# CSIC 101

## Problem Solving and Programming Skills using C (PSPS)

**Q1: scanf & printf & simple operator based**

1. Write a program to read two numbers from user & add, Subtract, Multiply these two numbers.

// 1_1.c

```c
#include<stdio.h>

void function(int a,int b){
    printf("Sum is : %d\nSubtraction is : %d\nMultiplication is %d",a+b,a-b,a*b);

}
int main(){
    int a,b;
    printf("Enter two numbers as 'a'&'b' \n");
    scanf("%d %d",&a,&b);
    function(a,b);
    return 0;
}
```

Result/Output Image

```
PS C:\Users\DELL\.vscode\cli\practice c language\output> & .\'w1 q1.exe'
Enter two numbers as 'a'&'b'
25
21
Sum is : 46
Subtraction is : 4
Multiplication is 525
```

2. Write a program to find area of a circle. Once completed, change this program to find area & perimeter of triangle as well as rectangle

   // Program to find area of circle

   //1_2(a).c

```c
#include<stdio.h>

void area_of_circle(float radius){
    float pie=3.14159265359;
    float area = pie*radius*radius;
    printf("Area of required circle is : %.5f ",area);
}
int main(){
    float radius;
    printf("Enter radius of circle\n");
    scanf("%f",&radius);
    area_of_circle(radius);
    return 0;
```

```
}
```

Result/Output Image

```
Enter radius of circle
5
Area of required circle is : 78.53982
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

//program to find area & perimeter of rectangle
//1_2(b).c

```c
#include<stdio.h>
void area_of_rectangle(float length,float breadth){
    float area = length*breadth;
    printf("Area of required rectangle is : %.2f\n",area);
}
void perimeter_of_rectangle(float length,float breadth){
    float perimeter = 2*(length+breadth);
    printf("Perimeter of required rectangle is : %.2f\n",perimeter);
}
int main(){
    float length,breadth;
    printf("Enter length of rectangle : ");
    scanf("%f",&length);
    printf("Enter breadth of rectangle : ");
    scanf("%f",&breadth);
    area_of_rectangle(length,breadth);
    perimeter_of_rectangle(length,breadth);
    return 0;
}
```

Result/Output Image

```
Enter length of rectangle : 50.26
Enter breadth of rectangle : 12.564
Area of required rectangle is : 631.47
Perimeter of required rectangle is : 125.65
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

//Program of Perimeter & Area of Triangle
//1_2(c).c

```c
// Program of Perimeter & Area of Triangle
#include<stdio.h>
#include<math.h>
void perimeter_of_triangle(float side1,float side2,float side3){
    float perimeter = side1+side2+side3;
    printf("Perimeter of required triangle is : %.2f\n",perimeter);
}
void area_of_triangle(float side1,float side2,float side3){
   float s = (side1+side2+side3)/2;
   float area = sqrt(s*(s-side1)*(s-side2)*(s-side3));
   printf("Area of required triangle is : %.2f\n",area);
}
int main(){
```

```
    float side1,side2,side3;
    printf("Enter side 1 : ");
    scanf("%f",&side1);
    printf("Enter side 2 : ");
    scanf("%f",&side2);
    printf("Enter side 3 : ");
    scanf("%f",&side3);
    perimeter_of_triangle(side1,side2,side3);
    area_of_triangle(side1,side2,side3);
    return 0;
}
```

Result/Output Image

```
Enter side 1 : 5.65
Enter side 2 : 4.56
Enter side 3 : 6.15
Perimeter of required triangle is : 16.36
Area of required triangle is : 12.33
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

3. Write a program to compute simple interest of given principal amount.
   //1_3.c

```
#include<stdio.h>
    void simple_interest(float principal,float rate,float time){
       float SI;       SI = principal*rate*time/100;       printf("Value of
Simple Interest is : %.2f \n",SI);     float total_amount= principal + SI;
       printf("Value of Total Amount(with interest) is : %.2f ",total_amount);

    }
    int main(){
        float principal,rate,time;
        printf("Enter Principal amount(in rupees)\n");
        scanf("%f",&principal);
        printf("Enter Interest rate\n");
        scanf("%f",&rate);
        printf("Enter time period (in Years)\n");
        scanf("%f",&time);
        simple_interest(principal,rate,time);
        return 0;
        }
```

Result/Output Image

```
Enter Principal amount(in rupees)
12000
Enter Interest rate
8
Enter time period (in Years)
2
Value of Simple Interest is : 1920.00
Value of Total Amount(with interest) is : 13920.00
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

C++ Runner: Debug Session (practice c language) Share Code Link Blackbox ▷ Compile & Run

**Q2: If-else based**

1. Input 2 numbers. Using if (not else)

i.If first is bigger add both.

ii.If 2nd is bigger subtract.

