buffer

Fetching 3 blocks of data from HOU customer

Fetching next three bocks of data from HOU customer

The cusomer Street and city information of customer with account number A10334 are

F Street:Houston

total number of block transfers for join 5

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Executing Query 4

Fetching 2 blocks of Account blocks from OMA

Fetching block of branch table from NYC

Aksarben 20000

Aksarben 12457

Aksarben 1547786

Aksarben 1547862

Aksarben 10000

output buffer is full, writing in to file

Aksarben 145246

Aksarben 10002

Aksarben 15426

Aksarben 12563

number of block transfers 3