ANKAN MUKHERJEE , ROLL - 1828049 , SECTION - CSSE-1
ASSIGNMENT-1

Q1.
Program to find the GCD of n numbers.
Input: n=6
5 10 25 45 95 65
Output: 5

```c
#include <stdio.h>
#include <stdlib.h>
int* sort(int a[],int n){
    for (int i = 0; i < n; ++i)
    {
        for (int j = i+1; j <n ; ++j)
        {
            if (a[i] >= a[j])
            {
                int t = a[i];
                a[i] = a[j];
                a[j] = t;
            }
        }
    }
    return a;
}
int gcd(int a[], int n){
    int c=2,c1=0,b=1;

    int *d = (int*)malloc(n*sizeof(int));
    d= sort(a,n);
    do{
        for (int i = 0; i < n; ++i)
        {
            if (*(d+i)%c == 0)
            {
                c1++;
            }
        }
        if (c1 == n){
            b=c;c++;c1=0;
        }else{
            c++;c1=0;
        }

    }while(c<=*(d+0));
```

```c
return b;

}
int main(){
    int n;
    printf("Enter no of items\n");
    scanf("%d",&n);
    int a[n];
    printf("Enter the no\n");
    for (int i = 0; i < n; ++i)
    {
        scanf("%d",&a[i]);
    }
    int ans = gcd(a,n);

    printf("GCD = %d\n",ans );
}
```


Q2.
Program to print nth Fibonacci number. 0 1 1 2 3 5 8 13 21…….
Input: n=7
Output: 8

#include <stdio.h>

```c
#include <stdlib.h>
int fib(int n){
    int x=0,y=1,z=x+y;
    int a[n];
    a[0]=0;a[1]=1;
    int n1=2;
    while(n1<=n){
        z=x+y;
        x=y;
        y=z;
        a[n1]=z;
        n1++;
    }
    return a[n-1];
}
void main(){
    int n;
    printf("Enter value of n\n");
    scanf("%d",&n);
    int ans = fib(n);
    printf("%d th Fibonacci number is = %d\n",n,ans);

}
```


Q3.

