CSE115L – Programming Language I Lab

Lab-05
Selection Structures

In this lab, we will learn about selection structures in C using **`if,else and switch`** keywords. The following examples will helpyou remember the syntax.

Basic syntax of if-else statement in C.

```
if (condition){
      Statements;
}else{
      Statements;
}
```

Example 1: Read two user inputs and check if they are equal

```
#include <stdio.h>
int main()
{
    int m, n;
    scanf("%d%d", &m,&n);
    if (m == n)
        printf("m and n are equal");
    else
        printf("m and n are not equal");
    return 0;
}
```

Relational Operators	
<	is less than
<=	is less than or equal to
>	is greater than
>=	is greater than or equal to
==	is equal to
!=	is not equal to

Example 2: Print student grade.

Using nested if else

```
#include<stdio.h>
int main()
{
    int num;
    printf("Enter a number:");
    scanf("%d",&num);

    if(num >= 90)
        printf("Grade is A!");
    else
    {
        if(num >= 80)
            printf("Grade is B!");
        else
        {
            if(num >= 70)
                printf("Grade is C!");
            else
                printf("Fail!");
        }
    }
    return 0;
}
```

Using if else if

```
#include<stdio.h>
int main()
{
    int num;
    printf("Enter a number:");
    scanf("%d",&num);

    if(num>=90)
        printf("Grade is A!");
    else if(num >= 80)
        printf("Grade is B!");
    else if(num >= 70)
        printf("Grade is C!");
    else
        printf("Fail!");
    return 0;
}
```

Logical operators				
Condition **A**	Condition **B**	**A && B** (logical AND)	**A || B** (logical OR)	**!A** (logical NOT)
true	true	true	true	false
true	false	false	true	false
false	true	false	true	true
false	false	false	false	true

Example 3: Read a character from the user and print if it is alphanumeric or not.

```
#include<stdio.h>
int main()
{
    char c;
    printf("Enter a character:");
    scanf("%c",&c);

    if( (c>='a' && c<='z') || (c>='A' && c<='Z') || (c>='0' && c<='9') )
        printf("%c is alphanumeric", c);
    else
        printf("%c is not alphanumeric", c);
    return 0;
}
```

Basic syntax of switch statement in C.

```
switch (expression)
{
    case constant_expression_1:
        // code to be executed if expression value is equal to constant_expression_1;
        break;

    case constant_expression_2:
        // code to be executed if expression value is equal to constant_expression_2;
        break;
        .
        .
        .
    default:
        // code to be executed if expression value doesn't match any constant
}
```

Example 4: Print remark based on student's grade.

```
#include <stdio.h>

int main()
{
    char grade;
    printf("Enter your grade: ");
    scanf("%c", &grade);

    switch(grade) {
        case 'A' :
            printf("Excellent!\n" );
            break;
        case 'B' :
        case 'C' :
            printf("Well done\n" );
            break;
        case 'D' :
            printf("You passed\n" );
            break;
        case 'F' :
            printf("Better try again\n" );
            break;
        default :
            printf("Invalid grade\n" );
    }
    return 0;
}
```

Perform the following tasks.

Task 1: Write a program that checks whether a particular year (provided as input) is leap year or not. To determine whether a year is leap year or not, use the following rules.

A leap year must satisfy any or both of the following conditions:

- Year is divisible by 4 but not divisible by 100
- Year is divisible by 400

Task 2: Write a program that finds the maximum of the three numbers provided as input.

Task 3: Write a program that asks user for an arithmetic operator (+, - , * or /) and two operands, ***a*** and ***b***. Display the result of the corresponding operation using switch statement.

Example:
Enter the operator: *
Enter a: 50
Enter b: 3
Result: 150