**SINDH MADRESSATUL ISLAM UNIVERISTY, KARACHI**

**DEPARTMENT OF SOFTWARE ENGINEERING**

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**CSC103 - PROGRAMMING FUNDAMENTALS**

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**SECTION SE1A/SE1B/SE1C/CS1D[e]**

# LAB MANUAL 05

# CONDITIONAL STRUCTURES IN C

# CONDITIONAL STATEMENTS IN C

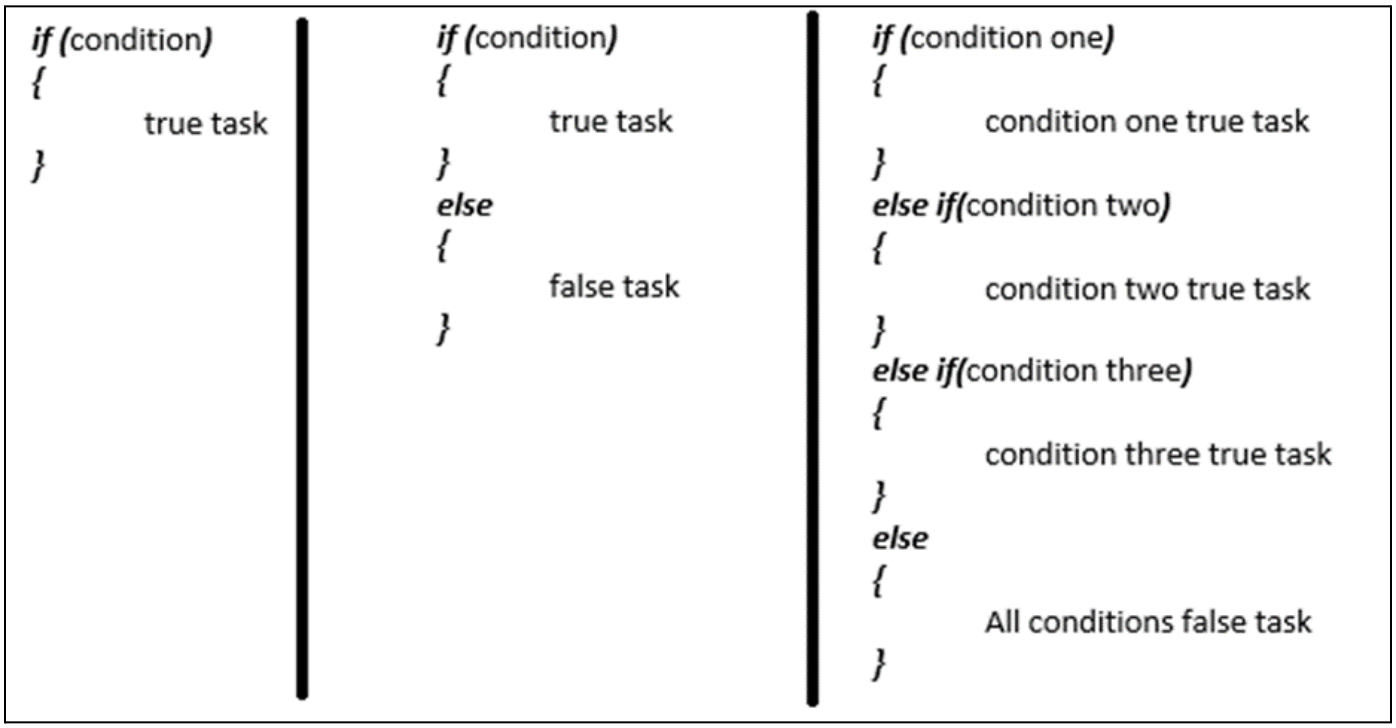
## 1. Conditional expressions (Expressions representing conditions) in C:

- Every Boolean expression contains a question, whose answer is either true or false.
- Hence a Conditional expression can be either true or false. e.g. the Conditional expression x==y is true when x is equal to y and false otherwise i.e. when x is not equal to y.

| this expression | is true if |
|---|---|
| x == y | x is equal to y |
| x != y | x is not equal to y |
| x < y | x is less than y |
| x > y | x is greater than y |
| x <= y | x is less than or equal to y |
| x >= y | x is greater than or equal to y |

## 2. if – else Building Block

- The general forms are:




- Note: The condition (i.e. Boolean Expression) will always be inside the parenthesis i.e. ().