//2_1(a).c

```c
#include<stdio.h>

int compare(int a,int b){
    if (a>b){
        int c=a+b;
        printf("Required addition value is %d\n",c);
    }
    if (a<b){
    int d=b-a;
    printf("Required subtraction value is %d\n",d);
    }
    return 0;
}
int main(){
    int a,b;
    printf("Enter value of a & b \n");
    scanf("%d %d",&a,&b);
    compare(a,b);
    return 0;
}
```

Result/Output Image

```
Enter value of a & b
21
15
Required addition value is 36
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output> &
Enter value of a & b
15
21
Required subtraction value is 6
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

Do above question using if-else.

//2_1(b).c

```c
//  problem 1(using if-else)
#include<stdio.h>
int compare(int a,int b){
    // int a,b;
    if (a>b){
        int c=a+b;
        printf("Required value of addition is %d\n",c);
    }
    else if (a<b){
    int d=b-a;
    printf("Required value of subtraction is %d\n",d);
    }
    else {
        printf("No results for these enteries \n");
    }

    return 0;
}
int main(){
    int a,b;
    printf("Enter value of a & b \n");
    scanf("%d %d",&a,&b);
    compare(a,b);
    return 0;
}
```

Result/Output Image

```
Enter value of a & b
36
51
Required value of subtraction is 15
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output> &
Enter value of a & b
51
36
Required value of addition is 87
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

2. Using if-else and && operator, find max out of 3 non-distinct numbers. Now improve the program such that && etc is not used and multiple if-else are used find max out of 3 distinct numbers.

//2_2.c

```c
// program 2 (Find max out of 3 distinct using if-else and && operator)

  #include<stdio.h>
void compare_num(int a,int b,int c){
    if(a>b&&a>c)
    printf("%d has max integer value among them \n",a);
    else if (b>a&&b>c)
    printf("%d has max integer value among them \n",b);
    else if(c>a&&c>b)
    printf("%d has max integer value among them \n",c);
    // return NULL;
}
int main(){
    int x,y,z;
    printf("Enter your 3 integers \n");
    scanf("%d %d %d",&x,&y,&z);
    compare_num(x,y,z);
    return 0;
}
```

Result/Output Image

```
Enter your 3 integers
54
86
95
95 has max integer value among them
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

2nd Part

//2_2.c

```c
// program 2 by using multiple if-else instead of && operator

 #include<stdio.h>
void compare_num(int a,int b,int c){
```

```
 if(a>b){
    if(a>c)
    printf("%d has max integer value among them \n",a);
    else
    printf("%d has max integer value among them \n",c);
 }
 if(b>a){
    if(b>c)
    printf("%d has max integer value among them \n",b);
    else
    printf("%d has max integer value among them \n",c);
 }
}
int main(){
    int x,y,z;
    printf("Enter your 3 integers \n");
    scanf("%d %d %d",&x,&y,&z);
    compare_num(x,y,z);
    return 0;
}
```

Result/Output Image

```
Enter your 3 integers
5142
5869
2156
5869 has max integer value among them
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

3. Find roots of quadratic equation. Roots can be real/equal/complex. Values of all typesof roots should be displayed

//2_3.c

```
 #include<stdio.h>

#include<math.h>
void roots(float a,float b,float c){
    float discriminant= ((b*b)-4*a*c);
    if(discriminant>0){
        printf("Roots of this equation are real and distinct\n");
        float root1 = -b/2*a +sqrt(discriminant)/2*a;
        float root2 = -b/2*a -sqrt(discriminant)/2*a;
        printf("Roots are:- %.2f , %.2f \n",root1,root2);
    }
    else if(discriminant==0){
        printf("Roots of this equation are real and equal\n");
        float root1= -b/2*a;
        printf("Roots are:- %.2f , %.2f \n",root1,root1);
```

```
    }
    else if(discriminant<0){
        printf("Roots of this equation are imaginary..\n");
        float r1= -b/2*a;
        float r2= sqrt(-discriminant)/2*a;
// use ‘i’ as Iota ..Bcoz I don’t know how to use complex function in c …
        printf("Roots are:- %.2f +i %.2f, %.2f -i %.2f \n",r1,r2,r1,r2);
    }
    else
    printf("Your input data has some error \n");
}
int main (){
    float a,b,c;
    printf("Enter value of 'a','b','c' as the required equation is ax^2 +bx
+c...\n");
    scanf("%f %f %f",&a,&b,&c);
    roots(a,b,c);
    return 0;
}
```