Program to print nth prime number.
Input: n=5
Output: 11

```c
#include <stdio.h>
#include <stdlib.h>
int prime(int n){
    int a[n];
    int n1=0,j=1,k=0;
    while(n1<=n){
        int c=0;
        for (int i = 2; i <j ; ++i)
        {
            if (j%i == 0)
            {
                c++;
            }

        }
        if (c==0)
        {
            a[k]=j;
            k++;
            n1++;
        }
        j++;
    }
    return a[n1-1];
}
void main(){
    int n;
    printf("Enter value of n\n");
    scanf("%d",&n);
    int ans = prime(n);
    printf("%d th prime number is = %d\n",n,ans);

}
```

```
q3.c
1    #include <stdio.h>
2    #include <stdlib.h>
3    int prime(int n){
4      int a[n];
5      int n1=0,j=1,k=0;
6      while(n1<=n){
7        int c=0;
8        for (int i = 2; i <j ; ++i)
9        {
10         if (j%i == 0)
11         {
12           c++;
13         }
14
15       }
16       if (c==0)
17       {
18         a[k]=j;
19         k++;
20         n1++;
21       }
22       j++;
23     }
24     return a[n1-1];
25   }
26   void main(){
27     int n;
28     printf("Enter value of n\n");
29     scanf("%d",&n);
30     int ans = prime(n);
31     printf("%d th prime number is = %d\n",n,ans);
32
33   }
```
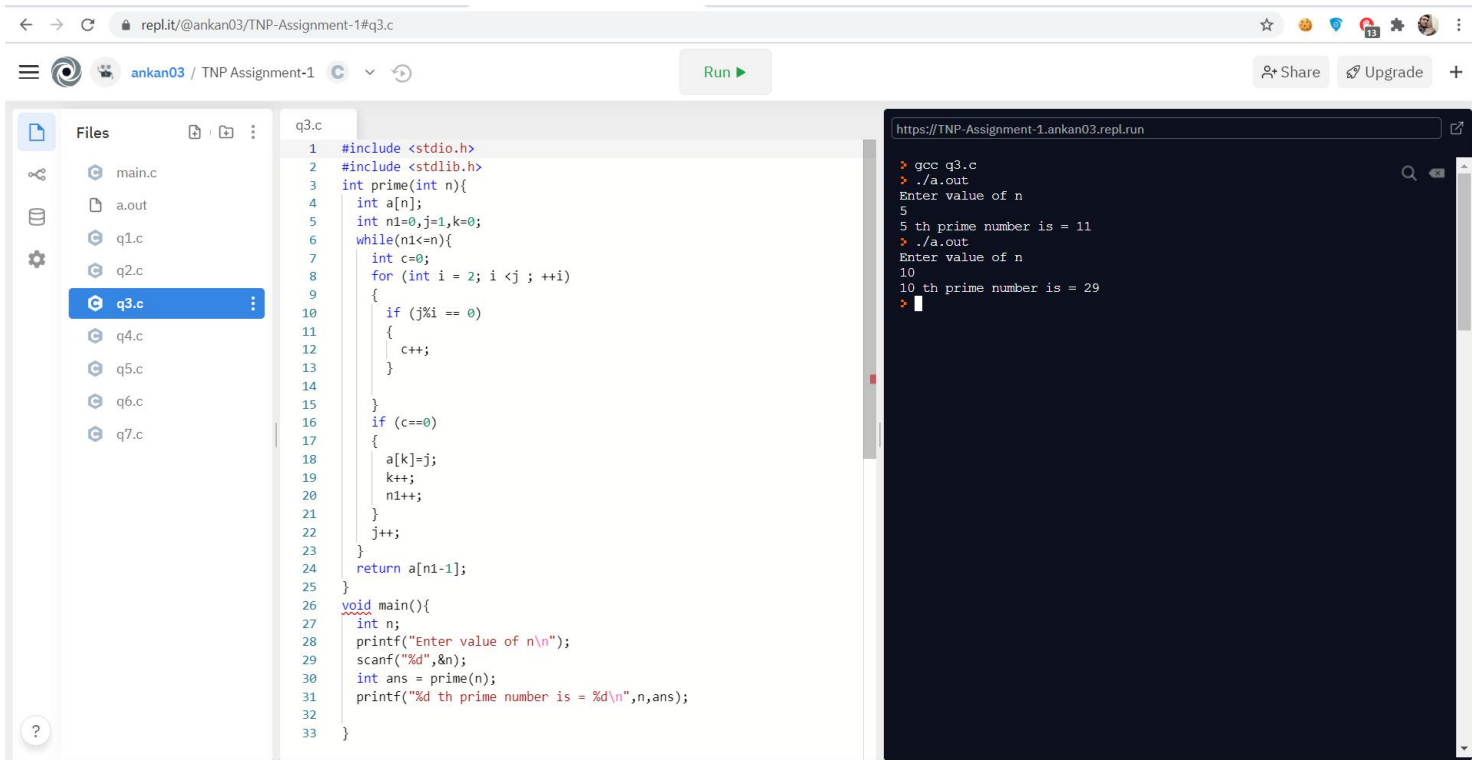
Q4.
Program to find sum of the prime factors of a number.
Input: n=100
Output: 2+5=7

```c
#include <stdio.h>
#include <stdlib.h>
int isPrime(int n){
    int c=0;
    for (int i = 2; i <= n/2; ++i)
    {
        if (n%i==0)
        {
            c++;
        }
    }
    if (c==0)
    {
        // printf("n = %d, returned 1\n",n );
        return 1;
    }else{
        // printf("n = %d, returned 0\n",n );
        return 0;
    }
}
int SumPrimeFactor(int n){
    int a[n];
    int c=0,s=0;
```

```c
    for (int i = 2; i <= n/2; ++i)
    {
        if (n%i == 0)
        {
            if (isPrime(i))
            {
                a[c]=i;
                c++;
            }
        }
    }
    for (int i = 0; i < c; ++i)
    {
        s += a[i];
    }
    return s;
}
void main(){
    int n;
    printf("Enter value of n\n");
    scanf("%d",&n);
    int ans = SumPrimeFactor(n);
    printf("Sum of Prime Factor of %d is = %d\n",n,ans);

}
```



```c
q4.c
1   #include <stdio.h>
2   #include <stdlib.h>
3   int isPrime(int n){
4     int c=0;
5     for (int i = 2; i <= n/2; ++i)
6     {
7       if (n%i==0)
8       {
9         c++;
10      }
11    }
12    if (c==0)
13    {
14      return 1;
15    }else{
16      return 0;
17    }
18  }
19  int SumPrimeFactor(int n){
20    int a[n];
21    int c=0,s=0;
22    for (int i = 2; i <= n/2; ++i)
23    {
24      if (n%i == 0)
25      {
26        if (isPrime(i))
27        {
28          a[c]=i;
29          c++;
30        }
31      }
32    }
33    for (int i = 0; i < c; ++i)
34    {
35      s += a[i];
36    }
37    return s;
38  }
39  void main(){ ...
46  }
```

```
https://TNP-Assignment-1.ankan03.repl.run
> gcc q4.c
> ./a.out
Enter value of n
100
Sum of Prime Factor of 100 is = 7
> ./a.out
Enter value of n
1000
Sum of Prime Factor of 1000 is = 7
> ./a.out
Enter value of n
20
Sum of Prime Factor of 20 is = 7
> ./a.out
Enter value of n
6
Sum of Prime Factor of 6 is = 5
>
```