***Example 01***

```
if (number%2==0)
{
    printf("This is Even number");
}
```

- And as you might have observed, there is no "else" part here. So this means that else is not necessary and so we only need the else part when we really need it in our Algorithm.
- For instance: if in the above program we also want to find out whether the number is odd, we would need an else.

## 3. Using conditional statements in a program:

***Example 02***

```
#include<stdio.h>
int main()
{
        int num;
        printf("Enter a number to check whether it is EVEN or ODD:\t");
        scanf("%d", &num);
        if(num%2 == 0)
        {
                printf("%d is Even", num);
        }
        else
        {
                printf("%d is Odd", num);
        }
}
```

- "If" statements can also be nested as follows

***Example 03***

```
if (x>10)
{
      if(x<20)
      {
              printf ("x is greater than 10 and x is less than 20");
      }
}
```

- Nesting can also become more complex and can go to any no. of levels, which requires the use of the curly braces to delimit the blocks of code.

***Example 04***

```
if(x>10)
{
        printf("x is greater than 10!!!\n");
                if (x<20)
                {
                        printf("And less than 20!!!\n");
                        if(x==15)
                        {
                              printf("Infact, x is equal to 15 :)\n");
                        }
                }
}
```

## 4. Use of Else-if statement

***Example 05***

```
#include<stdio.h>

int main()
{
        int num;
        printf("Enter a number to check whether it is POSITIVE, NEGATIVE or ZERO\t");
        scanf("%d", &num);
        if(num < 0)
        {
                printf("Number is Negative");
        }
        else if(num>0)
        {
                printf("Number is Positive");
        }
        else
        {
                printf("Number is Zero");
        }
}
```

# Lab Task 05:

**Write C programs for the following problems and submit it according to the instructions that follow.**

1. **Prompt the user for his/her year of birth and if the year is a leap year print "You were born in a leap year", otherwise print the age of the user. (using function named leapYear())**
2. **Take obtained marks of a student out of 100 as input and print the grade as per following rules.**

| Obtained Marks | Grade |
|---|---|
| Between and including 50 and 60 | D |
| Between and including 61 and 70 | C |
| Between and including 71 and 80 | B |
| Between and including 81 and 90 | A- |
| Between and including 91 and 100 | A+ |

3. **Write a program that prompts the user to enter two numbers NUM1 and NUM2, and then it will check the numbers and print one of the following.**

| Condition | Print |
|---|---|
| If both numbers are even | "You have entered two even numbers" |
| If both numbers are odd | "You have entered two odd numbers" |
| If any one of the numbers is even and the other is odd (the order does not matter). | "You have entered one even number and one odd number." |

4. **Take as input an alphabet (e.g. 'a', 'b', 'c', 'x', 'y', 'z', 'A', 'B', 'X', 'Y', etc…) and display whether the input alphabet is in capital or in small caps.**
5. **Simple Calculator: Take two numbers as an input and an operator as a character (+, -, *, /). Apply the operation on the two numbers and print the result.**

# Submission Instructions:

***Due Date: Nov 17, 2022***

1. **For C files, name your C files as questionNumber_yourRollNum_yourSection_LTNumber.c (e.g. Q1_BSE-22F-123_SE1A_LT1.c).**
2. **Place all files in a folder and name the folder as yourRollNum_yourSection_LTNumber (e.g. BSE-22F-123_SE1A_LT1).**
3. **Compress the folder by using either Winrar or 7Zip with the same name.**
4. **Go to tiny.cc/pffall2022smiu and in the "Coordination Document Folder" open the "PF-Activity Submission Form".**
5. **Fill out all the details with your correct password and submit the form by the due date.**