Result/Output Image

```
Enter value of 'a','b','c' as the required equation is ax^2 +bx +c...
1
-5
6
Roots of this equation are real and distinct
Roots are:- 3.00 , 2.00
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output> &
Enter value of 'a','b','c' as the required equation is ax^2 +bx +c...
1
2
1
Roots of this equation are real and equal
Roots are:- -1.00 , -1.00
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output> &
Enter value of 'a','b','c' as the required equation is ax^2 +bx +c...
4
2
6
Roots of this equation are imaginary..
Roots are:- -4.00 + i19.18, -4.00 - i19.18
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

4. **Without using && etc, find max as well as min out of 3 numbers. Same if should be used to find max as well as min. Aim to use minimum number of if statements.

//2_4.c

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

```c
void compare_max(int a,int b,int c){
 if(a>b){
    if(a>c)
    printf("%d has max integer value among them \n",a);
    else
    printf("%d has max integer value among them \n",c);
 }
 if(b>a){
    if(b>c)
    printf("%d has max integer value among them \n",b);
    else
    printf("%d has max integer value among them \n",c);
 }
}
void compare_min(int a,int b,int c){
 if(a<b){
    if(a<c)
    printf("%d has min integer value among them \n",a);
    else
    printf("%d has min integer value among them \n",c);
 }
 if(b<a){
    if(b<c)
    printf("%d has min integer value among them \n",b);
    else
    printf("%d has min integer value among them \n",c);
 }
 }
int main(){
    int x,y,z;
    printf("Enter your 3 integers \n");
    scanf("%d %d %d",&x,&y,&z);
    compare_max(x,y,z);
    compare_min(x,y,z);
    return 0;
}
```

Result/Output Image

```
Enter your 3 integers
0156
2145
9658
9658 has max integer value among them
156 has min integer value among them
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

5. **Find max out of 4 distinct numbers without using && etc.

**means difficult problem

//2_5.c

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

```c
void compare_max(int a,int b,int c,int d){
 if(a>b){
    if(a>c){
        if(a>d)
        printf("%d has max value among these \n",a);
        else
        printf("%d has max value among these \n",d);
    }
 }
 if(b>a){
    if(b>c){
        if(b>d)
        printf("%d has max value among these \n",b);
        else
        printf("%d has max value among these \n",d);
    }
 }
 if(c>a){
    if(c>b){
        if(c>d)
        printf("%d has max value among these \n",c);
        else
        printf("%d has max value among these \n",d);
    }
 }

}
int main(){
    int w,x,y,z;
    printf("Enter your 4 integers \n");
    scanf("%d %d %d %d",&w,&x,&y,&z);
    compare_max(w,x,y,z);
    return 0;
    }
```

Result/Output Image

```
Enter your 4 integers
948
712
541
998
998 has maximum interger value among these
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

**Q 3: Loop Based Simple problems:**

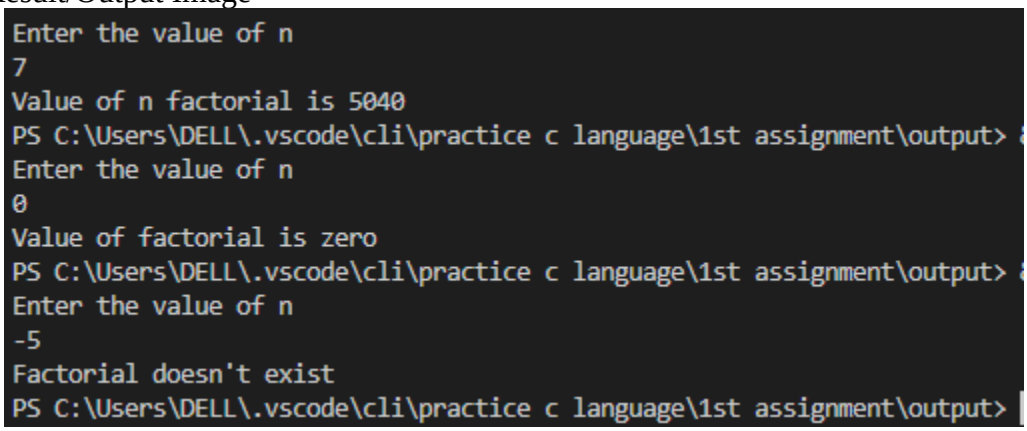
1. Find factorial of a number. Number can be +ive/zero/-ive.

//3_1.c

```c
// factorial of a number
#include<stdio.h>
int factorial(int n){
    if(n>0){
    int i=1;
```

```
    int product =1;
    for(;i<=n;i+=1){
        product = product*i;
    }
    printf("Value of n factorial is %d \n",product);
    return 0;
    }
    else if(n==0){
        printf("Value of factorial is zero\n");
    }
    else
    printf("Factorial doesn't exist \n");
}
int main(){
    int n;
    printf("Enter the value of n\n");
    scanf("%d",&n);
    factorial(n);
    return 0;
}
```

Result/Output Image




2. Using appropriate loop, write a program to find sum of following series:

   S= 1+5+10+15 ... N times

//3_2(a).c

