**Project 3 – Parking Deck Ticketing System**

**Objectives:**

1. Make use of if statements to solve a problem.
2. Make use of input and output statements to model a real world application
3. Format output properly
4. Make use of functions to divide up parts of a problem

**Instructions:**

Your task is to write a program that simulates a parking meter within the parking deck. The program will start by reading in the time **from a file** that a car arrives in the parking deck. Next it will read in the time the car left the parking deck. You should then calculate the time that has passed between issuing the time ticket and the time the car left. Lastly, you will use this information to determine how much the person needs to pay upon leaving the deck. The rates are in the table below. Please read through all of the notes below!

You should write a single function for each of the following things:

* Reading in the arrival times and departure times from a file
* Calculate the passage of time
* Determine how much the driver needs to pay
* Print out the information for each driver in a report format, including his Run number, arrival and departure times, time in the deck, and how much he owes. Be sure to include the exceptions of a Lost Ticket, Special Parking Pass, and Error (over 12 hour stay).
* Column Headings to be printed once at the beginning of the program – see format below.

**Notes:**

Time should be handled in the 24 hour format for simplicity. The data file will have the input hours, the input minutes then the output hours and finally the output minutes as four separate variables. You may assume that the parking deck is open 24/7 for simplicity. You do not need to worry about times the deck closes for this project.

If the driver has a special parking pass, the program will read in the time of 99 for the hour and 99 for the minutes when entering the deck. This should be used as a code for the system to know that this person has a special parking pass.

If the drive has lost their ticket, the program will enter the input of 55 for the hour and 55 for the minutes when exiting the deck.

Please make sure that the output is attractive and informative. It should include, but is not limited to: the time the ticket was issued the time the ticket was entered back into the machine (time the driver exited the deck.) You should also include the amount of time that transpired while the driver was in the deck and the amount of money the driver has to pay. Please use proper formatting techniques for output (fixed and set precision, remember we are talking about money.) Use the output format given below in **Running**.

**Rate Table:**

|  |  |
| --- | --- |
| **Time in Parking Deck** | **Rate in Dollars ($)** |
| Less than or equal to 30 minutes | 3.00 |
| 30 Minutes <= 1 Hour | 5.00 |
| 1 Hour <= 2 Hours ) | 10.00 |
| 2 Hours <= 3 Hours ) | 15.00 |
| 3 Hours <= 4 Hours ) | 30.00 |
| Each half hour over four hours and <= 12 hrs | 30.00 + 5.00 per additional half hour or part thereof |
| 12 Hours < 24 Hours ) | Error prints out, see notes above. |
| Lost ticket | 110.00 |
| Special Parking Pass | 5.00 |

**Running:**

Please run the following sets of data, using this format for the output:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Entrance Hour** | **Entrance Minute** | **Exit Hour** | **Exit Minute** | **Total Minutes or Hours and Minutes** | **Price for Parking** |
| **Run 1** | 00 | 00 | 00 | 30 |  |  |
| **Run 2** | 05 | 45 | 07 | 00 |  |  |
| **Run 3** | 06 | 32 | 09 | 54 |  |  |
| **Run 4** | 09 | 15 | 12 | 15 |  |  |
| **Run 5** | 09 | 32 | 14 | 35 |  |  |
| **Run 6** | 08 | 00 | 10 | 30 |  |  |
| **Run 7** | 08 | 45 | 55 | 55 | LOST TKT |  |
| **Run 8** | 99 | 99 | 99 | 99 | SPECIAL |  |
| **Run 9** | 9 | 10 | 23 | 30 |  | ERROR |
| **Run 10 Extra Credit** | 17 | 0 | 4 | 0 |  |  |

**Submitting:**

Face-to-face students; please include this document at the front of your project folder. This should be followed by the algorithm for your program, source code, and your output. Lastly, please include your signed Academic Honesty Promise. Please print all of these and clamp them into your project folder. Turn it in on the due date.

Online students should submit the algorithm, the source code, the output, your signed Academic Honesty Promise, and the input data file. All of this should be in a zipped folder.

**Extra Credit (5 points):**

What happens if you were to arrive at 5:00 PM and leave at 4:00 AM? Would your program still run this correctly? Make sure that you can account for this sort of issue. Add data to test this situation.