Console Parking System

Requirements

A car parking system allows customers to select the number of hours to leave their car in the car park. Customer will be asked to choose options to `park` (in) or `pickup` (out) or `history`.

- With `park` option:
    - Customer will need to input:
        - The `arrival time`: The time to start parking. For ex: `2023-06-18 18:30`.
        - The `car identity`: The identity of the car in a valid format like this `59C-12345`, `01E-00001`.
        - The `frequent parking number`(*optional*): This number consists of 4 digits and a check digit that is calculated using ***modulo 11 check digit calculation***.(Ex: `12343` is a valid frequent parking number)
    - System will collect the information and store them in file(s), return to the *option selection*.
- With `pickup` option:
    - The customer will need to input the `car identity`.
    - System will calculate and display the parking price, round up to ***2-decimal format*** (Ex: `50.46`).
    - If no valid identity found, then system will raise the error.
    - Customer will pay the fee by input a payment amount, it needs `to be great or equal` the fee.
    - The exceed amount will be kept for next payment (stored in file(s)).
- With `history` option:
    - The customer will need to input the `car identity`.
    - The system will export a file with name `<car_identity>.txt`:
        - Total payments.
        - Available credits (remaining credits when customer over pay their bills).
        - Parked dates in format `parked datetime - stay time`.
    - Example file output:

        ```
        Total payment: $367.0
        Available credits: $33.00
        Parked Dates:
        2023-11-10 08:00 - 2023-11-12 19:30 $347.00
        2023-11-15 08:00 - 2023-11-15 09:30 $20.00
        ```

- The price of parking regulation is displayed in the bellow table:

Day of week	Arrival Time					
	From 08:00 - 16:59		From 17:00 - Midnight		Midnight - 07:59	
	Max stay in hours	Price per hour	Max stay in hours	Price per hour	Max stay in hours	Price (one time)
Sunday	8	2.00	Up to midnight	5.00	None	20.00
Monday	2	10.00	Up to midnight	5.00	None	20.00
Tuesday	2	10.00	Up to midnight	5.00	None	20.00
Wednesday	2	10.00	Up to midnight	5.00	None	20.00
Thursday	2	10.00	Up to midnight	5.00	None	20.00
Friday	2	10.00	Up to midnight	5.00	None	20.00
Saturday	4	3.00	Up to midnight	5.00	None	20.00

- The customer has the valid frequent parking number will get the discount:
  - `50%` for parking time: `17:00 – Midnight, Midnight – 08:00`.
  - `10%` for `other parking time`.
- Any car parked exceed `max stay hours` will pay `double price` for each exceed hour it parked.

Your Tasks

Calculate the price for parking.

Apply all the concepts we have learned:

- Class and Function, OOP concepts.
- Exception Handling.
- Datetime module.
- Python common data structures (tuple, dictionary, string, decimal, ...)
- Using files to store the data we need.

Samples

Case 1
Car Identity: **50A-12345**
Arrival Time: 2023-11-10 08:00
Frequent Parking Number: None
Leave Time: 2023-11-12 19:30

Day	2023-11-10		2023-11-11		2023-11-12	
Day of week	Friday		Saturday		Sunday	
23:59 – 07:59			N/A	$20.00	N/A	$20.00
08:00 – 16:59	2 hours	$10.00/h	4 hours	$3.00/h	8 hours	$2.00/h
	7 hours	$10.00/h * 2	5 hours	$3.00/h * 2	1 hour	$2.00/h *2
17:00 – 23:59	7 hours	$5.00/h	7 hours	$5.00/h	3 hours	$5.00/h
Sub total	**$195.00**		**$97.00**		**$55.00**	
Total	**$347.00**					

Case 2

Car Identity: **50A-12345**

Arrival Time: 2023-11-10 08:00

Frequent Parking Number: 12343 (valid checked)

Leave Time: 2023-11-12 19:30

Customer get discounted by:

- 50% for parking time: 17:00 – Midnight, Midnight – 08:00.
- 10% for other parking time.

Day	2023-11-10		2023-11-11		2023-11-12	
Day of week	Friday		Saturday		Sunday	
23:59 – 07:59			N/A	$20.00 * 0.5	N/A	$20.00 * 0.5
08:00 – 16:59	2 hours	$10.00/h * 0.9	4 hours	$3.00/h * 0.9	8 hours	$2.00/h * 0.9
	7 hours	$10.00/h * 2 * 0.9	5 hours	$3.00/h * 2 * 0.9	1 hour	$2.00/h *2 * 0.9
17:00 – 23:59	7 hours	$5.00/h * 0.5	7 hours	$5.00/h * 0.5	3 hours	$5.00/h *0.5
Sub total	**$171.50**		**$65.30**		**$25.50**	
Total	**$262.30**					