Name: Antarin Ghosal

Ha 7.1

```c
/*
Antarin Ghosal
HA7.1 WAP to test whether a number num (num is entered through keyboard) is a number in
 the Fibonacci sequence or not.
*/

int fibo(int x)
{
    int a=-1,b=1,c=a+b,flag=0;
    while(c<=x)
    {
        if(c==x)
            flag=1;
        a=b;
        b=c;
        c=a+b;
    }

    return flag;
}

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

    if(fibo(num))
        printf("%d comes in fibonaci series",num);
    else
        printf("IT DOES NOT COMES IN FIBONACCI SERIES");
    return 0;

}
```

```
Enter a number: 72
IT DOES NOT COMES IN FIBONACCI SERIES
```

```
Enter a number: 5
5 comes in fibonaci series
```

Ha 7.2

```c
/*
Antarin Ghosal
HA7.2 WAP to compute the power series (e to the power x).
ex=1+x+x^2/2!+x^3/3!+x^4/4!+...
*/

#include<stdio.h>

int POWER(int x,int y)
{
    int pow=1,i;
    for(i=1;i<=y;i++)
        pow*=x;

    return pow;
}

int fact(int x)
{
    int i,fact=1;
    for(i=1;i<=x;i++)
        fact*=i;
        return fact;
}

int main()
{
    int x,term=1;
    float sum=1.0;
    printf("ENTER THE VALUE OF X: ");
    scanf("%d",&x);
    while(term<x)
    {
        sum+=(float)POWER(x,term)/fact(term);
        term++;
    }
    printf("sum of the series: %0.2f",sum);
}
```

```
ENTER THE VALUE OF X: 5
sum of the series: 65.38
```

```
ENTER THE VALUE OF X: 10
sum of the series: 10086.57
```

Ha 7.3

```c
/*
Antarin Ghosal
HA7.3 WAP to find the LCM of two numbers a and b by using a suitable function (say LCM)
for this.
*/

#include<stdio.h>

int LCM(int a,int b)
{
    int i,lcm;
        for(i=1;i<=(a<b?a:b);i++)
            if(a%i==0&&b%i==0)
                lcm=i;
    return lcm;
}

int main()
{
    int x,y;
    printf("ENTER the value of A and B : ");
        scanf("%d %d",&x,&y);
    printf("LCM of %d and %d is %d",x,y,LCM(x,y));

    return 0;

}
```

```
ENTER the value of A and B : 10 20
LCM of 10 and 20 is 10
```

```
ENTER the value of A and B : 10 3
LCM of 10 and 3 is 1
```

Ha 7.4

```c
/*
Antarin Ghosal
HA7.4 WAP to find out the sum of n elements of an integer array a[] by using recursion.
*/

#include<stdio.h>

void sumOfArray(int a[],int n,int sum)
{
    if(n>=0)
    {
```

```
        sum+=(a[n]);
    sumOfArray(a,n-1,sum);
    }
    else
    printf("Sum:%d",sum);
}


int main()
{
    int i,n,sum=0;
    printf("ENTER NUMBER OF ARRay elements: ");
    scanf("%d",&n);
    int a[n];
    printf("Enter array elements:\n");
    for(i=0;i<n;i++)
        scanf("%d",&a[i]);
        sumOfArray(a,n-1,sum);
    return 0;

}
```

```
ENTER NUMBER OF ARRay elements:
Enter array elements:
1
2
3
4
5
Sum:15
```

```
ENTER NUMBER OF ARRay elements: 3
Enter array elements:
7
8
9
Sum:24
```

Ha 7.5

```
/*
Antarin Ghosal
HA7.5 WAP by designing a recursive function to calculate the sum of all even digits of
any given integer.
*/

#include<stdio.h>

void sumEd(int num,int sum)
{
    if(num!=0)
    {
        if((num%10)%2==0)
```

```
            sum+=num%10;
        sumEd(num/10,sum);
    }
    else
    printf("SUM OF EVEN DIGIT:%d ",sum);
    return;
}

int main()
{
    int n,sum=0;
    printf("ENter the number: ");
    scanf("%d",&n);
    sumEd(n,sum);
    return 0;
}
```

```
ENter the number: 72
SUM OF EVEN DIGIT:2
```

```
ENter the number: 272
SUM OF EVEN DIGIT:4
```

La 7.1

```
/*
Antarin Ghosal
LA7.1 WAP to swap the values of two variables by using a suitable user defined function
(say SWAP) for it.
*/

#include<stdio.h>

void SWAP(int x,int y)
{
    x=x+y;
    y=x-y;
    x=x-y;
    printf("value of a:%d b:%d After swap\n ",x,y);
}

int main()
{
    int a,b;
    printf("Enter the value of a and b: ");
    scanf("%d %d",&a,&b);
    printf("Value of a:%d b:%d before swap\n",a,b);
    SWAP(a,b);
    return 0;
```

```
}
```

```
Enter the value of a and b: 10 20
Value of a:10 b:20 before swap
value of a:20 b:10 After swap
```

```
Enter the value of a and b: 30 40
Value of a:30 b:40 before swap
value of a:40 b:30 After swap
```

La 7.2

```c
/*
Antarin Ghosal
LA7.2 WAP to find out ncr factor by using a user defined function for factorial (say
fact).
*/

#include<stdio.h>

int fact(int x)
{
    int i,fact=1;
    for(i=1;i<=x;i++)
        fact*=i;
        return fact;
}


int main()
{
    int n,r;
    printf("Enter the value of n and r: ");
    scanf("%d %d",&n,&r);
    int nCr=fact(n)/(fact(r)*fact(n-r));
    printf("\nnCr:%d",nCr);
    return 0;
}
```

```
Enter the value of n and r: 10 3

nCr:120
```

```
Enter the value of n and r: 30 3

nCr:4
```

