PES UNIVERSITY **Week 2: Programs on Input, Output Functions And Control Structures**		**2021**

Name: SUNDEEP A	**SRN: PES1UG20CS445**	**Section: O**
	Date:13-05-2021	**Week Number: 2**

1	**Write a program to calculate the grade of the student according to the specified marks.** Grade A:Marks(>85 and <=100) Grade B:Marks(>60 and <=85) Grade C:Marks(>40 and <=60) Grade D:Marks(>30 and <=40) Fail: Marks(<30) **Sample Input:** Enter your marks:60 **Sample Output:** You got grade C
	Program:

```c
#include<stdio.h>
int main()
{
    double n;
    printf("Enter the marks obtained to get the grade!!\n");
    scanf("%lf",&n);
    if(n>85 && n<=100)
        printf("Grade 'A'");
    else if(n>60)
        printf("Grade 'B'");
    else if(n>40)
    {
        printf("Grade 'C'");
    }
    else if(n>30)
        printf("Grade 'D'");
    else
        printf("Fail!!\n");
    return 0;
}
```

Output Screenshot:

```
C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc -c prog1.c

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc prog1.o

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>a
Enter the marks obtained to get the grade!!
78
Grade 'B'
```

2 **Write a Program to convert all characters in a given line from lower case to upper case.**

Sample Input:

Enter characters to convert case

I am student of 2nd Semester!

Sample Output:

I AM STUDENT OF 2ND SEMESTER!

Program:

```
#include<stdio.h>
int main()
{
    char ch;
    while((ch=getchar())!='\n')
    {
        if(ch>='a' && ch<='z')
            ch=ch+'A'-'a';
        putchar(ch);
    }
    return 0;
}
```

Output Screenshot:

```
C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc -c prog2.c

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc prog2.o

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>a
welcome to pesu
WELCOME TO PESU
```

3 **Write a C program using bitwise operators for the following:**

i) check whether specified bit is set or not

ii) set the specified bit and print the result

iii) clear the specified bit and print the result

Sample Input/Output:

Enter the number which you want check

25

Input number is 25

Enter the bit position, starts from zero

2

	bit is not set Enter the bit position, which you want to set 4 set : 16 The number after set is 25 Enter the bit position, which bit you want to clear 3 set : 0 The number after clear is 17
	Program:

```c
#include<stdio.h>
int main()
{
    unsigned int c;
    int i,j;
    //check a bit
    printf("Enter the number which you want to check =\n");
    scanf("%d",&c);
    printf("Enter the bit position \n");
    scanf("%d",&i);
    //1.
    if(c& (1<<i))
        printf("Bit is set\n");
    else
        printf("Bit is not set\n");

    //set a bit
    printf("Enter the bit position which you want to set \n");
    scanf("%d",&i);
    printf("set : %u\n", c & (1 << i));
    c= c|(1 <<i);
    printf("The number after set is %u\n",c);
    printf("\nEnter th bit position,which you want to clear \n");
    scanf("%d",&i);
    //clear a bit set to 0
    c = c & ~(1 <<(i));
    printf("set : %u\n", c&(1<<i));
    printf("The number after clear is %u\n",c);

    return 0 ;
}
```

Output Screenshot:

```
C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc -c prog3.c

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc prog3.o

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>a
Enter the number which you want to check =
25
Enter the bit position
2
Bit is not set
Enter the bit position which you want to set
4
set : 16
The number after set is 25

Enter th bit position,which you want to clear
3
set : 0
The number after clear is 17
```

4

a)Write a program to generate a multiplication table using for loop

b)Write a program to print the following pattern

```
*

* *

* * *

* * * *

* * * * *
```

Program:

a)

```
#include<stdio.h>
int main()
{
    int n;
    printf("Enter the value of n\n");
    scanf("%d",&n);
    printf("The multiplication table for %d is",n);
    for(int i=1;i<=10;i++)
        printf("\n %d x %d = %d",n,i,n*i);
    return 0;
}
```

b)

```
#include<stdio.h>
int main()
{
    int n;
    printf("Enter the number of rows to be printed ");
    scanf("%d",&n);
    for (int i=1;i<=n;++i)
    {
        for (int j=1;j<=i;++j)
        {
            printf("*");
        }
        printf("\n");
    }
    return 0;
}
```

