Bangladesh University of Business and Technology

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Lab Report No. 02

Implementing Conditional statements and operators

Course Title : Structured Programming Language Lab
Course Code : CSE 112

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Problem Description: 1
Write a program to detect whether a liquid is acidic or not
Sample Input: Enter a number: 6.0
Sample Output: Liquid is Acidic

```c
#include <stdio.h>

int main()
{
    float pH;

    printf("Enter a number: ");
    scanf("%f", &pH);

      if (pH < 7.0)
          printf("Liquid is Acidic");

      else if(pH==7)
          printf("Liquid is Nutral ");

      else if(pH<=14)
          printf("Liquid is Alkaline ");
      else printf("Unknown Type");


      return 0;
 }

```

```
PS C:\Users\user\OneDrive\Desktop\CSE 111> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2\" ; if ($
?) { gcc p1.c -o p1 } ; if ($?) { .\p1 }
Enter a number: 3
Liquid is Acidic
PS C:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\L
ab_2\" ; if ($?) { gcc p1.c -o p1 } ; if ($?) { .\p1 }
Enter a number: 7
Liquid is Nutral
PS C:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\L
ab_2\" ; if ($?) { gcc p1.c -o p1 } ; if ($?) { .\p1 }
Enter a number: 13
Liquid is Alkaline
```

Problem Description: 2

Write a C program to check whether a year is a leap year or not leap year.

Procedure: Try to write the C code by using if/else statement. Try to understand the problem by seeing the sample input/output given below.

Sample Input:

Year: 2100

Sample Output:

This is not a leap year.

```c
#include<stdio.h>
int main()
{
    int year;
    printf("Enter a year: ");
    scanf("%d",&year);
    // leap year if perfectly divisible by 400
    if ( year%400 == 0)
        printf("%d is a leap year.", year);
    else if ( year%100 == 0)
        printf("%d is not a leap year.", year);
    else if ( year%4 == 0)
        printf("%d is a leap year.", year );
    else
        printf("%d is not a leap year.", year);
    return 0;
}

```

```
PS C:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab
_2\" ; if ($?) { gcc tempCodeRunnerFile.c -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
Enter a year: 2020
2020 is a leap year.
PS C:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab
_2\" ; if ($?) { gcc tempCodeRunnerFile.c -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
Enter a year: 2013
2013 is not a leap year.                                cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab
_2\" ; if ($?) { gcc tempCodeRunnerFile.c -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
Enter a year: 2100
2100 is not a leap year.
```

Problem Description:3
Write a C program to find a grade from a given marks of a course.

Procedure: Try to write the C code by using basic if/else statement. Try to understand the problem by seeing the sample input/output given below.

Sample Input:
77
Sample Output:
GPA: 3.75

```c
#include<stdio.h>
int main()
{
    int marks;
    float GPA;
    char *grade;

    printf("Enter marks: ");
    scanf("%d", &marks);

     if(marks >= 80)
     {
         GPA = 4.0;
         grade = "A+";
     }
     else if(marks >= 75)
     {
         GPA = 3.75;
         grade = "A";
     }
     else if(marks >= 70)
     {
         GPA = 3.50;
         grade = "A-";
     }
     else if(marks >= 65)
     {
         GPA = 3.25;
         grade = "B+";
     }
       else if(marks >= 60)
```

```
    {
        GPA = 3.00;
        grade = "B";
    }
      else if(marks >= 55)
    {
        GPA = 2.75;
        grade = "B-";
    }
      else if(marks >= 50)
    {
        GPA = 2.50;
        grade = "C+";
    }
      else if(marks >= 45)
    {
        GPA = 2.25;
        grade = "C";
    }
      else if(marks >= 40)
    {
        GPA = 2.00;
        grade = "D";
    }
    else
    {
        GPA = 0.0;
        grade = "F";
    }

    printf("GPA: %.2f\n", GPA);
    printf("Grade: %s\n", grade);

    return 0;
}
```

```
PS C:\Users\user\OneDrive\Desktop\CSE 111> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2\" ; if ($?)
 { gcc tempCodeRunnerFile.c -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
Enter marks: 29
GPA: 0.00
Grade: F
PS C:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab
_2\" ; if ($?) { gcc tempCodeRunnerFile.c -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
Enter marks: 50
GPA: 2.50
Grade: C+
PS C:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab
_2\" ; if ($?) { gcc tempCodeRunnerFile.c -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
Enter marks: 81
GPA: 4.00
Grade: A+
PS C:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2>
```

Problem Description: 4

Write a C program to check whether a number is even or odd.

Procedure: Try to write the C code by using if/else statement.

Sample Input:

Number: 4

Sample Output:

This is an even number.

```c
#include <stdio.h>

int main()
{
    int num;

    printf("Enter a number: ");
    scanf("%d", &num);

    if(num % 2 == 0)
        printf("This is an even number.");
    else
        printf("This is an odd number.");

    return 0;
}

```

```
PS C:\Users\user\OneDrive\Desktop\CSE 111> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2\" ; if ($?)
 { gcc tempCodeRunnerFile.c -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
Enter a number: 5
This is an odd number.
PS C:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab
_2\" ; if ($?) { gcc tempCodeRunnerFile.c -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
Enter a number: 10
This is an even number.
```

Problem Description: 5
Write a C program to check whether a character is a vowel or consonant.
Procedure: Try to write the C code by using if/else statement.
Sample Input:
Enter a character: d
Sample Output:
Consonant.
Sample Input:
Enter a character: a
Sample Output:
Vowel.

```c
#include <stdio.h>

int main()
{
    char ch;

    /* Reads character input from the user */
    printf("Enter any character: ");
    scanf("%c", &ch);

        /* Condition for vowel */
        if((ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') ||
           (ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U'))
        {
            printf("%c is vowel.", ch);
        }
        else if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
        {
            printf("%c is consonant.", ch);
        }
        else
        {
            /* If the input is not alphabet */
            printf("%c is not an alphabet.", ch);
        }

        return 0;
    }
```

29.

```
PS C:\Users\user\OneDrive\Desktop\CSE 111> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2\" ; if ($?)
 { gcc p5.c -o p5 } ; if ($?) { .\p5 }
Enter any character: a
a is vowel.
PS C:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab_2> cd "c:\Users\user\OneDrive\Desktop\CSE 111\CSE 111\Lab
_2\" ; if ($?) { gcc p5.c -o p5 } ; if ($?) { .\p5 }
Enter any character: b
b is consonant.
```