Problem Statement

Recently, RBI has decided to start withdrawing 2000 Rupee notes from people in two ways i.e., exchange them for smaller notes or deposit them at the bank on or before Sep 30, 2023. The facility for deposit into accounts and exchange for Rs 2000 bank notes has already been started at all the banks from May 23, 2023. As there is a huge transaction happening in all the banks daily, they need your help to keep track of all the deposited and exchanged Rs 2000 notes details.

1. List out the bank name & its Rs 2000 note denomination count for both may & June month.
2. Calculate the total number of Rs2000 notes deposited in all the banks for both months.
3. Add new bank details to the list and figure out the max Rs 2000 notes deposited in which bank for may & June month.
4. Calculate the total amount that collected so far for both months.
5. Remove two bank details from the list which shows max Rs 2000 note denominations for the may month.
6. Print the max heap tree for both months.

Requirements:

1. Model the problem as a Heap.
2. Read the input from a file **inputPS07.txt**.
3. You will output your answers to a file **outputPS07.txt.**

4. Perform an analysis for the features above and give the running time in terms of input size: n.
5. Make sure proper exception handling is written for the code.
6. Implement the above problem statement using python 3.7.

Sample Input: The input file will contain the initial set of data followed by additional rows of instructions as shown below

Bank name, note count, month
Bank1, 16578, may
Bank2, 48927, may
Bank3, 9093, may
Bank4, 20976, may
Bank5, 10936, may
Bank6, 89027, may
Bank7, 28163, may
Bank8, 95754, may
Bank9, 64678, may
Bank10, 56474, may

Bank1, 83763, June
Bank2, 73726, June
Bank3, 79319, June
Bank4, 90282, June
Bank5, 21917, June
….
Bank10, 101010, June

New Bank details:
Bank11, 671862, May
Bank11, 3893, June

Note that the input/output data shown here is only for understanding and testing, the actual file used for evaluation will be different.

Sample Output:

May month details:
Bank1, 16578
Bank2, 48927
Bank3, 9093
Bank4, 20976
Bank5, 10936
Bank6, 89027
Bank7, 28163
Bank8, 95754
Bank9, 64678
Bank10, 56474

June month details:
Bank1, 83763
Bank2, 73726
Bank3, 79319
Bank4, 90282
Bank5, 21917
….
Bank10, 101010

Total Rs 2000 note count for May & June month: '440606' & 'XXXXXX'

Added new bank details:
Bank11, 671862, May
Bank11, 3893, June
Maximum notes deposited in bank11: 671862 for may month…
Maximum notes deposited in bank10: 101010 for June month…

Total amount that collected so far in all the banks: 'Rs XXXXXXXXX'

Max heap tree for both months…

Note that the input/output data shown here is only for understanding and testing, the actual file used for evaluation will be different.

Display the output in outputPS07.txt

Readings

Text book: Algorithms Design: Foundations, Analysis and Internet Examples Michael T. Goodrich, Roberto Tamassia, 2006, Wiley (Students Edition).