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كلية العلوم والدراسات الانسانية – الجبيل

Imam Abdulrahman Bin Faisal University

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Fundamentals of Programming

Point. Of Purchase Calculation

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1-Introduction

Our project revolves around enhancing the dining experience on campus. Therefore, we have decided to develop a unique system for university students linked to their academic data. This system will display adjustable menu options to customize individual dietary preferences for each customer. Additionally, we will ensure prompt order processing. After the customer completes their order, their points will be calculated, allowing them to access various offers and discounts.

2-Challenges

Some of the difficulties we faced while writing the program were how to divide and arrange ideas among ourselves, as well as finding errors, then improving each code, collecting the codes in an orderly manner without disrupting the program, and finally presenting the program smoothly to customers.

3-Solution

We solved these difficulties first by working together, understanding each team member's ideas, and focusing on every line of the code to avoid errors of any kind. When we collected the codes, we tried to arrange them accurately and in a way that suited the program so that it was presented to the customer smoothly and understandably.

4-Methods and Explanations

Shahad Hussain AL Dhaif 2230001147.

`void displayMenu(MenuItem menu[], int size, OrderItem order[], int& orderSize, float&total, int& loyaltyPoints, string& userName, string& studentID);`

Functionality: Display a list of items to the user, allowing them to select an item and specify the desired quantity. Once the user makes a selection, the chosen item is added to the order, and the order size is updated accordingly.

- Parameters:

- menu: Array containing menu items.

size: Size of the menu array.

- order: Array containing ordered items.

-orderSize: Number of items in the order (by reference).

- total: Total price (by reference).- loyaltyPoints: Loyalty points (by reference).

- userName: User's name (by reference).

- studentID: Student ID (by reference).

`void choosePickupTime();`

Functionality: The user is presented with options for when to receive the order, numbered as 1, 2, and 3. It enables the user to select the desired time of receipt by entering the corresponding option number. Upon making a choice, a confirmation message is displayed to the user.

Parameters: None.

`void displayOrder(OrderItem order[], int orderSize)`

Functionality: Displays a numbered list of the items in the user's current order, showing details such as the name, quantity, and price of each item.

Parameters:

- order: Array containing ordered items.

- orderSize: Number of items in the order.

//Yara Ali Alshehri 2230006494

```
float calculateTotal(OrderItem order[], int size,  
int& loyaltyPoints);
```

Functionality:

Calculate the total of the order based on the item and its quantity and store it into the float total and update the loyalty points based on the total amount.

Parameters:

- Order[]: array containing ordered items.
 - Size: size of the order array .
 - loyaltyPoints:represents loyalty points (by reference).
- ```
float applyDiscount(float total, int points);
```

Functionality:

applies discount based on the total,if the points=15 it applies a 10 SAR discount ,if the points=10 it applies a 5 SAR discount,and if the points=5 it applies a 3 SAR discount , also a confirmation text appears after any discount applied,other than that it will display “You don't get any discount!” Text

Parameters:

- total:total cost of the order .
- Points: represents loyalty points.

**// Fatimah Majid Almar 2230004016.**

```
void addItem(OrderItem order[], int& orderSize, MenuItem foodMenu[], int foodSize, MenuItem drinksMenu[], int drinksSize, MenuItem dessertsMenu[], int dessertsSize, float& total, int& loyaltyPoints, string& userName, string& studentID);
```

The function `addItem` adds a new item to the order. It prompts the user to choose the menu they want to order from (food menu, drinks menu, or desserts menu), then calls the appropriate `displayMenu` function to show the selected menu. After choosing an item from the menu, it adds it to the order, and then displays the updated order using the `displayOrder` function.

- Parameters:

- `OrderItem order[]`: Array representing the current order.

- `int& orderSize`: Reference to an integer representing the size of the current order.

- `MenuItem foodMenu[], MenuItem drinksMenu[], MenuItem dessertsMenu[]`: Arrays containing the available items in the food, drinks, and desserts menus.

- `int foodSize, int drinksSize, int dessertsSize`: Integers representing the sizes of the respective menus.

- `float& total`: Reference to a float representing the total cost of the order.

