

## **ASSIGNMENT – 2**

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**SLOT: L31+L32+L49+L50**

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Write a C code for the game “Guess It”. The game is played by two players. The game proceeds as follows: The first player will enter the “magic number”. Magic number is greater than zero and less than 100. Prompt for the “magic number” from the II player. You should print out “Higher” if the magic number is higher than the guess and you should print out “Lower” if the magic number is less than the guess. Give 10 chances for the II player to guess the number. When the magic number has been guessed print "Great" and then end. If the II player cannot guess the number in 10 attempts, then print the message "Better luck next time:)" and end. Check boundary conditions and print 'Invalid input' for wrong output.

## CODE:

```
#include <stdio.h>
int main()
{
    int n,guess,i=0;
    printf("enter the magic number:");
    scanf("%d",&n);
    while (i<10)
    {
        printf("\nEnter guess:");
        scanf("%d",&guess);
        if (guess>n)
        {
            printf("\nhigher");
            i++;
        }
        else if (guess<n)
        {
            printf("\nlower");
            i++;
        }
        else
        {
            printf("\nGreat");
            i++;
            break;
        }
    }
    if (i>9) printf("\nBetter luck next time");
}
```

# OUTPUT:

```
/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT (master)
↳ cd "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/" && gcc program1.c -o program1 && "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/"program1
enter the magic number:30
Enter guess:1
lower
Enter guess:2
lower
Enter guess:3
lower
Enter guess:4
lower
Enter guess:5
lower
Enter guess:6
lower
Enter guess:7
lower
Enter guess:8
lower
Enter guess:9
lower
Enter guess:10
lower
Better luck next time.
```

```
/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT (master)
↳ cd "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/" && gcc program1.c -o program1 && "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/"program1
enter the magic number:30
Enter guess:1
lower
Enter guess:2
lower
Enter guess:3
lower
Enter guess:4
lower
Enter guess:5
lower
Enter guess:6
lower
Enter guess:7
lower
Enter guess:8
lower
Enter guess:30
Great!
```

Calculate the number of birthdays celebrated by Mr.X. If Mr.X was born on 29th February of a leap year, then he celebrates birthday only in leap years. Given the date of birth of Mr.X and the current year, design an algorithm and write the C code to determine the number of birthdays celebrated by Mr.X. A year is a leap year if it is divisible by 4 and not divisible by 100 or when the year is divisible by 400. For example, year 1996 and 2000 are leap years whereas 1900 is not a leap year. Assume that the current day and month is greater than day and month of birthday.

## CODE:

```
#include <stdio.h>

int main()
{
    int day,month,yr,current_yr,i=0;
    printf("Day of birth:"); scanf("%d",&day);
    printf("Month of birth:"); scanf("%d",&month);
    printf("Year of birth:"); scanf("%d",&yr);
    printf("Current year:"); scanf("%d",&current_yr);

    if ((yr%4==0 && yr%100!=0) || (yr%400==0 && month==2 && day==29))
    {
        for (int y;yr<=current_yr;yr++)
        {
            if ((yr%4==0 && yr%100!=0) || (yr%400==0 && month==2 && day==29))
            {
                i=i+1;
            }
        }
        printf("Number of birthdays celebrated:%d",i);
    }

    else
    {
        printf("Number of birthdays celebrated:%d",current_yr-yr);
    }
}
```

## OUTPUT:

```
/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT (master)
└─ cd "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/" && gcc program2.c -o program2 && "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/"program2
Day of birth:31
Month of birth:08
Year of birth:2003
Current year:2022
Number of birthdays celebrated:19%
```

Electronic color code is used to indicate the values or ratings of electronic components, usually for resistors. The following table shows the multiplier value for the third band of color.

Design a flow chart and write a python code to print the value of multiplier given the color code read by the user. Check boundary conditions and print 'Invalid input' for wrong output.

## CODE:

```
#include <stdio.h>
#include <string.h>

int main()
{
    char code[10];
    int multiplier;
    printf("1.black \n2.brown \n3.red \n4.orange");
    printf("\nEnter color code for the resistor:");
    scanf("%s",code);

    if (strcmp(code,"black")==0) printf("multiplier for black band:%d",1);
    else if (strcmp(code,"brown")==0) printf("multiplier for brown band:%d",10);
    else if (strcmp(code,"red")==0) printf("multiplier for red band:%d",100);
    else if (strcmp(code,"orange")==0) printf("multiplier for orange band:%d",1000);
    else printf("Invalid Input");

}
```

## OUTPUT:

```
/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT (master)
└─ cd "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/" && gcc program3.c -o program3 && "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/"program3
1.black
2.brown
3.red
4.orange
Enter color code for the resistor:black
multiplier for black band:1
/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT (master)
└─ cd "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/" && gcc program3.c -o program3 && "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/"program3
1.black
2.brown
3.red
4.orange
Enter color code for the resistor:violet
Invalid Input
```

Develop a flow chart and write the C code for the problem stated. A university wants to encourage their students by providing discount in the fee to be paid based on the conditions mentioned below:

if student is first graduate in family and secured more than 90% in School then he is given a discount of 30% in the total fee. If the student has secured more than 90% in School but not first graduate in family, then discount is 20% in the total fee. If the student is first graduate in family and secured more than 85% in School, then he is given a discount of 10% in the total fee. Check for boundary conditions and print 'Invalid input' for wrong output. Print two decimal places for output.

## CODE:

```
#include <stdio.h>
#include <string.h>

int main()
{
    int marks;
    char graduate;
    float fees;
    printf("Enter fees to pay:");
    scanf("%f",&fees);
    printf("Enter marks of the student:");
    scanf("%d",&marks);
    printf("Are you the first graduate in your family?(Y/N):");
    scanf(" %c",&graduate);

    if (graduate=='Y')
    {
        if (marks>=90) printf("\nFees:%.2f",fees-((30*fees)/100));
        else if (marks>85 && marks<90) printf("\nFees:%.2f",fees-((10*fees)/100));
        else printf("\nSorry.You are not eligible for scholarship.");
    }
    else if (graduate=='N')
    {
        if (marks>=90) printf("\nFees:%.2f",fees-((20*fees)/100));
        else printf("\nSorry.You are not eligible for scholarship.");
    }
}
```

# OUTPUT:

```
/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT (master)
└ cd "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/" && gcc program4.c -o program4 && "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/"program4
Enter fees to pay:5000
Enter marks of the student:90
Are you the first graduate in your family?(Y/N):Y

Fees after scholarship:3500.00
/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT (master)
└ cd "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/" && gcc program4.c -o program4 && "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/"program4
Enter fees to pay:5000
Enter marks of the student:84
Are you the first graduate in your family?(Y/N):N

Sorry.You are not eligible for scholarship.
/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT (master)
└ cd "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/" && gcc program4.c -o program4 && "/Users/vijayakumarmuthusamy/COLLEGE/PROGRAMMING/github/C_PROBLEMS_VIT/"program4
Enter fees to pay:5000
Enter marks of the student:95
Are you the first graduate in your family?(Y/N):N

Fees after scholarship:4000.00
```