

Semester 1, 2022

Foundations of Technical Programming Assignment 2

Total = 25 marks

It is part of the submission requirement that you will have to demonstrate/explain your work to your tutor, if you are absent/unavailable or fail to demonstrate properly, zero marks will be awarded.

Please note, this is an individual task and it will be checked for plagiarism. All the involved parties will be penalised if any plagiarism is found.

Instructions

1. This assignment is based on a business scenario, with 4 stages of solutions.
 - Stage – A – Maximum 59% (topics from week 1 to 9)
 - Stage – B – Maximum 69% (topics from week 1 to 10)
 - Stage – C – Maximum 79% (topics from week 1 to 10)
 - Stage – D – Maximum 100% (topics from week 1 to 10)
2. **Each stage elaborates on the previous stage, so you need to submit only one stage.**
3. Submit only one document (Single text document)
 - a) Write the Question Numbers.
 - b) C program (Copy paste your C program into notepad++ document and save it as a **assign2.txt** file)
 - c) Screenshot of the output are not necessary.
4. Use only .txt extensions – no other format will be accepted for marking.
5. Marks will be given for proper indentation and comments
6. If you are failing to come for the demonstration, you will get zero marks for the Assignment demonstration section.
7. Due date is **15th May 2022.**

Business Scenario:

"Tasty Burgers", a very fast-growing burger outlet in Melbourne has approached your company (Software Inc) to help their business by providing the required IT solutions.

Tasty Burgers – Manager Jim has given the following brief about their current business practices and their expectations:

The burger outlet started in 2010 has seen very steady growth over the past decade. Their main item and the most popular among the locals are the burgers, the outlet also serves hot chips and cold drinks. Currently, the restaurant uses a POS (Point of Sales) system to take orders.

Hugely attracted by the self-ordering kiosks at other popular fast-food restaurants, the management of Tasty Burgers wanted to implement a similar system at their outlet.

During an earlier meeting with your manager (Tom), Jim has been briefed about the challenges in implementing a full-fledged self-ordering kiosk as a single project. Therefore, it has been decided to break the project into 4 stages (A, B, C & D). You are entrusted with the responsibility to develop these stages.

Your manager – Tom has listed the requirements of the stages below. (You are required to complete one stage at a time.)

Stage – A

- A menu-driven application, using which customers can order burgers. There is no need to offer different varieties of burgers at this stage.
- Burgers are sold at 12\$ each.
- A 10% discount from the total bill value is offered when five or more burgers are ordered.
- The kiosk should allow users to cancel their orders by entering the Receipt Number.
- Your program should be capable of storing the details of 25 orders at the maximum.

A sample screen:

Welcome to Tasty Burgers

Place your order here...

1. *Order Burger*
2. *Cancel*
3. *Exit*

Select your option:

1

How many burgers you wish you order?

4

Your total bill value is \$48.00.

Your receipt number is B001.

Please go to a register and make the payment by quoting the Receipt Number – B001.

<<Press Any Key to show the main menu >>

Welcome to Tasty Burgers

Place your order here...

1. *Order Burger*
2. *Cancel*
3. *Exit*

Select your option: 1

How many burgers you wish you order?

6

*Your total bill value is \$72.00. Discount
10% - \$7.20*

*Final bill values is \$64.80 Your
receipt number is B002.*

Please go to a register and make the payment by quoting the Receipt Number – B002.

<<Press Any Key to show the main menu >>

Welcome to Tasty Burgers

Place your order here...

1. *Order Burger*
2. *Cancel*
3. *Exit*

Select your option:

2

*Please enter your Receipt Number.
B001*

Your order has been cancelled. Thank you.

<<Press Any Key to show the main menu >>

Welcome to Tasty Burgers

Place your order here...

1. *Order Burger*
2. *Cancel*
3. *Exit*

Select your option:

Technical details: Your manager has instructed you to implement the following C-language features in Stage-A.

Structures – burger – (receipt no, quantity, total_price). Receipt number to be automatically generated, starting from B001 to B0025.

An array of burger structure, of size 25.