- `int& loyaltyPoints`: Reference to an integer representing the user's loyalty points.

- `string& userName, string& studentID`: References to strings representing the user's name and student ID.

```
void removeItem(OrderItem order[], int& orderSize);
```

As for the function `removeItem`, it removes an item from the order. It starts by displaying the current order using the `displayOrder` function so the user can select the item they want to remove. Then, it updates the order by removing the selected item, and finally, it displays the updated order again.

- Parameters

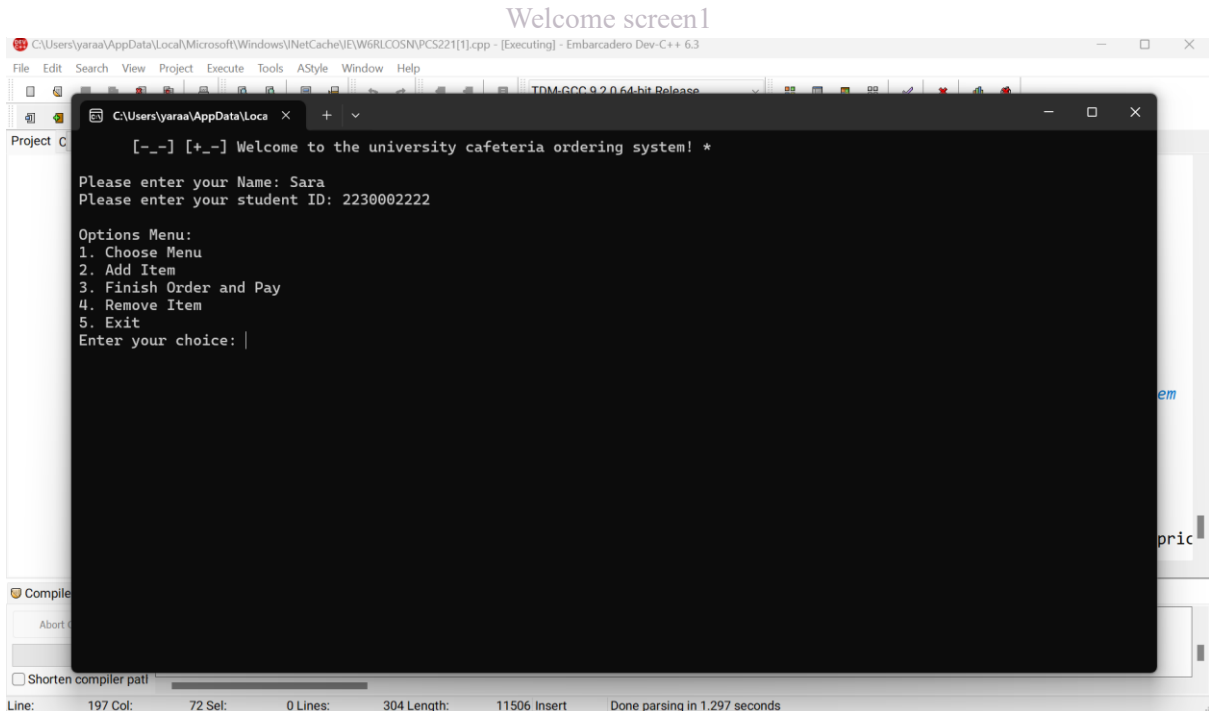
- `order[]`: Array containing ordered items.

- `orderSize`: Number of items in the order

## 5-Result and Output Screens

- 1- The user will be welcomed, then the customer will be asked to enter his data (name and university number), then the main menu will appear to the user and he will be allowed to choose from it.

