

区块链大数据分析 用户手册

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(使用 \LaTeX 编辑)

注: 测试运行环境为macOS Mojave 10.14.6, 终端是iTerm2, Shell是Oh My Zsh. 以下截图均基于此环境.

1 功能介绍

本软件由五大类功能(加载、查询、分析、更新、其他)构成, 分别是文件加载功能(含区块文件、交易文件)模块; 查询功能(某账号某时间段内金额最高的前 k 条交易、某账号某时刻累计金额、某时刻福布斯排行榜)模块; 图分析功能(含交易图输出、平均出/入度及出/入度前 k 高账号、交易图环路判定以及单账号最短转账路径)模块; 最后是数据更新以及退出功能.

2 编译

在本机上, 编译命令是: `g++ -std=c++17 -O3 main.cpp -o main.`

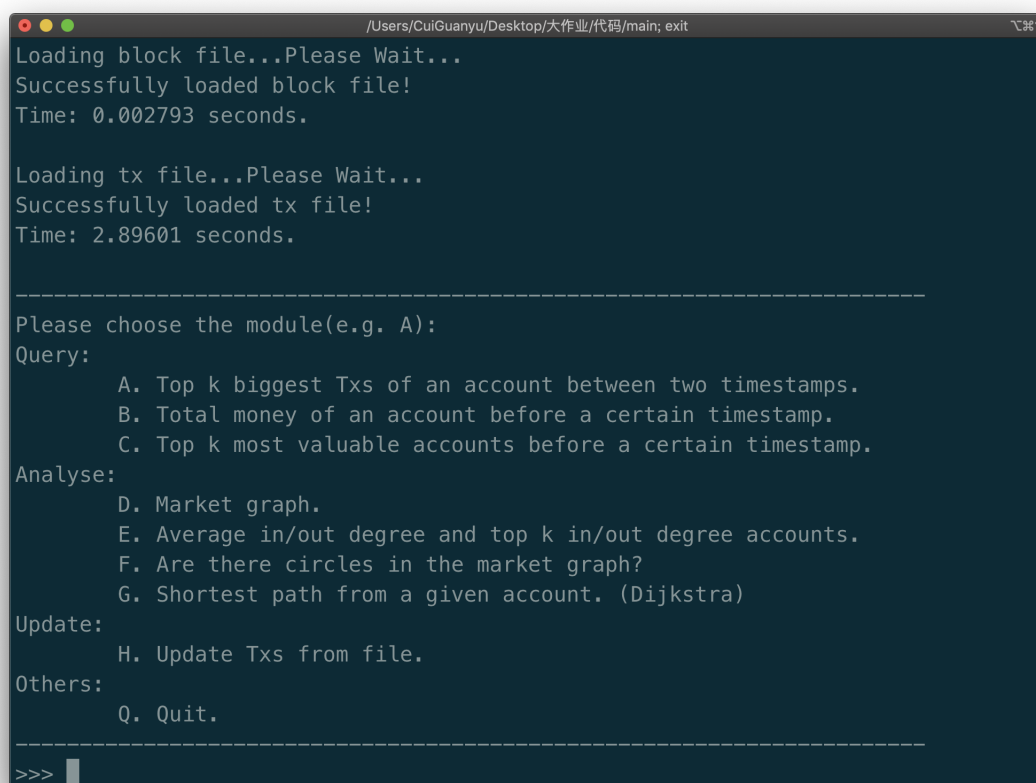
3 运行

编译完成后, 运行main来使用软件.

4 具体操作

4.1 主界面

运行时, 程序要求用户输入区块文件和交易文件路径, 输入完毕后程序自动加载. 加载完毕后, 用户看到的主界面如图1所示. 用户首先输入所需模块前面的字母.



```
/Users/CuiGuanyu/Desktop/大作业/代码/main; exit
Loading block file...Please Wait...
Successfully loaded block file!
Time: 0.002793 seconds.

Loading tx file...Please Wait...
Successfully loaded tx file!
Time: 2.89601 seconds.

-----
Please choose the module(e.g. A):
Query:
    A. Top k biggest Txns of an account between two timestamps.
    B. Total money of an account before a certain timestamp.
    C. Top k most valuable accounts before a certain timestamp.
Analyse:
    D. Market graph.
    E. Average in/out degree and top k in/out degree accounts.
    F. Are there circles in the market graph?
    G. Shortest path from a given account. (Dijkstra)
Update:
    H. Update Txns from file.
Others:
    Q. Quit.

-----
>>> 
```

Figure 1: 主界面

例1: 用户希望查询某时刻福布斯排行榜, 应输入C后回车.