```
// sum of series 1+5+10+15 upto n terms
#include<stdio.h>
int serie(int n){
    int sum = 1,i=0;
 do {
    sum+=5*i;
    i++;
 }
 while (i<n);
printf("Sum of the series upto N terms is : %d",sum);
return 0;
}
```

```c
 int main() {
    int n ;
    printf("Enter value of 'N' (sum utpo N terms ) \n");
    scanf("%d",&n);
    serie(n);
    return 0;

 }
```

Result/Output Image

```
Enter value of 'N' (sum utpo N terms )
6
Sum of the series upto N terms is : 76
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

S= 1+5+10+15 ... upto N

//3_2(b).c

```c
// Series is S= 1+5+10+15 ... upto N
#include<stdio.h>
void sum_of_series(int N){
 int sum=1;
 for(int i=5;i<=N;i+=5){
            sum = sum + i;
        }
        printf("Sum of the series(S) is : %d\n",sum);
}
 int main(){
        int N;
        printf("Enter value 'N' (Find sum of the series upto term N)\n");
        scanf("%d",&N);
        sum_of_series(N);
        return 0;
}
```

Result/Output Image

```
Enter value 'N' (Find sum of the series upto term N)
25
Sum of the series(S) is : 76
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

S=2+4+8+... N times

//3_2(c).c

```c
// series 2+4+8+16+32+.......... upto n terms
#include<stdio.h>
#include<math.h>
void sum_of_series(int n){
    int i,x,sum=0;
```

```
    for(i=1;i<=n;i++){
        x= pow(2,i);
        sum = sum + x;
    }
    printf("Sum of given series is : %d",sum);
}
int main(){
    int n;
    printf("Enter value of 'n' (where n denoted the no of terms )\n");
    scanf("%d",&n);
    sum_of_series(n);
    return 0;
}
```

Result/Output Image

```
Enter value of 'n' (where n denoted the no of terms )
5
Sum of given series is : 62
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

S=1 -3 + 5 -7 ...upto N

//3_2(d).c

```
// Series is S=1 -3 + 5 -7 ...upto N

#include<stdio.h>
#include<math.h>
void sum_of_series(int n){
    int a=1,sum=0;
    for (int i=1; ;i++){
        if (i%2==0){
            a=-a;
            sum=sum+a;
            a=-a;
        }
        else{
            sum=sum+a;
        }
        if (a==n||a==-n){
            break;
        }
        a+=2;       //a=a+2;
    }
    printf("Sum of the series(S) is : %d\n", sum);
}
int main(){
    int n;
```

```
    printf("Enter value 'n' (Find sum of the series upto term n)\n");
    scanf("%d", &n);
    sum_of_series(n);
    return 0;
}
```

Result/Output Image

```
Enter value 'n' (Find sum of the series upto term n)
17
Sum of the series(S) is : 9
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

For some of above series, while will be more suitable and for some others, for loop will be better. Identify, understand the reason & implement using proper loop.

3. Using loops and reading N from the user, write a program to display following patterns, assuming each pattern is of N lines

| | |
|---|---|
| *<br>**<br>***<br>****<br>...N lines | *<br>**<br>***<br>****<br>....N lines |
| | |

```
/*3_3.c

 '*'pattern printing problem */

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

Result/Output Image

```
Enter the value of n
6
*
* *
* * *
* * * *
* * * * *
* * * * * *
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

**Q 4: Loop Based better problems:**

1. Using loops and reading N from the user, write a program to display following patterns:

| | |
|---|---|
| A<br>ABC<br>ABCDE<br>...N Lines<br><br>(assume N <=13) | 1<br>121<br>12321<br>(after reaching to 9, next number will be 0)<br><br>123456789010987654321<br>1234567890121098765432 1<br>... N lines |

A
ABC
ABCDE

//4_1(a).c

```c
#include<stdio.h>
void pattern(int n){
   int i,j,space;
   for(i=1;i<=n;i++){
    for(space=1;space<=(n-i);space++){
        printf(" ");
    }
    for(j=1;j<=(2*i)-1;j++){
        printf("%c",64+j);
    }
printf(" \n");
   }

}
int main (){
    int n;
    printf("Enter n for number of lines\n");
    scanf("%d",&n);
    pattern(n);
    return 0;
}
```

Result/Output Image

```
Enter n for number of lines
6
     A
    ABC
   ABCDE
  ABCDEFG
 ABCDEFGHI
ABCDEFGHIJK
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

Numerical Pattern

//4_1(b).c

```c
// pattern using numbers
#include<stdio.h>
void pattern(int n){
   int i,j,space;

   for(i=1;i<=n;i++){
    for(space=1;space<=(n-i);space++){
        printf(" ");
    }
    for(j=1;j<=(2*i)/2-1/2;j++){
        int x=j%10;
        printf("%d",x);
    }
    for(j=i-1;j>=1;j--){
        int x=j%10;
        printf("%d",x);
    }
printf(" \n");
   }

}
int main (){
    int n;
    printf("Enter n for number of lines\n");
    scanf("%d",&n);
    pattern(n);
    return 0;
}
```