Welcome screen1

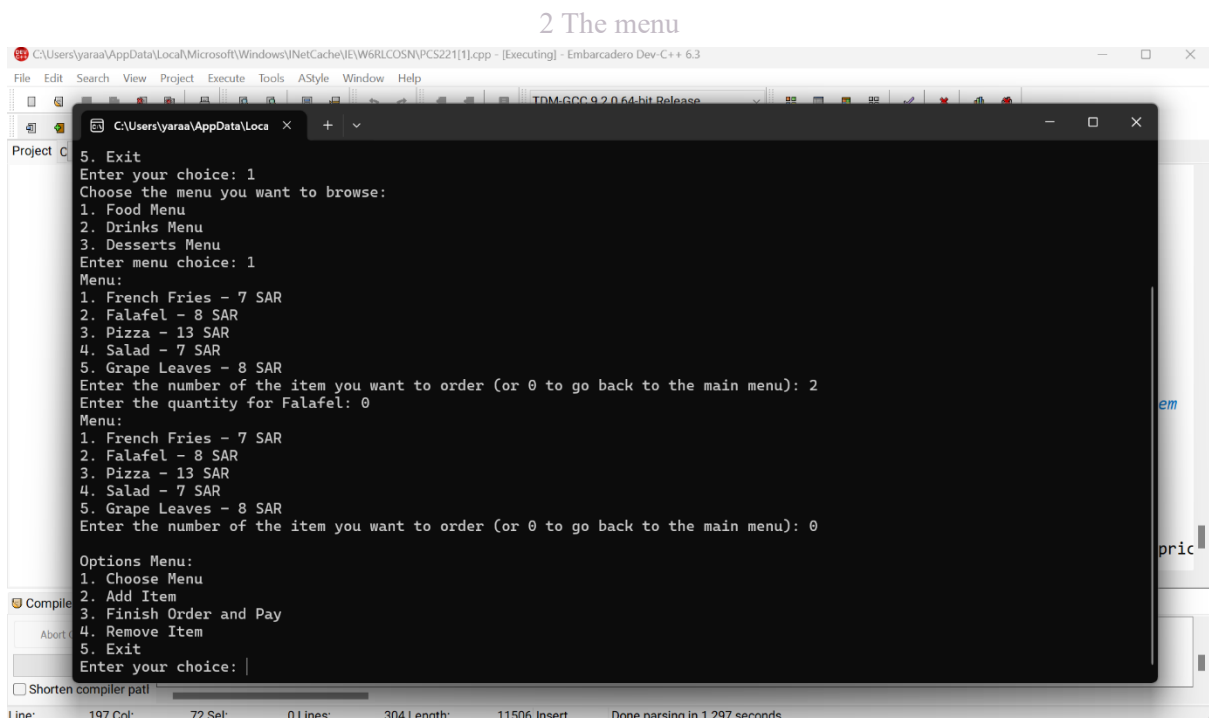


```
[_ _] [+ _] Welcome to the university cafeteria ordering system! *
Please enter your Name: Sara
Please enter your student ID: 2230002222

Options Menu:
1. Choose Menu
2. Add Item
3. Finish Order and Pay
4. Remove Item
5. Exit
Enter your choice: |
```

- 2- If the user chooses option 1, three submenus appear Food, Drinks, and Desserts. He can then make a selection from the menus and specify the quantity required.
- 3- After completing the order, the user can enter 0 to return to the main menu.