Stage – B

In this stage, you are required to enhance the stage-A implementation by

- Allowing customers to order the following types of burgers – Chicken (15\$), Ham (17\$), or Vegie (13\$)
- A 10% discount from the total bill value is offered when five or more burgers are ordered.
- The kiosk should allow users to cancel their orders by entering the Receipt Number.
- Your program should be capable of storing the details of 25 orders at the maximum.

A sample screen:

Welcome to Tasty Burgers

Place your order here...

1. *Order Burger*
2. *Cancel*
3. *Exit*

Select your option:

1

Select the Burger Type

A – Chicken Burger – 15\$

B – Ham Burger – 17\$

C – Vegie Burger – 13\$

X – To return to Main Menu

Select your burger type

A

You have selected Chicken Burger. How many burgers you wish you order?

6

Your total bill value is \$90.00.

Discount 10% - \$9.00

*Final bill values is \$81.00 Your
receipt number is B001.*

Please go to a register and make the payment by quoting the Receipt Number – B001.

<<Press Any Key to show the main menu >>

Welcome to Tasty Burgers

Place your order here...

1. *Order Burger*
2. *Cancel*
3. *Exit*

Select your burger type:

Technical details: Your manager has instructed you to add the following C-language features in Stage-B to accommodate the burger types.

Enumeration – burger-types – (1-Chicken 2-Ham 3-Vegie)

Use the burger type in the Burger Structure.

Structures – burger – (receipt no, Burger type, quantity, total_price).

All other features of Stage-A to be retained.

Stage – C

In this stage, you are required to enhance the stage-B implementation by

- Allowing customers to order different types of burgers in a single order.
- The prices of the burgers are – Chicken (15\$), Ham (17\$), or Vegie (13\$).
- A 10% discount from the total bill value is offered when five or more burgers are ordered.

A sample screen:

*Welcome to Tasty Burgers
Place your order here...*

- 1. Order Burger*
- 2. Cancel*
- 3. Exit*

*Select your option: **1***

Select the Burger Type

A – Chicken Burger – 15\$

B – Ham Burger – 17\$

C – Vegie Burger – 13\$

X – To return to Main Menu

Select your burger type

A

You have selected Chicken Burger. How many burgers you wish you order?

2

Your current bill value is \$30.00.

Press "Y" to add more burgers into your order or Press "N" to process your order now.

Y

Select the Burger Type

A – Chicken Burger – 15\$

B – Ham Burger – 17\$

C – Vegie Burger – 13\$

X – To return to Main Menu

Select your burger type

B

You have selected Ham Burger. How many burgers you wish you order?

4

Your current bill value is \$68.00.

*Press "Y" to add more burgers into your order or Press "N" to process your order now. **N***

Your total bill value is \$98.00.

Discount 10% - \$9.80

*Final bill value is \$88.20 Your
receipt number is B001.*

Please go to a register and make the payment by quoting the Receipt Number – B001.

<<Press Any Key to show the main menu >>

Welcome to Tasty Burger

Place your order here...

1. *Order Burger*
2. *Cancel*
3. *Exit*

Select your burger type:

Technical details: Your manager has instructed you to add the following C-language features in Stage-C to accommodate the feature to order varieties of burger in a single order.

Nested Structure – Order (Receipt No, Total Order Value, Pointer to Burger Structure)

Dynamic Memory Allocation – Both Order structure and Burger structures to be created using dynamic memory allocation concept.

All other features of Stage-B to be retained.

Stage – D

In this stage, you are required to enhance the stage-C implementation by

- Allowing customers to order Burger meals in a single order • The meal options available at Tasty Burgers are:
 - Big Chicken Meal - \$20 – Chicken Burger + Chips + Cold Drink
 - Big Ham Meal - \$ 22 – Ham Burger + Chips + Cold Drink
 - Big Vegie Meal - \$ 18 – Vegie Burger + Chips + Cold Drink.
- This stage should also allow customers to add chips and or cold drinks to their orders.
 - Chips - \$5
 - Cold Drinks - \$3.50
- Discount
 - A 10% discount from the total bill value is offered when five or more burgers are ordered.
 - A 15% discount from the total bill value is offered when the total bill value is above \$100.
 - **Note:** Either discount a or b can be applied to an order and not both at the same time.

