Write a program for "the subway ticket machine that satisfies the conditions described below, and submit the source code and presentation material.

Follow the steps below for the programming. Proceed just as far as you can, and submit the result of each step you have completed.

e.g.) If you have completed steps 1 to 3, you have to submit four files as follows:

1. The zip file of the source code from Step 1.
2. The zip file of the source code from Step 2.
3. The zip file of the source code from Step 3.
4. A presentation material.

STEP 1. Implementation of the Basic Program

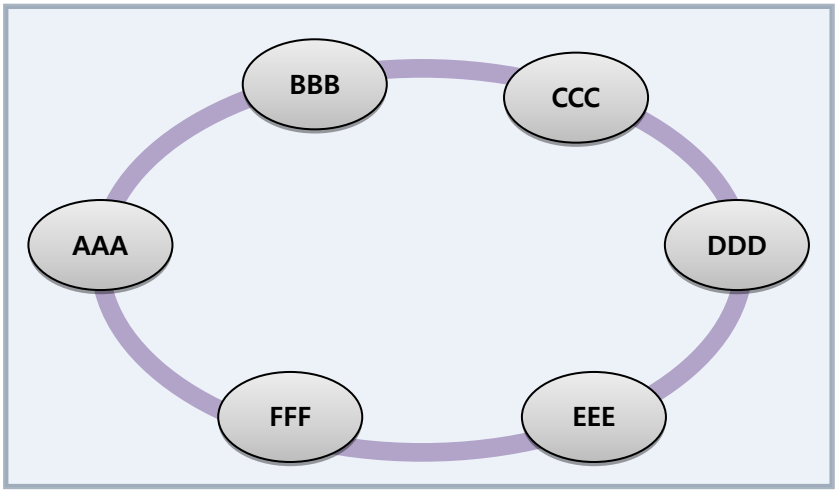
1. Upon running the program, the following screen appears, ready for user input.

```
*****************************************************
Enter a station name.
Station Name :
```

   A. You can enter a station name. Station names are managed in a property file.

      i. The property file is structured as "station name|station name|..." as below.

      AAA|BBB|CCC|DDD|EEE|FFF



      ii. Let us assume that the stations are linked in a circle as in the above example.

      e.g.) AAA and FFF stations are also connected.

      iii. The file location and name are fixed.

   B. If you enter a station name that is not present in the property file, the below screen appears, and user input is required again.

```
*****************************************************
ERROR!! The station name doesn't exist.
Station Name :
```

2. If you enter AAA in Station Name, the below menu screen appears, ready for user input.

```
**************************************************
AAA Station | Subway Ticket   |   Balance : 0
**************************************************
1. Payment
2. Purchase
3. Day pass purchase (10 CNY)
98. Refund
99. End
**************************************************
Choose Menu :
```

3. Only numbers can be entered on the above screen. If you enter numbers other than displayed on the above screen, the screen as the following screen is displayed .

```
**************************************************
Note : Wrong input.
Choose Menu :
```

4. If input 1. on the above screen, the screen to input coins as the following appears, and ready for user input

```
**************************************************
Note : Only 1, 2, 5, or 10 CNY coins acceptable.
Coin :
```

   A. You can only enter 1, 2, 5, or 10, if any other number or character is entered, a "wrong input" message is displayed, and the above screen is shown again.
   B. If you enter a correct number, the menu appears again, and ready for user input.
      i. The balance shows the existing balance plus the entered amount.
   C. Below is the example menu screen when 10 (a correct number) is entered.

```
**************************************************
AAA Station | Subway Ticket   |   Balance : 10
**************************************************
1. Payment
2. Purchase
3. Day pass purchase (10 CNY)
98. Refund
99. End
**************************************************
Choose Menu :
```

5. If you enter 2 on the menu screen, the below screen appears for arrival station entry, and ready for user input.

```
**************************************************
Arrival Station :
```

   A. If you enter an arrival station, the ticket price is calculated based on the travel route, the ticket information is displayed, and the balance minus the ticket price is shown. The ticket price differs according to the number of travelled stations, as follows.
      i. 2 CNY charged for 3 or less stations travelled
      ii. 4 CNY charged for 6 or less stations travelled
      iii. 6 CNY charged for 7 or more stations travelled
      iv. Calculate the price on the minimum basis.
         A. Going from AAA to FFF: This is one station apart, instead of five stations, which is to choose the lower ticket price.

```
**************************************************
You have purchased a ticket for CCC. (2 CNY)
**************************************************
AAA Station | Subway Ticket   |   Balance : 8
**************************************************
1. Payment
2. Purchase
3. Day pass purchase (10 CNY)
98. Refund
99. End
**************************************************
Choose Menu :
```