2 The menu

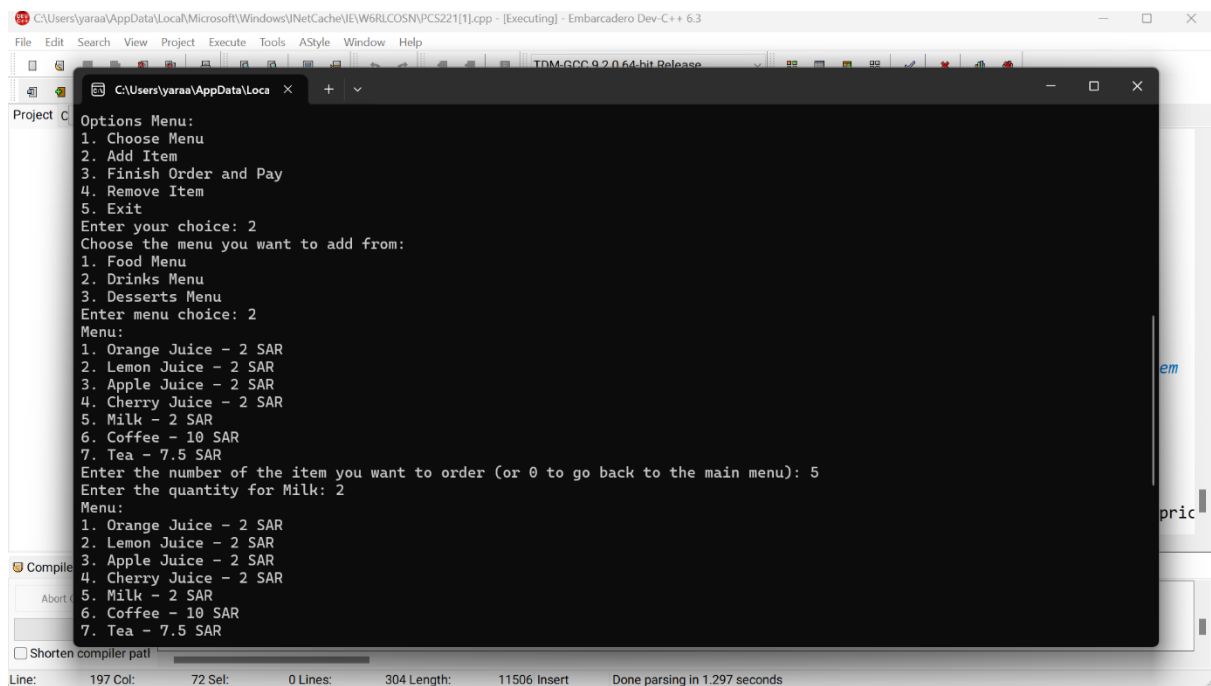


```
5. Exit
Enter your choice: 1
Choose the menu you want to browse:
1. Food Menu
2. Drinks Menu
3. Desserts Menu
Enter menu choice: 1
Menu:
1. French Fries - 7 SAR
2. Falafel - 8 SAR
3. Pizza - 13 SAR
4. Salad - 7 SAR
5. Grape Leaves - 8 SAR
Enter the number of the item you want to order (or 0 to go back to the main menu): 2
Enter the quantity for Falafel: 0
Menu:
1. French Fries - 7 SAR
2. Falafel - 8 SAR
3. Pizza - 13 SAR
4. Salad - 7 SAR
5. Grape Leaves - 8 SAR
Enter the number of the item you want to order (or 0 to go back to the main menu): 0

Options Menu:
1. Choose Menu
2. Add Item
3. Finish Order and Pay
4. Remove Item
5. Exit
Enter your choice: |
```

- 4- If the user wants to add more items to their order, they can press 2 to go back to the submenus and continue adding items until they are finished, then press 0 to return to the main menu.