A sample screen:

Welcome to Tasty Burgers

Place your order here...

1. *Order Meals*
2. *Order Burgers*
3. *Order Chips*
4. *Order Cold Drinks*
5. *Process Order*
6. *Cancel*
7. *Exit*

Select your option:

1

Select the Meal Type

A – Big Chicken Meal – 20\$

B – Big Ham Meal – 22\$

C – Big Vegie Meal – 18\$

X – To return to Main Menu

Select your Meal type

A

You have selected Chicken Meal. How many meals you wish you order?

2

Your current bill value is \$40.00.

Press "Y" to add more meals into your order or Press "X" to go back to the previous menu. **Y**

Select the Meal Type

A – Big Chicken Meal – 20\$

B – Big Ham Meal – 22\$

C – Big Vegie Meal – 18\$

X – To return to Main Menu

Select your Meal type

C

You have selected Chicken Meal. How many meals you wish you order?

1

Your current bill value is \$58.00.

Press "Y" to add more meals into your order or Press "X" to go back to the previous menu. **X**

Welcome to Tasty Burgers

Place your order here...

1. Order Meals
2. Order Burgers
3. Order Chips
4. Order Cold Drinks
5. Process Order
6. Cancel
7. Exit

Select your option:

3

You have selected Chips. How many chips you wish you order? **1**

Your current bill value is \$63.00.

Welcome to Tasty Burgers

Place your order here...

1. Order Meals
2. Order Burgers
3. Order Chips
4. Order Cold Drinks
5. Process Order
6. Cancel
7. Exit

Select your option:

5

Your total bill value is \$63.00.

Your receipt number is B001.

Please go to a register and make the payment by quoting the Receipt Number – B001.

<<Press Any Key to show the main menu >>

Welcome to Tasty Burgers

Place your order here...

1. Order Meals
2. Order Burgers
3. Order Chips
4. Order Cold Drinks
5. Process Order
6. Cancel
7. Exit

Select your option:

Technical details: Your manager has instructed you to add the following C-language features in Stage-D to accommodate the feature to order Burger Meals and sides to the order.

Structure Chips (chips description, min weight)

Structure Drinks (drinks description, min quantity)

Structure – Meals (Pointer to Burger Structure, Pointer to Chips Structure, Pointer to Drinks Structure)

Nested Structure – Order (Receipt No, Total Order Value, Pointer to Meals structure, Pointer to Chips Structure, Pointer to Drinks Structure)

All other features of Stage-B to be retained.

Additionally

As a last-minute requirement, the management of Tasty Burgers wishes to see the total revenue for a day.

After analysing this new requirement, you and Tom has decided to provide this feature as a hidden option in the main menu.

The management of Tasty Burgers will be able to activate the calculation of the "Total Revenue" feature by entering 9 as the value in the main menu.

To prevent customers from using this feature by accident, a password will be requested when this option is selected from the main menu.

A sample screen:

Welcome to Tasty Burgers

Place your order here...

1. *Order Meals*
2. *Order Burgers*
3. *Order Chips*
4. *Order Cold Drinks*
5. *Process Order*
6. *Cancel*
7. *Exit*

Select your option:

9

Enter the Password:

TastyBurger

Password Accepted

Total Revenue for today is: \$1320.40

<<Press Any Key to show the main menu >>

Welcome to Tasty Burgers

Place your order here...

1. *Order Meals*
2. *Order Burgers*
3. *Order Chips*
4. *Order Cold Drinks*
5. *Process Order*
6. *Cancel*
7. *Exit*

Select your option:

9

Enter the Password:

TotalRevenue

Invalid Password

<<Press Any Key to show the main menu >>

Technical details: Your manager has instructed you to use the following C-language features in Stage-D to accommodate the feature to calculate the total revenue.

Use Recursive Function to calculate the total revenue (All orders – Meals + Burgers + Chips + Drinks).

Note: You need to submit only one stage solution (A/B/C/D).