C programming basic problems and solutions

Part #4

1. Write a C program to find factorial for a given number.

Solution:

```
#include <stdio.h>
int main(){

    printf("Enter a number:\n");
    int n, factorial = 1;
    scanf("%d", &n);
    int i;
    for(i=1; i<=n; i++){
        factorial = factorial*i;
    }
    printf("Factorial of %d is = %d", n, factorial);
return 0;
}
```

2. Write a C program to find the sum of squares e.g. 1+4+9+…+n^2

Solution:

```
#include <stdio.h>
#include <math.h>
int main(){
    printf("Enter the range:\n");
    int n, sum = 0;
    scanf("%d", &n);
    int i;
    for(i=1; i<=n; i++){
        sum = sum+pow(i, 2);
    }
    printf("Sum of square is = %d" ,sum);
return 0; }
```

3. Write a C program to check whether a number is prime or not.

Solution:

```
#include <stdio.h>
int main(){

    printf("Enter a number:\n");
    int n, status = 1;
    scanf("%d", &n);

    if(n==0 || n==1){
        printf("Not a prime number\n");
    }
    else{
        int i;
        for(i=2; i<=n/2; i++){
            if(n%i==0){
                status = 0;
            }
        }

        if(status == 0){
            printf("Not a prime number\n");
        }
        else{
            printf("Prime number\n");
        }
    }

return 0;
}
```

4. Write a C program to show the square of a series 1 4 9…n^2

Solution:

```
#include <stdio.h>
#include <math.h>
int main(){

    printf("Enter the range:\n");
    int n;
    scanf("%d", &n);

    int  i, temp = 0;
    for(i=1; i<=n; i++){
        temp = pow(i, 2);
        printf("%d ",temp);
    }

return 0;
}
```


5. Write a C program to print Fibonacci series for a given range.

Solution:

```
#include <stdio.h>
int main(){
    printf("Enter the range:\n");
    int n;
    scanf("%d", &n);
    int term1=0, term2=1, nextTerm = 0;
    int i;
    for(i=1; i<=n; i++){
        printf("%d ", term1);
        nextTerm = term1+term2;
        term1 = term2;
        term2 = nextTerm;
    }
return 0;
}
```

6. Write a C program whether a given year is leap year or not.

Solution:

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

7. Find GCD (গসাগু/Greatest Common Divisor) from two numbers.

Solution:

```
#include <stdio.h>
int main(){
    printf("Enter two numbers:\n");
    int a, b, r = 0, GCD = 0;
    scanf("%d %d", &a, &b);
    if(a==0 || b==0){
        printf("Math Error\n");
    }
    else{
        if(a>b){
            while(b!=0){
                r = a%b;
                a = b;
                b = r;
            }
            GCD = a;
        }
        else if(a<b){
            while(a!=0){
                r = b%a;
                b = a;
                a = r;
            }
            GCD = b;
        }
        else{
            GCD = a;
        }
    }

     if(GCD!=0){
        printf("GCD is %d", GCD);
     }
return 0;
}
```

8. Find LCM (লসাগু/Least Common Multiple) from two numbers.

Solution:

```
#include <stdio.h>
int main(){
    printf("Enter two numbers:\n");
    int a, b, r = 0, n1 ,n2, GCD = 0, LCM = 0;
    scanf("%d %d", &a, &b);
    n1 = a;
    n2 = b;
    if(a==0 || b==0){
        printf("Math Error\n");
    }
    else{
        if(a>b){
            while(b!=0){
                r = a%b;
                a = b;
                b = r;
            }
            GCD = a;
        }
        else if(a<b){
            while(a!=0){
                r = b%a;
                b = a;
                a = r;
            }
            GCD = b;
        }
        else{
            GCD = a;
        }
    }

     if(GCD!=0){
        LCM = (n1*n2)/GCD;
        printf("LCM is %d", LCM);
     }

  return 0; }
```

9. GCD and LCM short method in one program [Used C++]

Solution:

```
#include <iostream>
using namespace std;

int main(){
int L,S,n1,n2;
cin>>L>>S;
n1=L, n2=S;
int R;

while(L%S!=0){
    R=L%S;
    L=S;
    S=R;
}

cout <<"GCD = "<<S<<endl;
cout<<"LCM = "<<(n1*n2)/S;

return 0;
}
```

10. Print all the prime numbers between a given range [Used C++]

Solution:

```
#include <iostream>
using namespace std;

int main(){

int n;
cin>>n;

for(int i=0; i<=n; i++){
    int s=1;
    if(i==0 || i==1){
        s=0;
    }
    else{
        for(int j=2; j<=i/2; j++){
            if(i%j==0){
                s=0;
            }
        }
    }

    if(s==1){
        cout<<i<<" ";
    }
}

return 0;
}
```