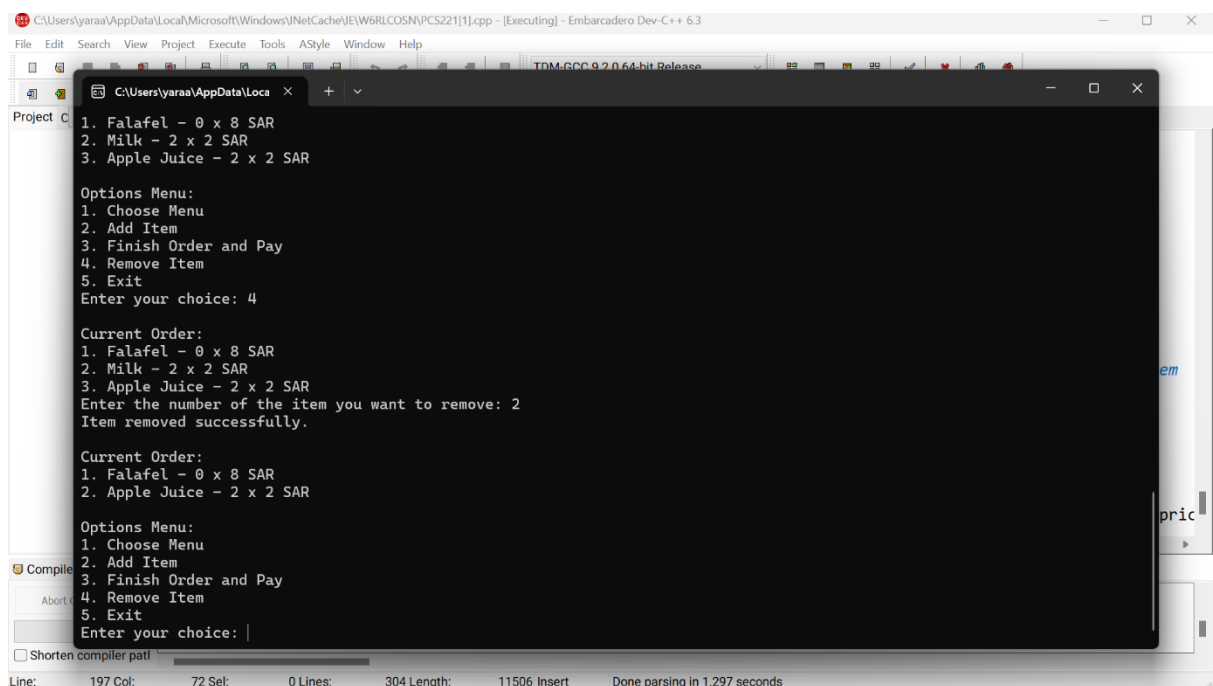
### 3Add



```
C:\Users\yaraa\AppData\Local\Microsoft\Windows\NetCache\IE\W6RLCOSN\PCS221[1].cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
C:\Users\yaraa\AppData\Local\Microsoft\Windows\NetCache\IE\W6RLCOSN\PCS221[1].cpp - [Executing] - Embarcadero Dev-C++ 6.3
Options Menu:
1. Choose Menu
2. Add Item
3. Finish Order and Pay
4. Remove Item
5. Exit
Enter your choice: 2
Choose the menu you want to add from:
1. Food Menu
2. Drinks Menu
3. Desserts Menu
Enter menu choice: 2
Menu:
1. Orange Juice - 2 SAR
2. Lemon Juice - 2 SAR
3. Apple Juice - 2 SAR
4. Cherry Juice - 2 SAR
5. Milk - 2 SAR
6. Coffee - 10 SAR
7. Tea - 7.5 SAR
Enter the number of the item you want to order (or 0 to go back to the main menu): 5
Enter the quantity for Milk: 2
Menu:
1. Orange Juice - 2 SAR
2. Lemon Juice - 2 SAR
3. Apple Juice - 2 SAR
4. Cherry Juice - 2 SAR
5. Milk - 2 SAR
6. Coffee - 10 SAR
7. Tea - 7.5 SAR
Line: 197 Col: 72 Sel: 0 Lines: 304 Length: 11506 Insert Done parsing in 1.297 seconds
```

- 5- If the user wants to delete something from his order, he can press 4, which displays the items he has selected and prompts him to choose the item he would like to remove.