B. If you enter a station name that is not present in the property file, the following error message appears, and user input is required again.

```
**************************************************
ERROR!! The station name doesn't exist
Arrival Station :
```

C. However, if the current balance is less than the ticket price, the below error message appears, and user input is required again.

```
**************************************************
ERROR!! The balance is not enough.
**************************************************
Choose Menu :
```

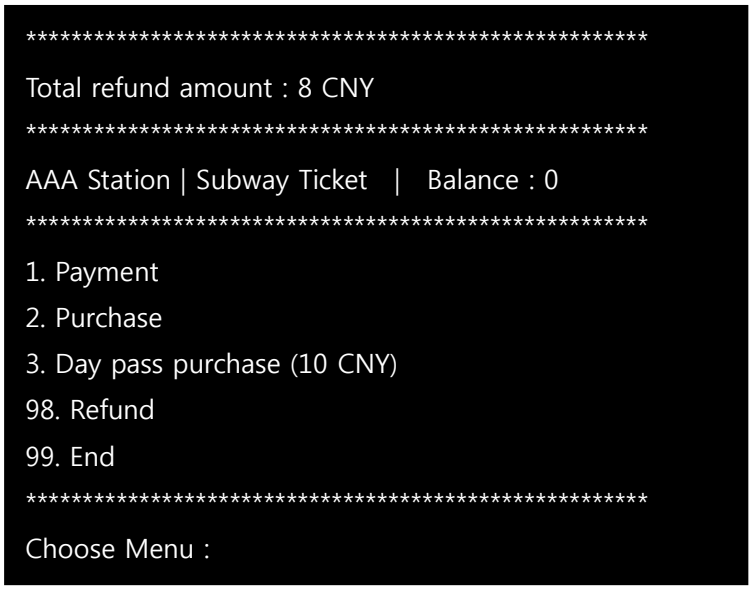
6. If you enter 3 on the menu screen, the purchased ticket information is displayed, and the balance minus the ticket price is shown.

```
**************************************************
You have purchased a Day travel pass. (10 CNY)
**************************************************
AAA Station | Subway Ticket   |   Balance : 0
**************************************************
1. Payment
2. Purchase
3. Day pass purchase (10 CNY)
98. Refund
99. End
**************************************************
Choose Menu :
```

A. However, if the current balance is less than the ticket price, the below error message appears, and user input is required again.

```
**************************************************
ERROR!! The balance is not enough.
**************************************************
Choose Menu :
```

7. If you enter 98 in the menu screen, the balance is initialized ("0") and the detail is displayed.



8. If you enter 99 in the menu screen, the program is closed.

STEP 2. Implementation of Additional Functions

1. It is possible to enter the number of tickets to purchase.

```
**************************************************
AAA Station | Subway Ticket   |   Balance : 20
**************************************************
1. Payment
2. Purchase
3. Day pass purchase (10 CNY)
98. Refund
99. End
**************************************************
Choose Menu :
```

A. If you enter 2 or 3 in the menu screen, the screen for entering the number of purchasing tickets is additionally appears.

```
**************************************************
Number of tickets :
```

i. If you enter 2 in the menu screen, after entering the arrival station, and the screen for entering the number of purchasing tickets appears.

ii. You can only enter a number in Number of tickets. If anything else is entered, a "wrong input" message appears and the above screen is displayed again.

iii. If you enter a correct number, the purchased ticket information is displayed, and the balance minus the ticket price is shown, as follows.

```
**************************************************
You have purchased 4 tickets to CCC. (8 CNY)
**************************************************
AAA Station | Subway Ticket   |   Balance : 12
**************************************************
1. Payment
2. Purchase
3. Day pass purchase (10 CNY)
98. Refund
99. End
**************************************************
Choose Menu :
```

iv. The exception process for the shortage of the balance is the same as mentioned

above.

