BSc (Hons) Computer Science
BSc (Hons) Cyber Security
Module Code: QH0305 Module Title: Problem Solving
Assessment Sheet 2

Instructions:

This is one of the eight assessment tasks which will contribute to the overall mark. You will need to complete the tasks as outlined below and then document them in a Word document file. As a minimum, you should provide screenshots of the following:

- Your code
- The output that your code generates

In instances where your code could generate different outputs depending on what values are given, you should provide multiple screenshots of the console screen, showing the different outputs in order to demonstrate that the code works correctly.

You must attempt all tasks on this sheet to achieve a higher mark. For example, if you want to gain marks between 70 - 100, you must complete all other tasks first and add them to your portfolio with screenshots.

A zip folder with all tasks must be attached inside of the portfolio (MS Word file).

Task: Movie Ticket Booking System

Task Objective:
Create a program for a movie ticket booking system that calculates the total cost of tickets based on user selections. The program will utilize **switch statements**, **arithmetic operators**, and **conditional logic**, while also incorporating **bulk discounts** and additional services.

Task Descriptions by Grade
To achieve Marks (Between 40-49) (Basic Ticket Price Calculation)

- **Requirements:**
    1. Create variables to store (Here you can choose any option as Default Value):
        - movieType: Default value ('A' for Action).
        - ticketCategory: Default value ('R' for Regular).
        - ticketPrice: Price of one ticket (calculated based on defaults).
    2. Use a **switch statement** to determine ticket prices based on the movie type and ticket category:
        - Action: £10 for Regular, £15 for Premium.
        - Comedy: £8 for Regular, £12 for Premium.
        - Drama: £7 for Regular, £10 for Premium.

3. Display the default **movie type**, **ticket category**, and **ticket price** to the user.

- **Example Outcome:**

Movie Type: Action
Ticket Category: Regular
Total Ticket Price: £10.00

To achieve Marks (Between 50-59) (User Input for Tickets)

- **Requirements:**

1. Modify the program to:
    - Prompt the user to select the **movie type** ('A', 'C', 'D').
    - Prompt the user to select the **ticket category** ('R' or 'P').
    - Prompt the user to enter the **number of tickets**.
2. Use a **switch statement** to calculate the price of one ticket.
3. Multiply the ticket price by the number of tickets to calculate the **total cost**.
4. Display all input details and the calculated total cost.

- **Example Outcome:**

Select a movie type ('A' for Action, 'C' for Comedy, 'D' for Drama):
C Select ticket category ('R' for Regular, 'P' for Premium): P
Enter the number of tickets: 3

Movie Type: Comedy
Ticket Category:
Premium Number of
Tickets: 3
Total Cost: £36.00

To achieve Marks (Between 60-69) (Discounts and Additional Services)

- **Requirements:**

1. Add a **bulk discount**:
    - Apply a **10% discount** if the user purchases more than 5 tickets.
2. Add an optional **snacks service**:
    - Ask the user if they want snacks ('y' for yes, 'n' for no).
    - Snacks cost £5 per ticket.
3. Calculate and display:
    - Movie type, ticket category, number of tickets.
    - Total cost before discounts and additional services.
    - Discount applied, snacks cost, and final total cost.

- **Example Interaction:**

Select a movie type ('A' for Action, 'C' for Comedy, 'D' for Drama):
D Select ticket category ('R' for Regular, 'P' for Premium): R
Enter the number of tickets: 6
Do you want snacks (y/n): y

Movie Type: Drama
Ticket Category:
Regular Number of
Tickets: 6
Total Cost Before Discount: £42.00
Bulk Discount: £4.20
Snacks Cost: £30.00
Final Total Cost: £67.80

To achieve Marks (Between 70-100) (Menu-Driven System)

- **Requirements:**
    1. Add a **menu system** using a **switch statement**:
        - **Option 1:** Book tickets.
        - **Option 2:** View ticket prices.
        - **Option 3:** Exit the program.
    2. Allow the user to interact with the menu repeatedly without restarting the program.
    3. Validate user input for:
        - Movie type ('A', 'C', 'D') and ticket category ('R', 'P').
        - Number of tickets (must be greater than 0).
    4. Display a detailed booking summary, including:
        - Movie type, ticket category, number of tickets.
        - Discounts applied, cost of additional services, and final total cost.
- **Example Interaction:**

--- Movie Ticket Booking System ---
1. Book Tickets
2. View Ticket Prices
3. Exit
Enter your choice: 1

Select a movie type ('A' for Action, 'C' for Comedy, 'D' for Drama):
A Select ticket category ('R' for Regular, 'P' for Premium): P
Enter the number of tickets: 8
Do you want snacks (y/n): n

Movie Type: Action
Ticket Category: Premium
Number of Tickets: 8
Total Cost Before Discount: £120.00
Bulk Discount: £12.00
Final Total Cost: £108.00

--- Movie Ticket Booking System ---
1. Book Ticket
2. View Ticket Prices
3. Exit
Enter your choice: 2

--- Ticket Prices ---
Action: £10 (Regular), £15 (Premium)
Comedy: £8 (Regular), £12 (Premium)
Drama: £7 (Regular), £10 (Premium)

--- Movie Ticket Booking System ---
1. Book Tickets
2. View Ticket Prices
3. Exit
Enter your choice: 3
Thank you for using the Movie Ticket Booking System!

Assignment Preparation Guidelines

- All components of the assignment report must be Word-processed **(handwritten text or hand drawn diagrams are not acceptable)**, font size must be within the range of 11 point to 14 point including the headings, body text and any texts within diagrams.
- Standard and commonly used fonts such as Times New Roman, Arial or Calibri should be used.
- All figures, graphs and tables must be numbered and labelled with short explanations.
- Material from external sources must be properly acknowledged and cited within the text using the Harvard referencing system.
- All components of the assignment (text, diagrams, code etc.) must be submitted in one Word file.
- The report should be logically structured, the core of the report may start by defining the problem / requirements, followed by the proposed solution including a detailed discussion, analysis and evaluation, leading to the implementation and testing stage, finally a conclusion and a personal reflection on learning.
- Screenshots without description / discussion are not suitable as they do not express your understanding or support your work adequately.

Submission instructions

- This is a portfolio assignment with eight tasks in total. Each task will be completed and saved in the portfolio. Once the portfolio is completed, it should be submitted on Turnitin. The submission link to Turnitin can be found under the “Assessment Tab” in your module section in the SOL VLE.

- Please note file size limitation might apply. Your report must be under 250MB.

- The source code for each task should be **zipped** and **attached** to your Word document report submission in the appendix.

- The Assignment Brief can be found under the “Assessment Tab” in your module section in the SOL VLE.

- **Refer to the Assignment Brief** to find the links to Late Submissions, Extenuating Circumstances, Academic Misconduct, Ethics Policy, Grade marking and Guidance for online submission through Solent Online Learning (SOL).