### 4Remove

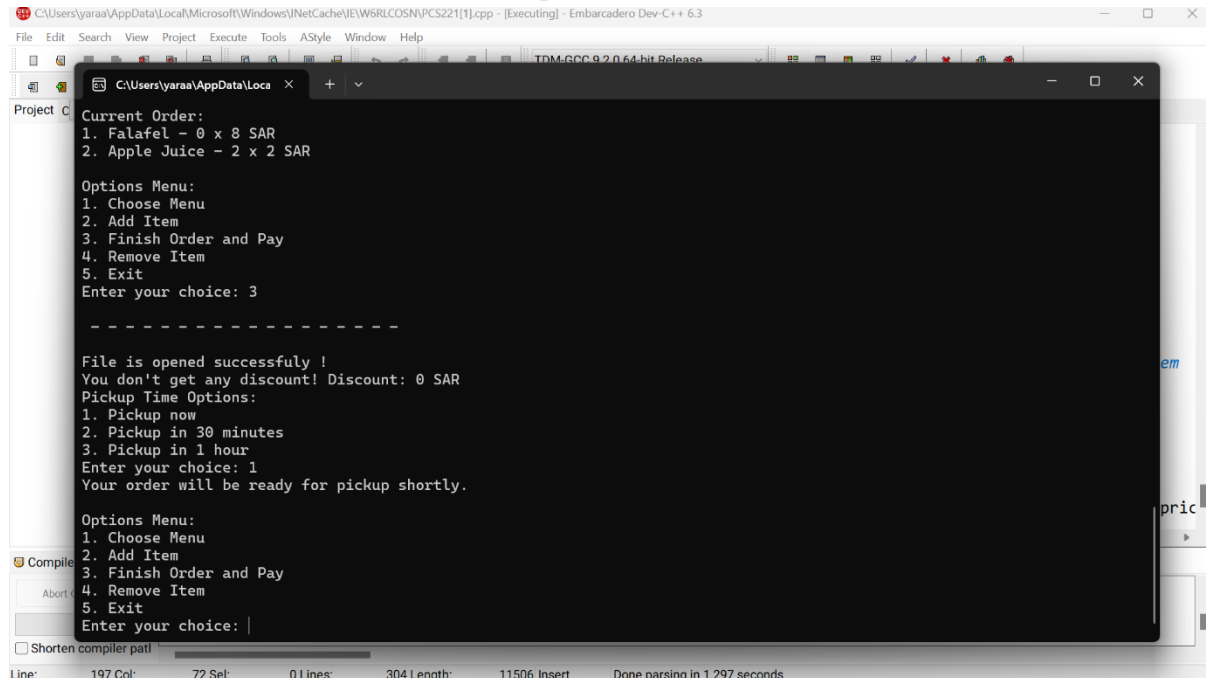


```
C:\Users\yaraa\AppData\Local\Microsoft\Windows\NetCache\IE\W6RLCOSN\PCS221[1].cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
C:\Users\yaraa\AppData\Local\Microsoft\Windows\NetCache\IE\W6RLCOSN\PCS221[1].cpp - [Executing] - Embarcadero Dev-C++ 6.3
1. Falafel - 0 x 8 SAR
2. Milk - 2 x 2 SAR
3. Apple Juice - 2 x 2 SAR
Options Menu:
1. Choose Menu
2. Add Item
3. Finish Order and Pay
4. Remove Item
5. Exit
Enter your choice: 4
Current Order:
1. Falafel - 0 x 8 SAR
2. Milk - 2 x 2 SAR
3. Apple Juice - 2 x 2 SAR
Enter the number of the item you want to remove: 2
Item removed successfully.
Current Order:
1. Falafel - 0 x 8 SAR
2. Apple Juice - 2 x 2 SAR
Options Menu:
1. Choose Menu
2. Add Item
3. Finish Order and Pay
4. Remove Item
5. Exit
Enter your choice: |
Line: 197 Col: 72 Sel: 0 Lines: 304 Length: 11506 Insert Done parsing in 1.297 seconds
```



- 6- If he finishes and wants to pay, he chooses number 3 to show the user the total price and the loyalty points earned. Depending on your loyalty points, discounts or free items may apply. The user is then prompted to specify the expected pickup time for his order.