例2: 用户希望输出交易图, 应输入D后回车.

例3: 用户希望更新交易文件, 应输入H后回车.

4.2 功能模块

用户输入完对应字母之后, 程序进入相应模块, 用户应当按照给出的提示操作.

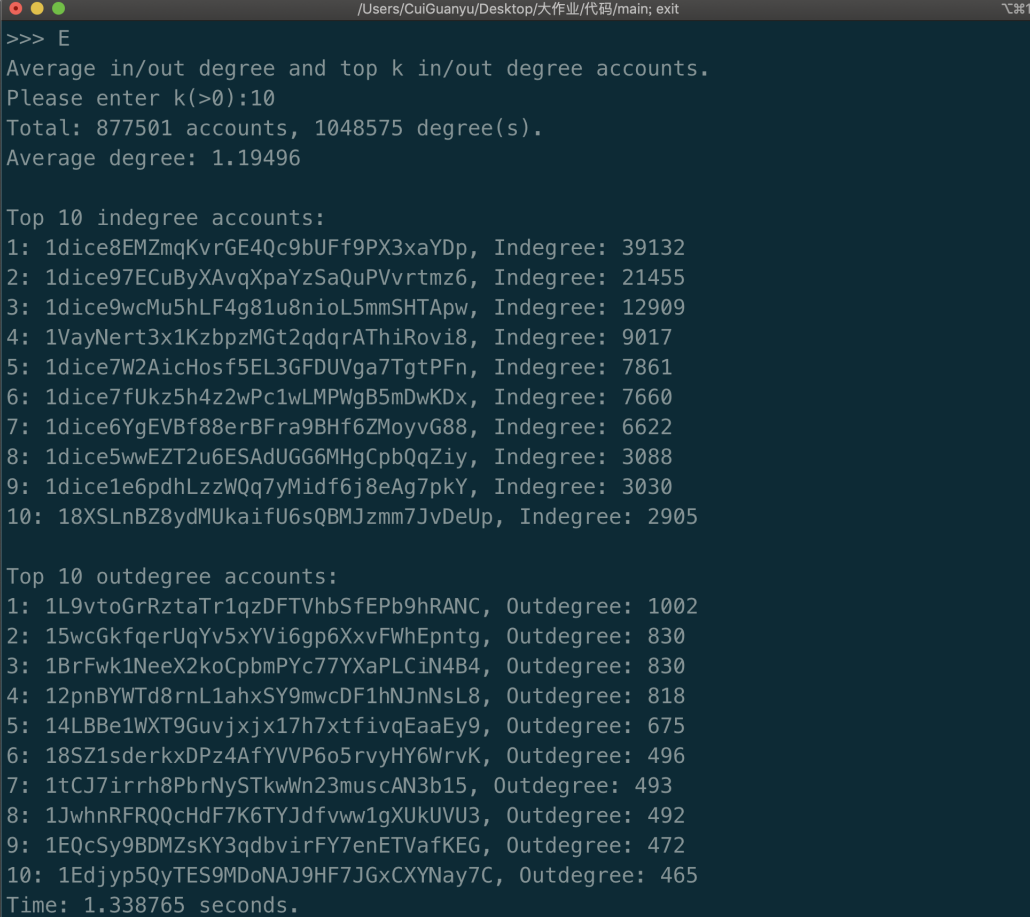
```
/Users/CuiGuanyu/Desktop/大作业/代码/main; exit
E. Average in/out degree and top k in/out degree accounts.
F. Are there circles in the market graph?
G. Shortest path from a given account. (Dijkstra)
Update:
    H. Update TxS from file.
Others:
    Q. Quit.
-----
>>> C
Top k most valuable accounts before a certain timestamp.
Please enter k(>0):10
Please enter an end timestamp:1400000000
Top 10 most valuable accounts:
1: 1VayNert3x1KzbpzMGt2qdqrAThIRovi8, Sum: 434322.0213
2: 122semdHkeMzS1naK83wVxw2DgpM2CvUfX, Sum: 135140.0000
3: 1Q7L195hFoiEARiAyNu8XntJbFXDLMxyB9, Sum: 60000.0000
4: 13TUWDE7foufgGNMsMqXHf9xpPUhoeMzNJ, Sum: 58333.4513
5: 1K6xtaY8VqfEYQqnWHPfJnhdcbAj4Tw4uu, Sum: 58309.5925
6: 1JLreuLdmkNjp5c8ssXr8MZPxigPpSLNSq, Sum: 57997.1478
7: 1LAKupP8bN882Uy6oaGuiKYu6gkJBVZUZu, Sum: 57979.4478
8: 1BpPKrzXqbyHSt9uJrmzjFAHoPCHuX72zG, Sum: 57900.6818
9: 1JYUy1j9GXW4LAPg3yV6EbfhbctmgKQSLq, Sum: 57771.1685
10: 1ESAwctdKc3z44wGpUG3GcPBLNSFZCGQfz, Sum: 57644.3688
Time: 1.764589 seconds.
```

