

2019 Paper 1A

Q1.

“Taste Me” pizza shop makes pizzas in two types and two sizes as shown below.

Pizza Type	Large (LKR)	Medium(LKR)
1 – Classic range	1720.00	975.00
2 –Signature range	1820.00	1000.00

This pizza shop offers discounts for the customers as given below.

Credit card	20%
Loyalty card	15%
Online orders	5%
Other	0%

You are asked to write a program to print the invoice for the pizza orders. One invoice can have many orders of the same customer.

Write a C program to do the following.

- Input the pizza type (1 or 2), size (L or M) and the number of pizzas the customer wants to buy from the keyboard. Display an error message if the user inputs an invalid pizza type or size.
- Calculate the cost of the pizzas purchased.
- Modify the program to allow to enter details (pizza type (1 or 2), size (L or M) and number of pizzas) of multiple orders. Stop entering the order details when the customer input -1 as the pizza type.
- Allow the user to input from the keyboard, whether the customer uses a credit card (C), loyalty card (L) or whether it is an online order (O) as shown below. A customer can belong to many categories. But entitle for only one discount. Select the highest discount percentage.

```
Are you paying by credit card (Y/N)? N Are you
a loyalty customer (Y/N)? Y
Is this an online order (Y/N)? N
```

- Calculate and display the following
 - Bill amount – total amount of the pizzas purchased
 - Discount – discount amount based on the customer type
 - Net amount – Amount to be paid after discount

Sample output of the program

```
Input pizza type : 1
Input the pizza size : L
Input the number of pizzas : 2

Input pizza type : 1
Input the pizza size : M
Input the number of pizzas : 1

Input pizza type : -1

Are you paying by credit card (Y/N)? N
Are you a loyalty customer (Y/N)? Y
Is this an online order (Y/N)? N

Total bill amount: 4415.00
Discount:662.25
Net amount:3752.75
```

Q2.Part_1.

Write a C program to fill the following array to represent a Fibonacci series.

0	1	1	2	3	5	8	13	21	34
---	---	---	---	---	---	---	----	----	----

- Create an array called **fib** of size 10.
- Initialize first two array elements with 0 and 1 respectively.
- Fill the other array elements as follows using a **repetition** structure.

```
fib[2] = fib[0] + fib[1]
fib[3] = fib[1] + fib[2]
fib[4] = fib[2] + fib[3]
```

```
.....
.....
```

Display the output as shown in the above figure.

Q2.Part_2.

A 2D array is used to store the details of the rating of 3 movies given by 4 reviewers. Some sampled data is shown below.

		Reviewers			
		1	2	3	4
Movies	1	4	6	2	5
	2	7	9	4	8
	3	6	9	3	7

Write a C program to do the following.

- Declare an array called **ratings** to store the details of the rating of 3 movies given by 4 reviewers.
- Read the movie ratings from the keyboard and store the data in the array.
- Display the array in tabular format.
- For each movie display the movie number and the average rating.
- Find and display the movie which received highest average rating.

Q3.

Write a C program to find out the amount you earn after investing money on a trust fund for a given period.

- Write a function called `calcAnnualInterest()` to calculate the interest amount the customer gets at the end of the year when the annual interest rate and the amount is passed as parameters. If the amount is above Rs. 1,000,000.00, an additional 0.5% is added to the interest rate.
- ```
float calcAnnualInterest(float interestRate, float amount);
```

  

```
interest = amount * interest rate /100
```
- Write a function called `findTotalAmount()` to return the total amount saved at the end of the year.

```
float findTotalAmount(float interestRate, float amount);
```

Hint: Total amount = interest + amount

Use `calcAnnualInterest` function to find out the interest earned.

- d) Write a function called `testTotalAmount()` which contains two assert statements to check the function implemented in section b) above.

```
void testTotalAmount();
```

- e) In your main function,
- Call `testTotalAmount()` function
  - Input the amount to be invested and the annual interest rate from the keyboard.
  - Customer is planning to invest the amount compounded yearly at the given interest rate for five years.  
i.e. (Amount + interest) is invested for the next year.

Display the total amount earned at the end of each year using the above functions.

Sample output is given below.

```
Enter Initial Amount to be invested : 10000.00
Enter Annual interest Rate(in percentage) : 10
```

```
Amount after year 1 : 11000.00
Amount after year 2 : 12100.00
Amount after year 3 : 13310.00
.....
```

#### Q4.

A text file can be used to record the details of loyalty customers. Follow the following steps to create a file called "loyalty.dat"

- a) Create a file called "loyalty.dat" using the vi editor with the following data.

|                   |
|-------------------|
| 7728369210 Dinesh |
| 7773457219 Subash |

- b) Write a C program to

- Input the name and the loyalty number from the keyboard.
- Read the file and check whether the loyalty number already exists.
- If the new number does not exist, append the loyalty number and the name to the file.
- Add details of five people and store those in the file if needed