 COMSATS Institute of Information Technology, Sahiwal

**DEPARTMENT OF COMPUTER SCIENCE**

**Final Lab Examination FA17**

**Instructor: Hina Farooq** **Time: 60 Min.**

**Course: ICP**   **Marks: 50**

**Program: BS (CS)-B**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Reg. #: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

## Question No 1: [10 Marks.]

Write a program that containing **two dimensional array** of length 2 (Representing two matrixes). Write a function which will multiply the values of two matrixes and display the result. For example,

1. 2 **\***  3 4 **=** (1\*3)+(2\*1) (1\*4)+(2\*1)

3 4 1 1 (3\*3) + (4\*1) (3\*4) + (4\*1)

## Question No 2: [10 Marks]

ABC University offers admission in three disciplines

1) **Computer Science**

2) **Software Engineering**

3) **Telecom Engineering**.

An admission test has already been conducted by the university. The university provides an interface to the interested candidates where they can check their eligibility for the disciplines offered by the university.

Eligibility criteria for the offered programs is:

* Computer Science (70% marks)
* Software Engineering (85% marks)
* Telecom Engineering (80%)

Formula for calculating the eligibility percentage is:

(Admission test marks percentage x 0.20) + (Matric marks percentage x 0.30) + (Intermediate marks percentage x 0.50)

Your task is to:

Write a c++ program to implement the above mentioned interface for eligibility assessment by Using **Struct ABC also having CS, SE, TE function to utilized ABC.**

* Your program should provide the user with options to choose the degree program for admission e.g.

Enter ‘**c**’ for Computer Science

Enter ‘**s**’ for Software Engineering

Enter ‘**t**’ for Telecom Engineering

* After taking user’s choice of degree program, the program should ask the user to enter his/her marks percentages of admission test, matric and intermediate results
* After that, program should calculate the eligibility percentage according to the provided formula and show the user if he/she is eligible for the selected degree program or not
* For the eligible candidates, the program should show the message **“Congratulations! You are eligible for the selected program”** and for non-eligible candidates the program should show **“Sorry! You could not qualify for the selected program”**
* If the user enters a choice other than ‘c’, ‘s’, or ‘t’, the program should show the following error message: **“Invalid input! Enter the correct input option again”**

**Press any key to continue...**

* On pressing any key from the keyboard, the program should start again from the beginning
* The program should keep showing the same error message until the user enters one of the correct inputs
* At the end of the program, the program should ask the user if he/she wants to check eligibility for another degree program. If the user presses y or Y, the program should start again from the beginning, or terminate otherwise

**Note: Must use structure and function otherwise marks as zero.**

## Question No 3 [10 Marks]

Write a C++ program which repeatedly asks the user to enter their contact numbers. Create a **string** variable named “Phone\_No” and take the input in the following pattern: “+92423672123” where the first three characters represent country code (e.g., +92 as shown in the example pattern), next two characters (e.g., 42 according the shown example number) represent the city code, while next 7 characters represent the actual number.

Your task is to display appropriate messages for the numbers belonging to three cities: Islamabad (having city code 51), Lahore (city code 42), and Karachi (city code: 21). Any number having different country code or city code must be reported as “Un-known number“. Please also ensure that the user must enter the number according to the shown pattern only and the size of the input string must be 12 characters.

* Use **classes** concepts with the help of Objects and **Pointers** in the Program.

**Sample Inputs:**

Enter a number: +92214352682

**Sample Outputs:**

This number belongs to Karachi

Do you want to enter another number (y/n): n

End of program. Bye!

## Question No 4 [20 Marks]

Viva.

--------------------------------Good Luck------------------------------