Output Screenshot:

a)

```
C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc -c prog4(a).c

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc  prog4(a).o

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>a
Enter the value of n
8
The multiplication table for 8 is
 8 x 1 = 8
 8 x 2 = 16
 8 x 3 = 24
 8 x 4 = 32
 8 x 5 = 40
 8 x 6 = 48
 8 x 7 = 56
 8 x 8 = 64
 8 x 9 = 72
 8 x 10 = 80
```

b)

```
C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc -c prog4(b).c

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc  prog4(b).o

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>a
Enter the number of rows to be printed 5
*
**
***
****
*****
```

5 **Write a program to implement a Simple Calculator using switch Statement**

Sample input:

Enter an operator (+, -, *,): +

Enter two operands: 3 4

Sample Output:

3.0 + 4.0 = 7.0

	Sample input: Enter an operator (+, -, *,): - Enter two operands: 7 6 **Sample Output:** 7.0 - 6.0 = 1.0
	Program:

```c
#include<stdio.h>
int main()
{
    char operator;
    int op1;int op2;
    printf("Enter the operator(+,-,*,/): ");
    scanf("%c",&operator);
    printf("Enter the operands\n");
    scanf("%lf%lf",&op1,&op2);
    switch(operator)
    {
        case '+':
        printf("%lf + %lf = %lf\n",op1,op2,op1+op2);
        break;

        case '-':
        printf("%lf - %lf = %lf\n",op1,op2,op1-op2);
        break;

        case '*':
        printf("%lf X %lf = %lf\n",op1,op2,op1*op2);
        break;

        case '/':
        printf("%lf / %lf = %lf\n",op1,op2,op1/op2);
        break;

        default:
        printf("ERROR !! operator is not correct");

    }
    return 0;
}
```

Output Screenshot:

```
C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc -c prog5.c

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc prog5.o

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>a
Enter the operator(+,-,*,/): *
Enter the operands
4 15
4 X 15 = 60
```

6 **Write a program to validate a given date and find the next date**

Sample input:

Enter the date 12

Enter the month 12

Enter the year 2000

Sample Output:

Date is valid & next date is: 13/12/2000

Sample input:

Enter the date 1

Enter the month 13

Enter the year 2000

Sample Output:

Month is invalid

Program:

```c
#include<stdio.h>
int main()
{
    int d;int m;int y;int max;
    printf("Enter the date\n");
    scanf("%d",&d);
    printf("Enter the month\n");
    scanf("%d",&m);
    printf("Enter the year\n");
    scanf("%d",&y);
    if(m==1 || m==3 || m==5 || m==7 || m==8 || m==10 || m==12)
        max=31;
    else if(m==4 || m==6 || m==9 || m==11)
        max=30;
    else if(y%4==0 && y%100!=0 || y%400==0)
        max=29;
    else
        max=28;

    if(m<1 || m>12)
        printf("Month is invalid\n");
    else if(d<1 || d>max)
        printf("Date is invalid\n");
    else if(d==max && m!=12)
    {
        d=1;
        m=m+1;
        printf("Date is valid and next date=%d/%d/%d",d,m,y);

    }
    else if(d==31 && m==12)
    {
        d=1;
        m=1;
        y=y+1;
        printf("Date is valid and next date=%d/%d/%d",d,m,y);

    }
    else
    {
        d=d+1;
        printf("Date is valid and next date=%d/%d/%d",d,m,y);

    }
    return 0;
}
```

Output Screenshot:

```
C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc -c prog6.c

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>gcc prog6.o

C:\Users\HP\Desktop\PESU\SEM-2\c programming lab\week 2>a
Enter the date
12
Enter the month
12
Enter the year
2000
Date is valid and next date=13/12/2000
```