2. Refund the balance, minimizing the number of coins.
   A. Refundable coins are 1, 2, 5, and 10 coins only. The type of coins not used in the refund is not displayed.
   B. Make a refund using the minimum number of coins. Display the refund details and the menu.

```
**************************************************
Total refund amount : 8 CNY
5 won : 1
2 won : 1
1 won : 1
**************************************************
AAA Station | Subway Ticket   |   Balance : 0
**************************************************
1. Payment
2. Purchase
3. Day pass purchase (10 CNY)
98. Refund
99. End
**************************************************
Choose Menu :
```

STEP 3. Ticket Sales History

1. Keep the ticket sales history for ticketing sales statistics.
   A. Whenever a ticket is sold, record 4 types of information: time of sales, departing station, arrival station, the number of tickets purchased, and total ticket price.
   B. Each information unit is separated using "," for easy reading and processing afterwards.
   C. The history is saved in a single file located in a fixed location, in time order. The latest record is displayed at the bottom of the file.
2. An example of the log file.

```
2013-05-05 23:51:51, AAA, CCC, 2 tickets, 4 CNY
2013-05-06 07:51:13, AAA, Day pass, 1 ticket, 10 CNY
2013-05-06 07:53:13, AAA, DDD, 8 tickets, 32 CNY
```

STEP 4. Conversion to DB

1. Errors are kept found related to the file, so we are going to change from the file to DB.
   A. Display ticket information through DB, which was previously done through the property file.
   B. Save the ticket purchase history in DB, not in the file anymore.
   C. In order to implement the above two functions, design a DB structure as you wish and submit the script file.

STEP 5. Implementation of the Statistics Function

1. The statistics menu is shown as below.

```
**************************************************
AAA Station | Subway Ticket   |   Balance : 0
**************************************************
1. Payment
2. Purchase
3. Day pass purchase (10 CNY)
97. Statistics display
98. Refund
99. End
**************************************************
Choose Menu :
```

2. If you enter number 97 on the above menu screen, the following statistics menu appears.

```
**************************************************
1. Display statistics for the recent 10 days
2. Display statistics for a specific date
3. Go back to the menu
**************************************************

Choose Menu :
```

   A. If you enter 1 on the above screen, the statistics for the recent 10 days appear as below.

```
**************************************************
Ticket Sales info. of AAA for the recent 10 days
**************************************************

2013-06-13 BBB 10 tickets
           CCC 53 tickets
           EEE 143 tickets
           Day pass 34 tickets
2013-06-12 CCC 35 tickets
           FFF 24 tickets
2013-06-11 DDD 2 tickets
           EEE 3 tickets
           FFF 8 tickets
           Day pass 2 tickets
.
.
.
2013-06-04 BBB 5 tickets
           CCC 1 tickets
           Day pass 2 tickets

< Press any key to go back to the menu. >
```

i. As in the example screen above, information without a ticket sales record is not displayed.

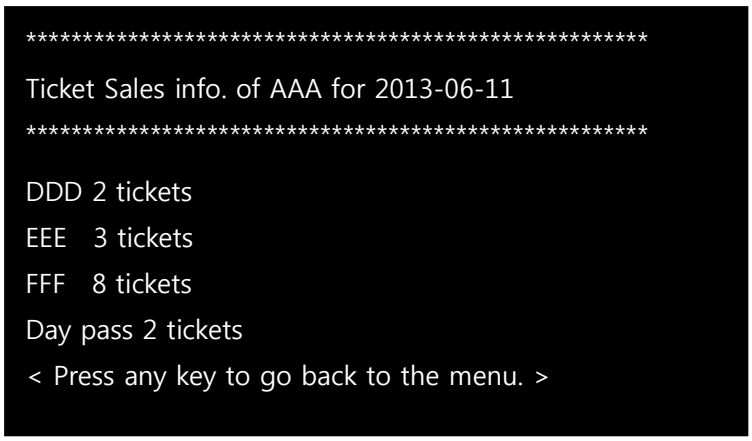
ii. If you press any key after sales history output, menu is displayed.

B. If you enter 2 in the below screen, a specific date is entered and the date's sales history is displayed.

```
**************************************************
1. Display statistics for the recent 10 days
2. Display statistics for a specific date
3. Go back to the menu
**************************************************
Choose Menu :
```

```
**************************************************
Search Date (yyyy-mm-dd) :
```

i. If you enter "2013-06-11" in the above screen, the output appears as below.



ii. If the entered date is not in "yyyy-mm-dd" format, an alert message appears and user input is required again.

STEP 6. Function to Select Data Location According to Environment

1. A problem was found, where DB access is impossible in some environments. When activating the program, implement the following function to make it configurable to fetch information from DB or the property file through a configuration file.
   A. Make a separate property file, and write "db_use = N" or "db_use = Y" in the file.
   B. If "db_use = N", the menu is displayed through the property file and the history is kept in the file. The statistics menu is not displayed.
   C. If "db_use = Y", the menu is displayed through DB and the history is kept in DB. The statistics menu is available.
   D. Implement this function, using factory pattern.