La 7.3

```c
/*
Antarin Ghosal
LA7.3 WAP to test whether a number n is palindrome number or not.
*/

#include<stdio.h>

int pali(int x)
{
    int rem,rev,temp;
    temp=x;
    while(x!=0)
    {
        rem=x%10;
        rev=rev*10+rem;
        x=x/10;
    }
    if(rev==temp)
        return 1;
    else
        return 0;
}

int main()
{

    int n;
    printf("Enter a number: ");
    scanf("%d",&n);
    if(pali(n))
        printf("%d is palindrome",n);
    else
        printf("%d is not palndrome",n);

    return 0;
}
```

```
Enter a number: 1234
1234 is not palndrome
```

```
Enter a number: 1221
1221 is palindrome
```

La 7.4

```c
/*
Antarin Ghosal
LA7.4 WAP to calculate x^y by writing a function(say POWER) for it.
*/

#include<stdio.h>

int POWER(int x,int y)
{
    int pow=1,i;
    for(i=1;i<=y;i++)
        pow*=x;

    return pow;
}

int main()
{

    int n,m;
    printf("Enter a number: ");
    scanf("%d",&n);
    printf("enter power:");
    scanf("%d",&m);
    printf("%d power %d: %d",n,m,POWER(n,m));


    return 0;
}
```

```
Enter a number: 1234
enter power:2
1234 power 2: 1522756
```

```
Enter a number: 2
enter power:8
2 power 8: 256
```

La 7.5

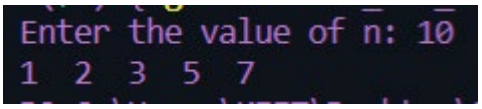
```c
/*
Antarin Ghosal
LA7.5 WAP to generate all the prime numbers between 1 and n by using a user defined
function (say isPRIME) to be used for prime number testing, where n is a value supplied by
the user.
*/
```

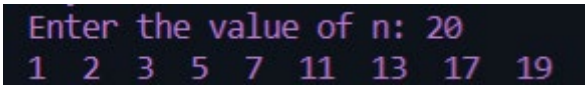
```c
#include<stdio.h>

int isPrime(int x)
{
    int flag=0,i;
    for(i=2;i<x;i++)
        if(x%i==0)
            flag=1;
    if(flag==1)
        return 0;
    else
        return 1;
}

int main()
{

    int n,i;
    printf("Enter the value of n: ");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
        if(isPrime(i))
            printf("%d  ",i);
    return 0;
}
```





La 7.6

```c
/*
Antarin Ghosal
LA7.6 A Fibonacci sequence is defined as follows: the first and second terms in the
sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the
 sequence (Fi=Fi-1+Fi-2). WAP to generate the first n terms of the sequence by writing a
 suitable user defined function (say fib) to be used to get nth term Fibonacci value.
*/

#include<stdio.h>

int fib(int x)
{
    int a=-1,b=1,c=a+b,i;
    for(i=1;i<=x;i++)
```

```
        {
            a=b;
            b=c;
            c=a+b;
        }
    return c;
}

int main()
{
    int n,i;
    printf("Enter the value of n: ");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
        printf("%d ",fib(i));
    return 0;
}
```

```
Enter the value of n: 10
1 1 2 3 5 8 13 21 34 55
```

```
Enter the value of n: 15
1 1 2 3 5 8 13 21 34 55 89 144 233 377 610
```

La 7.7

```
/*
Antarin Ghosal
LA7.7 WAP to compute the cosine series using function.
cos(x)=1-x^2/2!+x^4/4!-x^6/6!+ ?
*/

#include<stdio.h>

int POWER(int x,int y)
{
    int pow=1,i;
    for(i=1;i<=y;i++)
        pow*=x;

    return pow;
}

int fact(int x)
{
    int i,fact=1;
    for(i=1;i<=x;i++)
        fact*=i;
```

```
        return fact;
}

int main()
{
    float sum=1.0;
    int term=1,y=2,n,x;
    printf("Enter the value of N: ");
    scanf("%d",&n);
    printf("enter the value of x: ");
    scanf("%d",&x);
    while(term<n)
    {
        if(term%2!=0)
            sum-=(float)POWER(x,y)/fact(y);
        else
            sum+=(float)POWER(x,y)/fact(y);

        y=y+2;
        term=term+1;
    }

    printf("SUM OF THE SERIES: %0.2f",sum);
    return 0;
}
```

```
Enter the value of N: 10
enter the value of x: 10
SUM OF THE SERIES: 1067.91
```

```
Enter the value of N: 10
enter the value of x: 2
SUM OF THE SERIES: -0.42
```

La 7.8

```
/*
Antarin Ghosal
LA7.8 WAP to count number of digits of a positive integer n by using recursion.
*/

#include<stdio.h>

void COUNT(int num,int count)
{
    if(num<0)
    {
        printf("the number is not postive");
        return;
```

```c
    }
    if(num!=0)
    {
            count+=1;
        COUNT(num/10,count);
    }
    else
    printf("NUMBER OF DIGIT: :%d ",count);
    return;
}

int main()
{
    int n,count=0;
    printf("ENter the number: ");
    scanf("%d",&n);
    COUNT(n,count);
    return 0;
}
```

```
ENter the number: 10
NUMBER OF DIGIT: :2
```

```
ENter the number: 12345
NUMBER OF DIGIT: :5
```