Result/Output Image

```
Enter n for number of lines
5
    1
   121
  12321
 1234321
123454321
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

2. Using loop, find sum of digits of a given number. Number will be read as integer. Use do-while loop for this.

//4_2.c

```c
#include<stdio.h>
void sum_of_digits(int n){
     int sum =0;
    // for(int j;n!=0;n=n/10){
    //      j=n%10;
    //      sum = sum + j;     //sum+=j;
    // }
    int j;

     do{
        j=n%10;
        n=n/10;
        sum = sum+j;
     }
     while(n!=0);
    printf("Sum of all digits on integer is : %d",sum);
}



int main (){
    int n;
    printf("Enter a interger as 'n'\n");
    scanf("%d",&n);
    sum_of_digits(n);
    return 0;
}
```

Result/Output Image

```
Enter a interger as 'n'
75849
Sum of all digits of integer is : 33
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

3. Find sum of series S= x - $x^3/3!$ +$x^5/5!$ - $x^7/7!$ ... upto $x^n/n!$ . Do this program (i) by calculating numerator and denominator of each term separately for each iteration (ii) **implement efficiently, so that each numerator and denominator can be computed using previous numerator & denominator respectively.

//4_3.c

```c
#include <stdio.h>

#include<math.h>
int main()
{
int x,n,i,c=1,z=0;
```

```
double sum;
printf("Enter value of 'n' : ");
scanf("%d",&n);
printf("Enter value for x : ");
scanf("%d",&x);
for(i=1;i<=n;i++)
{
  c*=i;
if((i%2)!=0)
{
  sum+=pow(-1,z)*(pow(x,i)/c);
z++;
}
}
printf("Sum of the series is : %.3lf",sum);
}
```

Result/Output Image

```
Enter value of 'n' : 5
Enter value for x : 3
Sum of the series is : 0.525
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

4. **Find whether a given number is prime or not.

//4_4.c

```
   #include<stdio.h>


  void prime(int n){
    int num=0;
    for(int i=2;i<n;i++){
        if(n%i==0){
        printf("Number is composite \n");
        num=1;
        break;
        }
    }
    if(num==0)
    printf("Nummber is prime \n");
}
int main(){
    int n;
    printf("Enter number n for which you want to check \n");
    scanf("%d",&n);
prime(n);
return 0;
}
```

Result/Output Image

```
Enter number n for which you want to check
56
Number is composite
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output> &
Enter number n for which you want to check
23
Nummber is prime
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

**Q5: Switch-case Based with loops:**

1. Read a date as collection of 3 integers (d,m,y). Using switch-case, display date in format: 15th Aug, 2022, if inputs given were 15, 8, 2022

