BSc (Hons) Computing

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 marks. 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 it is given), you should provide multiple screenshots of the console screen, showing the different outputs in order to demonstrate that the code is working correctly.

This assessment will focus on variables, operators (Arithmetic, Logical & Conditional) and conditional statements.

You must attempt all tasks on this sheet to achieve a higher grade. For example, if you want to gain Grade A, you must complete all other grades first and add them to your portfolio with screenshots.

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

Task 2: Meal delivery service pricing calculator

In this task, you will create a program for a meal delivery service that calculates the total cost of a user's meal order based on their selected meal plan and any additional items they choose. The program will focus on variables, arithmetic operators, logical operators, and conditional statements.

To achieve a D grade (basic meal plan cost calculation)

- Create four variables to store: the user's selected meal plan (**selectedPlan),** additional items (**additionalItems),** whether the order is for takeaway (**isTakeaway**) and the total order cost (**totalCost)**.
- Assign a default value to **selectedPlan** representing the user's chosen meal plan as follows:
  - 'S' for Standard
  - 'V' for Vegetarian
  - 'F' for Family

- Assign a default value to **additionalItems** representing the number of additional items the user selects.
- Set the value of **isTakeaway** to 'y' if the customer is ordering takeaway or 'n' if they are not.
- Calculate the total order cost based on the following rules:
    - standard plan: £7.99 per meal
    - vegetarian plan: £6.99 per meal
    - family plan: £29.99 for a family-sized meal
    - additional items: £1.99 each per meal
    - if the order is takeaway (**isTakeaway** is 'y'), apply a 5% discount to the total cost.
- Display the selected meal plan, the number of additional items, whether the order is for takeaway, and the total order cost to the user.
- You need to provide screenshots of your code and the different outcomes it can give.
- Your Word document should have appropriate headings to ensure that this task can easily be identified alongside the rest of your work.

To achieve a C grade (user input for meal order)

Complete all previous steps, then apply the following changes:

- Modify the program to allow the user to input their selected meal plan and the number of additional items.
- Prompt the user to select a meal plan from the available options ('S' for Standard, 'V' for Vegetarian, or 'F' for Family)
- Prompt the user to select any number of additional items they want to add to their meal order.
- Prompt the user to specify if the order is for takeaway ('y' or 'n').
- Calculate the total order cost based on the user's selections.
- Display the selected meal plan, the number of additional items, whether the order is for takeaway, and the total order cost to the user after potential discounts.

All tasks must be accompanied by written descriptions or annotations. These must show satisfactory understanding of what the code is doing.

Example interaction:

- The program prompts the user to select a meal plan.
- Example prompt: "Select a meal plan ('S' for Standard, 'V' for Vegetarian, or 'F' for Family)".
    - Example input: 'V'
- The program prompts the user to enter the number of any additional items.
    - Example prompt: "Enter the number of additional items".
    - Example input: 2
- The program prompts the user to specify if the order is for takeaway.
    - Example prompt: "Is the order for takeaway? Enter 'y' or 'n':"

    - Example input: "y"
- The program calculates the total order cost based on the user's inputs and whether the order is for takeaway.
    - Example output:

> Meal plan: Vegetarian
> Additional items: 2
> Takeaway: Yes
> Total before discount: £6.99 + £1.99 + £1.99 = £10.97
> Apply the 5% takeaway discount: Total cost = £10.42

To achieve a B grade (family plan discount and custom items)

Complete all previous steps, then:

- Enhance your code to offer a discount for users selecting the Family Plan.
- If the user selects the Family Plan, apply a 10% discount on the total order cost.
- Allow users to input custom items they want to add to their meal order.
- Prompt the user to enter the name and cost of each custom item (e.g., up to 2 custom items).
- Calculate the total order cost including the family plan discount, custom items, and takeaway discount.
- Display the selected meal plan, number of additional items (including custom items), whether the order is takeaway, any applied discounts, and the total order cost to the user.

Example interaction:

- The program prompts the user to select a meal plan.
    - Example prompt: "Select a meal plan ('S' for Standard, 'V' for Vegetarian, or 'F' for Family)".
    - Example input: 'F'
- The program prompts the user to enter the number of additional items.
    - Example prompt: "Enter the number of additional items.
    - Example input: 2
- The program prompts the user to specify if the order is for takeaway.
    - Example prompt: "Is the order for takeaway? Enter 'y' or 'n':"
    - Example input: "y"
- The program prompts the user to enter the number of custom items they want to add.
    - Example prompt: "Enter the number of custom items you want to add:"
    - Example input: "2"
- For each custom item (assuming a fixed number, e.g., 2 items):
    - Example prompt: "Enter the name of custom item 1:"
        - User input: 'A' (for "Appetiser")
    - Example prompt: "Enter the cost of 'Appetiser':"
        - User input: "3.50"
    - Prompt: "Enter the name of custom item 2:"
        - User input: 'S' (for "Soup")
    - Prompt: "Enter the cost of 'Soup':"
        - User input: "4.00"

- The program calculates the final total cost considering the family plan discount, custom items, and takeaway discount.
- Example Output:

```
Meal plan: Family
Additional items: 2
Custom items: Appetiser (£3.50), Soup (£4.00)
Takeaway: Yes
Total before discounts: £29.99 + £1.99 + £1.99 + £3.50 + £4.00 = £41.47
Total cost after discount: £35.47
```

To achieve an A grade (switch statements and advanced features)

Complete all previous steps, then:

- In most assessment tasks, to attain higher grades, tasks will require some independent research. For example, investigate **switch statements** and create a program that demonstrates how **switch statements** can be used instead of **"If Statement".** For example, you could implement switch statements to handle user inputs for meal plans and additional items.
- Document this in your portfolio and provide a detailed explanation of **switch statements** along-side this.

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).