#### 5Total price and discounts



```
C:\Users\yaraa\AppData\Local\Microsoft\Windows\NetCache\E\W6RLCOS\PCS221\1\1.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
C:\Users\yaraa\AppData\Local\Microsoft\Windows\NetCache\E\W6RLCOS\PCS221\1\1.cpp
Project C
Current Order:
1. Falafel - 0 x 8 SAR
2. Apple Juice - 2 x 2 SAR

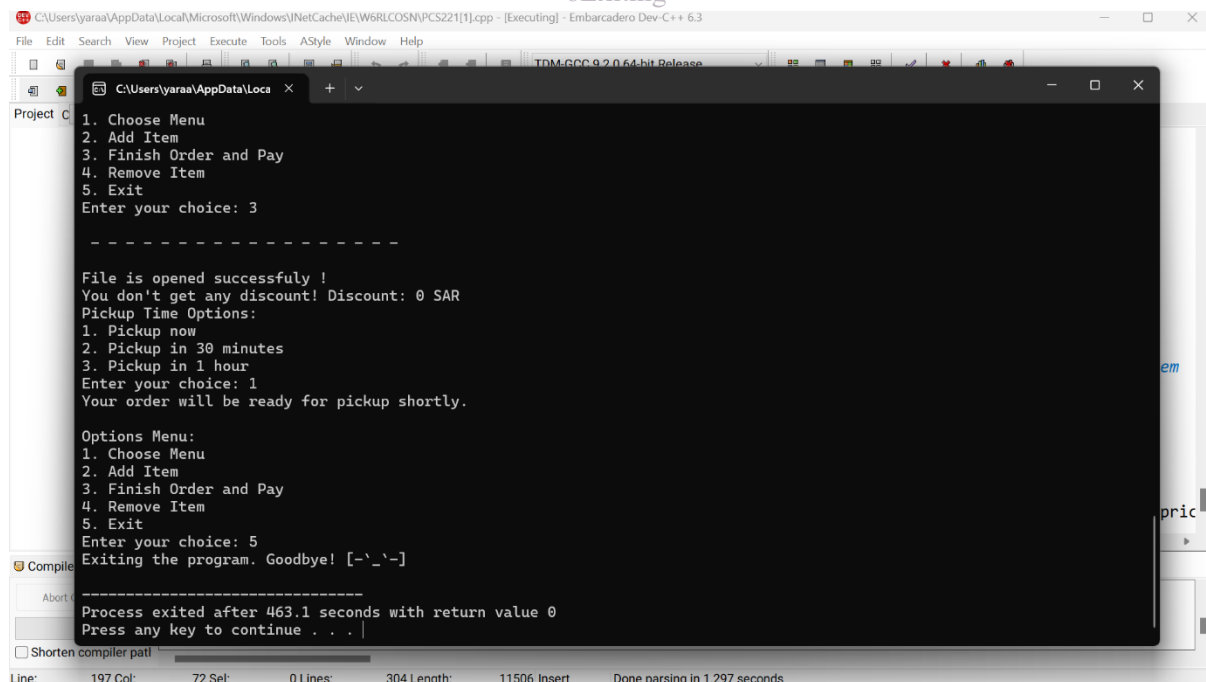
Options Menu:
1. Choose Menu
2. Add Item
3. Finish Order and Pay
4. Remove Item
5. Exit
Enter your choice: 3

File is opened successfully !
You don't get any discount! Discount: 0 SAR
Pickup Time Options:
1. Pickup now
2. Pickup in 30 minutes
3. Pickup in 1 hour
Enter your choice: 1
Your order will be ready for pickup shortly.

Options Menu:
1. Choose Menu
2. Add Item
3. Finish Order and Pay
4. Remove Item
5. Exit
Enter your choice: |
```

- 7- Before the end, if the user wants to terminate the request, the user can enter the number 5 to stop the program and it will show him “Exiting.!the program. Goodbye”