//5_1.c

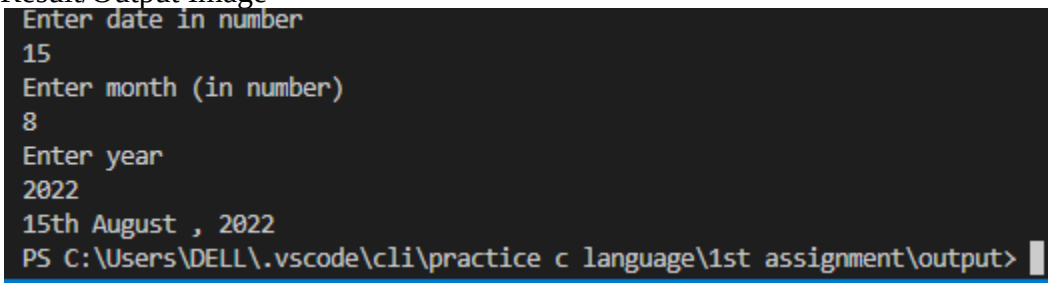
```c
#include<stdio.h>

void calender(int d,int m,int y){
   if(d==1|| d==21||d==31){
 switch (m)
 {
case 1: printf("%dst January , %d ",d,y) ;
break;
case 2: printf("%dst February , %d ",d,y) ;
break;
case 3: printf("%dst March , %d ",d,y) ;
break;
case 4: printf("%dst April , %d ",d,y) ;
break;
case 5: printf("%dst May , %d ",d,y) ;
break;
case 6: printf("%dst June , %d ",d,y) ;
break;
case 7: printf("%dst July , %d ",d,y) ;
break;
case 8: printf("%dst August , %d ",d,y) ;
break;
case 9: printf("%dst September , %d ",d,y) ;
break;
case 10: printf("%dst October , %d ",d,y) ;
break;
case 11: printf("%dst November , %d ",d,y) ;
break;
case 12: printf("%dst December , %d ",d,y) ;
break;
default :
```

```
printf("error");
 }
   }
   else if(d==2||d==22){
 switch (m)
 {
case 1: printf("%dnd January , %d ",d,y) ;
break;
case 2: printf("%dnd February , %d ",d,y) ;
break;
case 3: printf("%dnd March , %d ",d,y) ;
break;
case 4: printf("%dnd April , %d ",d,y) ;
break;
case 5: printf("%dnd May , %d ",d,y) ;
break;
case 6: printf("%dnd June , %d ",d,y) ;
break;
case 7: printf("%dnd July , %d ",d,y) ;
break;
case 8: printf("%dnd August , %d ",d,y) ;
break;
case 9: printf("%dnd September , %d ",d,y) ;
break;
case 10: printf("%dnd October , %d ",d,y) ;
break;
case 11: printf("%dnd November , %d ",d,y) ;
break;
case 12: printf("%dnd December , %d ",d,y) ;
break;
default :
printf("error");
 }
   }
   else if(d==3||d==23){
 switch (m)
 {
case 1: printf("%drd January , %d ",d,y) ;
break;
case 2: printf("%drd February , %d ",d,y) ;
break;
case 3: printf("%drd March , %d ",d,y) ;
break;
case 4: printf("%drd April , %d ",d,y) ;
break;
```

```
case 5: printf("%drd May , %d ",d,y) ;
break;
case 6: printf("%drd June , %d ",d,y) ;
break;
case 7: printf("%drd July , %d ",d,y) ;
break;
case 8: printf("%drd August , %d ",d,y) ;
break;
case 9: printf("%drd September , %d ",d,y) ;
break;
case 10: printf("%drd October , %d ",d,y) ;
break;
case 11: printf("%drd November , %d ",d,y) ;
break;
case 12: printf("%drd December , %d ",d,y) ;
break;
default :
printf("error");
 }
   }
  else if(d>=4|| d<=20||d>=24||d<=30){
 switch (m)
 {
case 1: printf("%dth January , %d ",d,y) ;
break;
case 2: printf("%dth February , %d ",d,y) ;
break;
case 3: printf("%dth March , %d ",d,y) ;
break;
case 4: printf("%dth April , %d ",d,y) ;
break;
case 5: printf("%dth May , %d ",d,y) ;
break;
case 6: printf("%dth June , %d ",d,y) ;
break;
case 7: printf("%dth July , %d ",d,y) ;
break;
case 8: printf("%dth August , %d ",d,y) ;
break;
case 9: printf("%dth September , %d ",d,y) ;
break;
case 10: printf("%dth October , %d ",d,y) ;
break;
case 11: printf("%dth November , %d ",d,y) ;
break;
```

```
case 12: printf("%dth December , %d ",d,y) ;
break;
default :
printf("error");
 }
   }
  else
  printf("There is some error in ur input \n");
}
int main(){
   int d,m,y;
   printf("Enter date in number \n");
   scanf("%d",&d);
   printf("Enter month (in number)\n");
   scanf("%d",&m);
   printf("Enter year \n");
   scanf("%d",&y);
   calender(d,m,y);
}
```