Figure 2: 操作示例

例1: 假设用户希望查询某时刻福布斯排行榜前十位. 如Fig2所示, 用户选择模块C. 程序给出提示, 要求用户输入 k , 用户输入10后回车. 接下来程序进一步 要求用户输入截止时间戳, 用户按提示输入1400000000后回车, 程序输出计算结果以及计算时间, 回到主界面, 等待用户再次操作.

例2: 用户进入到模块E(平均出入度以及出入度前 k 条账号)后, 要求用户输入 k , 用户输入10后回车, 程序输出计算结果以及计算时间.

更加详细的内容请参阅测试报告.



```
>>> E
Average in/out degree and top k in/out degree accounts.
Please enter k(>0):10
Total: 877501 accounts, 1048575 degree(s).
Average degree: 1.19496

Top 10 indegree accounts:
1: 1dice8EMZmqKvrGE4Qc9bUFf9PX3xaYDp, Indegree: 39132
2: 1dice97ECuByXAvqXpaYzSaQuPVvrtmz6, Indegree: 21455
3: 1dice9wcMu5hLF4g81u8nioL5mmSHTApw, Indegree: 12909
4: 1VayNert3x1KzbpzMGt2qdqrAThiRovi8, Indegree: 9017
5: 1dice7W2AicHosf5EL3GFDUVga7TgtPFn, Indegree: 7861
6: 1dice7fUkz5h4z2wPc1wLMPWgB5mDwKDx, Indegree: 7660
7: 1dice6YgEVbf88erBFra9BHf6ZMoyvG88, Indegree: 6622
8: 1dice5wwEZT2u6ESAdUGG6MHgCpbQqZiy, Indegree: 3088
9: 1dice1e6pdhLzzWQq7yMidf6j8eAg7pkY, Indegree: 3030
10: 18XSLnBZ8ydMUKaifU6sQBMJzmm7JvDeUp, Indegree: 2905

Top 10 outdegree accounts:
1: 1L9vtoGrRztaTr1qzDFTVhbSfEPb9hRANC, Outdegree: 1002
2: 15wcGkfqrUqYv5xYVi6gp6XxvFWhEpntg, Outdegree: 830
3: 1BrFwk1NeeX2koCpbmPYc77YXaPLCiN4B4, Outdegree: 830
4: 12pnBYWTd8rnL1ahxSY9mwcDF1hNJnNsL8, Outdegree: 818
5: 14LBBe1WXT9Guvjxjx17h7xtfivqEaaEy9, Outdegree: 675
6: 18SZ1sderkxDPz4AfYVVP6o5rvyHY6WrvK, Outdegree: 496
7: 1tCJ7irr8PbrNySTkwWn23muscAN3b15, Outdegree: 493
8: 1JwhnRFRQQcHdF7K6TYJdfvww1gXUKUVU3, Outdegree: 492
9: 1EQcSy9BDMZsKY3qdbvirFY7enETVafKEG, Outdegree: 472
10: 1Edjyp5QyTES9MDoNAJ9HF7JGxCXYNay7C, Outdegree: 465
Time: 1.338765 seconds.
```

Figure 3: 操作示例