



National University of Computer & Emerging Sciences, Karachi
Fall-2021

School of Computing
Lab Midterm

10th November 2021, 08:30 am – 10:00 am

Course Code: CL1002	Course Name: Programming Fundamentals
Instructor Name: Sobia Iftikhar	
Student Roll No: 21K-4580	Section No: 2

Instructions:

- Return the question paper and make sure to keep it inside your answer sheet.
- Read each question completely before answering it. There are 3 questions and 2 pages.
- In case of any ambiguity, you may make assumption. But your assumption should not contradict any statement in the question paper.
- You are not allowed to write anything on the question paper (except your ID and group).
- For Exam submission: Create a folder named "your student-id" i.e. (K21-0100). Paste the .c file for each question named as Q1.c, Q2.c and on so in that folder.

Max Marks: 30 Points

Time: 90 minutes.

[40 mins, 10 Points]

Question#1

Welcome to the geometry section of mathematics. You are hired to make it easy for students of class V by designing a program in C using nested switch statements. In which your prompts the ID of shape and it provides the desired parameter of shape.
Display the following menu and wait for the user response. Repeat the menu display and the calculation as long as the user is not typing 5.

- 1 Triangle
- 2 Rectangle

- 3 Square
- 4 End program

Output will be:

Enter your choice: 3

You have chosen a square please enter what you want to calculate:

Press 1 for area : 1

Enter the value for side: 5

Area = 5 * 5

Square area is = 25

Press 2 for perimeter: 2

Enter the value for side: 5

Area = 4*5

Square perimeter is = 20

Press 3 for exit.

Shapes	Area	perimeter
Triangle	height*base	side1+side2+side3
Rectangle	Length*width	2Length+2width
square	Side*side	4*side

Question#2

[30 mins, 5*2=10 Points]

- a) ALI learned how to convert the decimal number into binary in 10th standard now he took a admission in Computer science university where he want make a dynamic calculator for decimal binary, so what you think what will be the logic? Write a Program that will convert a number from decimal to binary,

//binary number into decimal. For example, 101 in decimal is $1*2^2+0*2^1+1*2^0$ i.e., 5.

Enter the decimal number

16

This is the binary 10000 representation of 16

Process exited after 7.643 seconds with return value 0
Press any key to continue . . .

Sample-output

- b) Write a c program that will investment amount from user and that amount Private limited company invests in a savings account yielding 8% interest. Assuming that all interest is added on deposit in the account each year, calculate and print the amount of money in the account at the end of each year for 10 years.
- Use the following formula for determining these amounts:
 - $a = p(1 + r)^n$ where p is the original amount invested (i.e., the principal)
 - r is the annual interest rate (for example, .08 for 8%)
 - n is the number of years a is the amount on deposit at the end of the n th year.

```
How much amount you want to invest in your saving account: 1000
Amount of money in the account at the end of the 1 year: 1080
Amount of money in the account at the end of the 2 year: 1166
Amount of money in the account at the end of the 3 year: 1259
Amount of money in the account at the end of the 4 year: 1360
Amount of money in the account at the end of the 5 year: 1469
Amount of money in the account at the end of the 6 year: 1586
Amount of money in the account at the end of the 7 year: 1713
Amount of money in the account at the end of the 8 year: 1850
Amount of money in the account at the end of the 9 year: 1997
Amount of money in the account at the end of the 10 year: 2158
```

Process exited after 3.181 seconds with return value 0
Press any key to continue . . .

Sample-output

Question#3

[20 mins, 10 Points]

K-Electric (KE) has powered Karachi for over one hundred years. K-Electric (KE) is the only vertically-integrated power utility in Pakistan and this K.E board charges the following rates for the use of electricity: for the first 200 units 0.80 per unit; for the next 100 units 0.90 paise per unit; beyond 300 units Rs 1.00 per unit. All users are charged a minimum of Rs. 100 as meter charge. If the total amount is more than Rs 400, then an additional surcharge of 15% of total amount is charged.

Write a program using conditional statements to read the name of the user, number of units consumed and print out the charges.

```
enter the name of consumer
xyz
enter the number of units consumed
300
consumer name=xyz
units consumed =300
billamount=350.000000 rupees
```