Result/Output Image

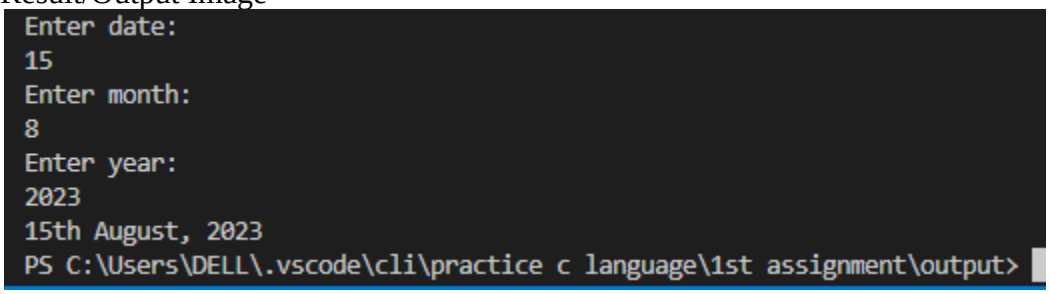



Alternate Solution

```
#include <stdio.h>
void format_of_date(int date, int month, int year)
{
    printf("%d", date);
    switch (date)
    {
    case 1:case 21:case 31: printf("st ");
        break;
    case 2:case 22:printf("nd ");
        break;
    case 3:case 23:printf("rd ");
        break;
    default:
        printf("th ");
        break;
    }
    switch (month)
```

```c
    {
    case 1: printf("January, ");
        break;
    case 2: printf("February, ");
        break;
    case 3: printf("March, ");
        break;
    case 4: printf("April, ");
        break;
    case 5: printf("May, ");
        break;
    case 6: printf("June, ");
        break;
    case 7: printf("July, ");
        break;
    case 8: printf("August, ");
        break;
    case 9: printf("September, ");
        break;
    case 10: printf("October, ");
        break;
    case 11: printf("November, ");
        break;
    case 12: printf("December, ");
        break;
    default:
        printf("Invalid Input ");
        break;
    }
    printf("%d", year);
}
int main()
{
    int date, month, year,day;
    printf("Enter date:\n");
    scanf("%d", &date);
    printf("Enter month:\n");
    scanf("%d", &month);
    printf("Enter year:\n");
    scanf("%d", &year);
format_of_date(date, month, year);

    return 0;
}
```

Result/Output Image




2. Implement simple calculator using loops and switch. Calculator should keep on working till user does not decide to Exit. Four operations are allowed: +, - , *, /. It will be better if you also provide the support that result of Previous calculations can get used in next operation, Or user may reset it to 0, by pressing C(for clear).

//5_2.c

```c
 // Simple calculator using loops & switch

#include<stdio.h>

int main()
{
    char operator;
    float n;
    printf("Enter Starting number \n");
    scanf("%f",&n);
    float result = n;


    while (1)
    {
        printf("Current result is : %f\n", result);
        printf("Enter operator or press 'C'/'c' to clear or press 'E'/'e' to exit
\nAfter operator Enter Number(By pressing Enter after entering operator) \n");
        scanf(" %c", &operator);

        if (operator=='E'||operator=='e')
        {
            break;
        }

        if (operator=='C'||operator=='c')
        {
            result=0;
        }
        else
        {
            scanf("%f", &n);
```

```
            switch (operator)
            {
            case'+':
                result+=n;
                break;
            case'-':
                result-=n;
                break;
            case'*':
                result*=n;
                break;
            case'/':
                if (n!=0)
                {
                    result/=n;
                }
                else
                {
                    printf("error\n");
                }
                break;
            default:
                printf("please enter correct operator\n");
                break;
            }
        }
    }

    printf("Final result is : %f\n", result);

    return 0;
}
```

Result/Output Image

```
Enter Starting number
25
Current result is : 25.000000
Enter operator or press 'C'/'c' to clear or press 'E'/'e' to exit
After operator Enter Number(By pressing Enter after entering operator)
+
15
Current result is : 40.000000
Enter operator or press 'C'/'c' to clear or press 'E'/'e' to exit
After operator Enter Number(By pressing Enter after entering operator)
*
14
Current result is : 560.000000
Enter operator or press 'C'/'c' to clear or press 'E'/'e' to exit
After operator Enter Number(By pressing Enter after entering operator)
c
Current result is : 0.000000
Enter operator or press 'C'/'c' to clear or press 'E'/'e' to exit
After operator Enter Number(By pressing Enter after entering operator)
-
5
Current result is : -5.000000
Enter operator or press 'C'/'c' to clear or press 'E'/'e' to exit
After operator Enter Number(By pressing Enter after entering operator)
*
25
Current result is : -125.000000
Enter operator or press 'C'/'c' to clear or press 'E'/'e' to exit
After operator Enter Number(By pressing Enter after entering operator)
e
Final result is : -125.000000
PS C:\Users\DELL\.vscode\cli\practice c language\1st assignment\output>
```

3. Given a number of max 4 digits, print it in words e.g. 2345 should be printed as two thousand three hundred forty five

