National University of Computer and Emerging Sciences

Assignment # 01

Programming Fundamentals
Section B&D
Due Date: 16-OCT-19 (11:55pm)

Department of Computer Science

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Semester	Fall 2019

Task1:

Input a character from the user and displays its ASCII number on the screen;

Task2:
Make a simple calculator(+,-,*,/,%) using switch statement.

Task3:
Write a code in which you will take a, b and c as an input where a, b and c are part of the quadratic equation i.e. $ax^2 + bx + c$, and tell whether the roots of the quadratic equation are equal, unequal or imaginary.

Hint: Google the word "Discriminant".

Task4:
Write a code in which you will input first character of your name in variable char of type character, and show whether it is a vowel or not.

Example: If my name is "Hamza" so here char='H' and it is not a vowel, if the name is "Iqbal" then yes it is a vowel.

Task5:
Write a pseudocode to Find the biggest of three Numbers.

Task6:

Write a pseudocode to Swap two variables without using a variable.

Task7:

Make A User Driven Menu Program to ask user to perform banking activities.

Choose Initial amount as 10000 Rs.

You have first 3 options, make account, deposit money, withdraw money, exit.

Account has two types saving and checking.

And Show All Information at the end of the program.

You can go forward and backward from the menu at any case.

Task8:

Take input from user of every data type and show the data type size on the screen.

Task9:
Write the difference between abs() and fabs() function.

TYPE in comments and also show with the help of code.

Task10:
Take a number input from user and show the number up to 2,3,4,5,6,7 decimal places.

Task11:
Write a program to prompt user to enter month and year. Your program should display the number of days in the month of that year. For example, if user enters 2 and 2000, the output will be 29 days.

Task12:

Write a program for a bottle vending machine in which you have to insert amount in the machine (take amount as an input from the user). It will ask you then with a choice of hot drinks and cold drinks. If user selects cold drinks then allow him to choose among 5 beverages (Coke, Water, Sprite, Pepsi, mineral water). Else allow him to choose among 4 beverages (Black Tea, Coffee, Green Tea, Cappuccino). Output which beverage they chose, its cost and remaining amount after purchase of that drink. Machine will print "Out of money" if the amount entered by the user is less than the cost of drink he's purchasing. Price of each drink will be   Rs. 60/- *(Note: Your program must be menu driven and you should display drink name followed by its price).*

Task13:

Write a program that prompts the user to input an integer between 0 and 35. If the number is less than or equal to 9, the program should output the number; otherwise, it should output A for 10, B for 11, C for 12 . . . and Z for 35.

Task14:

Re-write the following code using ternary operator and switch statements instead of if-else.

```cpp
int num1, num2, num3;
cout << "Enter 1st number: ";
cin >> num1;
cout << "Enter 2nd number: ";
cin >> num2;
cout << "Enter 3rd number: ";
cin >> num3;

if (num1 > num2)
{
    if (num1 > num3)
    {
        cout << "num1";
    }

    else
    {
        if (num1 == num3)
        {
            cout << "num1 & 3";
        }
}
```

```cpp
                                    else
                                    {
                                            cout << "num3";
                                    }
                            }
                    }


            else
            {
                    if (num2 > num3)
                    {
                            cout << "num2";
                    }



                    else
                    {
                            if (num2 == num3)
                            {
                                    cout << "num2 & 3";
                            }


                            else
                            {
                                    cout << "num3";
                            }
                    }
            }
            cout << endl;
```

Task15:

Write a program to find the Maximum value for a variable of type unsigned int. (use bitwise operator '~' operator)

Task16:

Write a program to check if two numbers are equal without using arithmetic operators or comparison operators (use bitwise operator 'XOR')

Task17:

Write a C program to input electricity unit charge and calculate the total electricity bill according to the given condition:

For first 50 units Rs. 0.75/unit
For next 100 units Rs. 0.95/unit
For next 100 units Rs. 1.20/unit
For unit above 250 Rs. 1.50/unit
An additional surcharge of 20% is added to the bill.

Task18:

The explosive growth of Internet communications and data storage on Internet-connected computers has greatly increased privacy concerns. The field of cryptography is concerned with coding data to make it difficult (and hopefully—with the most advanced schemes—impossible) for unauthorized users to read. In this exercise you'll investigate a simple scheme for encrypting and decrypting data. A company that wants to send data over the Internet has asked you to write a program that will encrypt it so that it may be transmitted more securely

All the data is transmitted as four-digit integers. Your application should read a four-digit integer entered by the user and encrypt it as follows: Replace each digit with the result of adding 7 to the digit and getting the remainder after dividing the new value by 10. Then swap the first digit with the third, and swap the second digit with the fourth. Then print the encrypted integer. Write a separate application that inputs an encrypted four-digit integer and decrypts it (by reversing the encryption scheme) to form the original number

Task19:

Tell the precedence of each statement using precedence rules.

   a) $x = 3 + 4 + 5$;
   b) $x = y = z$;
   c) z *= ++y + 5;

   d) a || b && c || d;

Task20:
     TELL WHAT THEY FUNCTIONS DO USING C++ EXAMPLE AND DEFINATION IN COMMENTS.

iomainp function (Setw, Setfill , fixed , showpoint)

Task21(Tell the output):

```
// 2  // Preincrementing and postincrementing.
 3  #include <iostream>
 4  using std::cout;
 5  using std::endl;
 6
 7  int main()
 8  {
 9    int c;
10
11
12    c = 5;
13    cout << c << endl;
14    cout << c++ << endl;
15    cout << c << endl;
16
17    cout << endl;
18
19
20    c = 5;
21    cout << c << endl;
22    cout << ++c << endl;
23    cout << c << endl;
24    return 0;
```

Instructions:

- Make a word file and put all your codes with proper screenshots in it.
- Word file format should be '**section_rollNo_assignmentNo**' for example C_16F8295_2
- The Questions should be in order, otherwise -5.

Guidelines

· A single violation of guideline will lead to Zero mark in your assignment.
· You will have maximum marks if you have done all of the tasks.
· Only ".doc" file should be uploaded on slate, Assignment would not be accepted via email, Facebook or USB flash drive etc.
· Do not zip your assignment it should be uploaded as individual file in following format. "RollNo_Assignment_No.doc"
· Paste all the required outputs, codes etc. in the single .doc file.
· Deadlines should be kept in mind no extension in assignment dates
· This is an individual assignment. PLAGARISM IS NOT ACCEPTABLE!
- **Use given cover page format**

· Follow the instructions as it is, otherwise your assignment would not be accepted at all.

HAPPY CODING ☺