#### 6Exiting



```
C:\Users\yaraa\AppData\Local\Microsoft\Windows\NetCache\E\W6RLCOS\PCS221\1\1.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
C:\Users\yaraa\AppData\Local\Microsoft\Windows\NetCache\E\W6RLCOS\PCS221\1\1.cpp
Project C
1. Choose Menu
2. Add Item
3. Finish Order and Pay
4. Remove Item
5. Exit
Enter your choice: 3

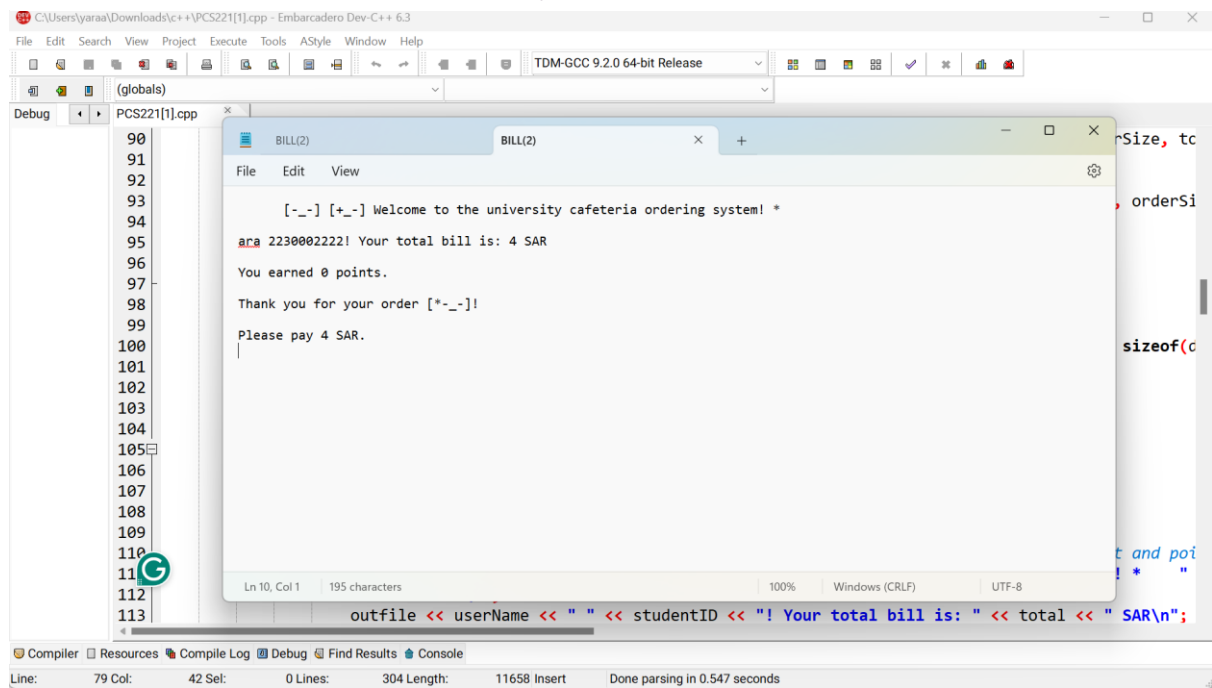
File is opened successfully !
You don't get any discount! Discount: 0 SAR
Pickup Time Options:
1. Pickup now
2. Pickup in 30 minutes
3. Pickup in 1 hour
Enter your choice: 1
Your order will be ready for pickup shortly.

Options Menu:
1. Choose Menu
2. Add Item
3. Finish Order and Pay
4. Remove Item
5. Exit
Enter your choice: 5
Exiting the program. Goodbye! [-\'_\'-]

Process exited after 463.1 seconds with return value 0
Press any key to continue . . . |
```

8- Finally, when you open the file, your saved invoice will appear as shown.

### 7The invoice



The screenshot shows a C++ IDE with a file named `PCS221[1].cpp` open. The output window, titled `BILL(2)`, displays the following text:

```
[!_] [+!] Welcome to the university cafeteria ordering system! *
ara 2230002222! Your total bill is: 4 SAR
You earned 0 points.
Thank you for your order [+!]!
Please pay 4 SAR.
```

The IDE's status bar at the bottom indicates the current line is 79, column 42, with 0 lines selected, a total length of 304 characters, and 11658 insertions. It also shows the parsing time as 0.547 seconds.

## 6-Timetable

| Week  | Task                                                                                                                                                                                                                                                                                                                                                                             |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Week1 | During the first week, the team got together and started thinking about interesting topics for programs that would benefit the community. We chose ideas that would be viable for their success and then jointly defined our goals and created the important steps to achieve them. They include general organization and organization.                                          |
| Week2 | In the second week, the team begins planning the project implementation and distributing tasks. Then we identified potential problems that could arise during the programming process and developed a comprehensive plan that specifies the steps required to create the project.                                                                                                |
| Week3 | During the third week, the team begins implementing the project according to the plans previously drawn up and designed. Each member began writing his codes and testing their functions, and we addressed the errors that occurred during programming. We worked together to ensure the project was implemented efficiently and effectively, with a focus on achieving success. |
| Week4 | In the fourth and final week, we conducted a comprehensive code review to ensure that the project was implemented correctly and was efficient and working. The team then created a report detailing the project's objectives and results, in addition to its steps, final design, and outputs                                                                                    |

## 7-Conclusion

In conclusion, and after all the difficulties we went through during the work of this program, the university cafeteria is very important, as it is a source of food for all university employees during long daily working hours. This program will solve the problems of crowding, delayed orders, and customer dissatisfaction because it will enable everyone to order from their own devices and receive their orders on time. What is required without any problems or errors occurring in applications, which helps to increase the quality of the university.