//5_3.c

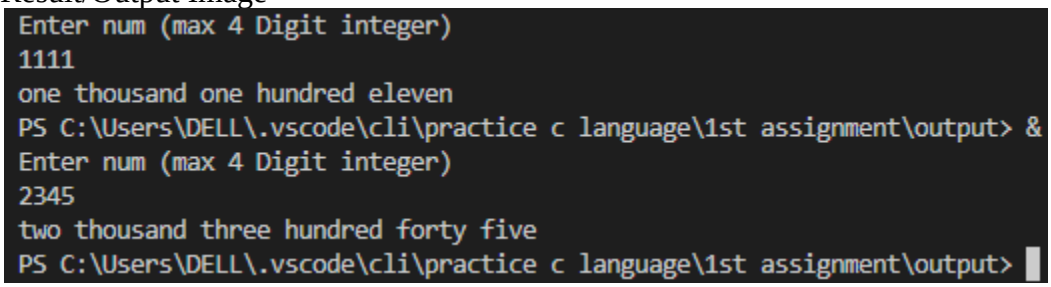
```c
#include<stdio.h>

void num(int x){
    int a,b,c,d;
    a=x/1000;
    int y=x%1000;
    b=y/100;
    int z=y%100;
    c=z/10;
    d=z%10;
    switch (a){
        case 0: printf(" ");
        break;
        case 1: printf("one thousand ");
```

```
        break;
        case 2: printf("two thousand ");
        break;
        case 3: printf("three thousand ");
        break;
        case 4: printf("four thousand ");
        break;
        case 5: printf("five thousand ");
        break;
        case 6: printf("six thousand ");
        break;
        case 7: printf("seven thousand ");
        break;
        case 8: printf("eight thousand ");
        break;
        case 9: printf("nine thousand ");
        break;
    }
    switch (b){
        case 0: printf(" ");
        break;
        case 1: printf("one hundred ");
        break;
        case 2: printf("two hundred ");
        break;
        case 3: printf("three hundred ");
        break;
        case 4: printf("four hundred ");
        break;
        case 5: printf("five hundred ");
        break;
        case 6: printf("six hundred ");
        break;
        case 7: printf("seven hundred ");
        break;
        case 8: printf("eight hundred ");
        break;
        case 9: printf("nine hundred ");
        break;
    }
    switch (c){
        case 0: printf(" ");
        break;
       case 1: switch(d){
        case 0: printf(" ");
```

```
        break;
        case 1: printf("eleven ");
        break;
        case 2: printf("twelve ");
        break;
        case 3: printf("thirteen ");
        break;
        case 4: printf("fourteen ");
        break;
        case 5: printf("fifteen ");
        break;
        case 6: printf("sixteen ");
        break;
        case 7: printf("seventeen ");
        break;
        case 8: printf("eightteen ");
        break;
        case 9: printf("nineteen ");
        break;
    }
        break;
        case 2: printf("twenty ");
        break;
        case 3: printf("thirty ");
        break;
        case 4: printf("forty ");
        break;
        case 5: printf("fifty ");
        break;
        case 6: printf("sixty ");
        break;
        case 7: printf("seventy ");
        break;
        case 8: printf("eighty ");
        break;
        case 9: printf("ninty ");
        break;
    }
    if(c==1){
        printf(" ");
    }
    else {
    switch (d){
        case 0: printf(" ");
        break;
```

```
        case 1: printf("one ");
        break;
        case 2: printf("two ");
        break;
        case 3: printf("three ");
        break;
        case 4: printf("four ");
        break;
        case 5: printf("five ");
        break;
        case 6: printf("six ");
        break;
        case 7: printf("seven ");
        break;
        case 8: printf("eight ");
        break;
        case 9: printf("nine ");
        break;
    }}
}
int main (){
    int x;
    printf("Enter num (max 4 Digit integer) \n");
    scanf("%d",&x);
    num(x);
    return 0;
    }
```

Result/Output Image




4. **Add number of days to a given date and find new date.

//5_4.c

```
#include <stdio.h>

void new_date(int date, int month, int year)
{
    printf("%d", date);
    switch (date)
    {
    case 1:case 21:case 31: printf("st ");
```

```
        break;
    case 2:case 22:printf("nd ");
        break;
    case 3:case 23:printf("rd ");
        break;
    default:
        printf("th ");
        break;
    }
    switch (month)
    {
    case 1: printf("January, ");
        break;
    case 2: printf("February, ");
        break;
    case 3: printf("March, ");
        break;
    case 4: printf("April, ");
        break;
    case 5: printf("May, ");
        break;
    case 6: printf("June, ");
        break;
    case 7: printf("July, ");
        break;
    case 8: printf("August, ");
        break;
    case 9: printf("September, ");
        break;
    case 10: printf("October, ");
        break;
    case 11: printf("November, ");
        break;
    case 12: printf("December, ");
        break;
    default:
        printf("Invalid Input ");
        break;
    }
    printf("%d", year);
}

int leap_year(int year)
{
    if ((year % 400 == 0) || ((year % 4 == 0) && (year % 100 != 0)))
```

```
    {
        return 1;
    }
    else
    {
        return 0;
    }
}

int days_in_month(int month, int year)
{
    int leapyear = leap_year(year);
    if (leapyear == 1 && month == 2){
         return 29; }
    else if (month == 2){
         return 28; }
    else if (month == 4|| month == 6|| month == 9|| month == 11){
         return 30;}
    else
    { return 31;  }
}

int main()
{
    int date, month, year,day;
    printf("Enter date:\n");
    scanf("%d", &date);
    printf("Enter month:\n");
    scanf("%d", &month);
    printf("Enter year:\n");
    scanf("%d", &year);
    printf("Enter the number of days to add:\n");
    scanf("%d", &day);

    while (day > 0)
    {
        date++;
        if (date > days_in_month(month, year))
        {
            date = 1;
            month++;
        }
        if (month > 12)
        {
            month = 1;
```

```
            year++;
        }
        day--;
    }

    printf("New date is: ");
    new_date(date, month, year);

    return 0;
}
```

Result/Output Image