Q5.
Program to print first n non-fobo numbers. First n numbers not in Fibonacci series. 0 1 1 2 3 5 8 13……
Input: n=5
Output: 4 6 7 9 10

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

void fib(int n){
    int x=0,y=1,z=x+y,k=0;
    int a[n+5],b[n];
    a[0]=0;a[1]=1;
    int n1=2;
    while(k<=n){
        z=x+y;
        x=y;
        y=z;
        a[n1]=z;

        if (a[n1]-a[n1-1]>1)
        {
            // printf("a[n1] = %d , a[n1-1] = %d\n",a[n1],a[n1-1]);
            int p = a[n1-1]+1;

            while(p < a[n1]){
                b[k]=p;
                k++;p++;
            }
        }
        n1++;
    }
    for (int i = 0; i < n; ++i)
    {
        printf("%d\t",b[i] );
    }
    // return b[n-1];
}
void main(){
    int n;
    printf("Enter value of n\n");
    scanf("%d",&n);
    fib(n);
    // printf("%d th Non-Fibonacci number is = %d\n",n,ans);
}
```

```c
q5.c
1    #include <stdio.h>
2    #include <stdlib.h>
3
4    void fib(int n){
5        int x=0,y=1,z=x+y,k=0;
6        int a[n+5],b[n];
7        a[0]=0;a[1]=1;
8        int n1=2;
9        while(k<=n){
10           z=x+y;
11           x=y;
12           y=z;
13           a[n1]=z;
14
15           if (a[n1]-a[n1-1]>1)
16           {
17               int p = a[n1-1]+1;
18
19               while(p < a[n1]){
20                   b[k]=p;
21                   k++;p++;
22               }
23           }
24           n1++;
25       }
26       printf("Upto %d 'th Non Fibonacci series is\n",n);
27       for (int i = 0; i < n; ++i)
28       {
29           printf("%d\t",b[i] );
30       }
31       printf("\n");
32   }
33   void main(){
34       int n;
35       printf("Enter value of n\n");
36       scanf("%d",&n);
37       fib(n);
38   }
```

https://TNP-Assignment-1.ankan03.repl.run

```
> gcc q5.c
> ./a.out
Enter value of n
5
Upto 5 'th Non Fibonacci series is
4    6    7    9    10
> ./a.out
Enter value of n
10
Upto 10 'th Non Fibonacci series is
4    6    7    9    10   11   12   14   15   16
> ./a.out
Enter value of n
100
Upto 100 'th Non Fibonacci series is
4    6    7    9    10   11   12   14   15   16   17   18   19   20   22   23   24   25 2
6    27   28   29   30   31   32   33   35   36   37   38   39   40   41   42   43   44 4
5    46   47   48   49   50   51   52   53   54   56   57   58   59   60   61   62   63 6
4    65   66   67   68   69   70   71   72   73   74   75   76   77   78   79   80   81 8
2    83   84   85   86   87   88   90   91   92   93   94   95   96   97   98   99   1001
01   102  103  104  105  106  107  108  109  110
>
```

Q6.
Program to convert a number from decimal to binary
Input: 5
Output: 0101

```c
#include <stdio.h>
#include <math.h>
int main(){
    int n,j=0;
    printf("Enter no\n");
    scanf("%d",&n);
    printf("Binary value of %d = ",n );
    int a[(int)log2(n) +1];
    while(n>0){
        a[j] = n % 2;
        j++;
        n /= 2;
    }

    for (int i = j-1; i >=0; i--)
    {
        printf("%d", a[i]);
    }
}
```

```
C:\Users\KIIT\Desktop\TNP\coding assignment-1 answer\q6.c - Sublime Text (UNREGISTERED)
File  Edit  Selection  Find  View  Goto  Tools  Project  Preferences  Help
```

```c
1    #include <stdio.h>
2    #include <math.h>
3    int main(){
4        int n,j=0;
5        printf("Enter no\n");
6        scanf("%d",&n);
7        printf("Binary value of %d = ",n );
8        int a[(int)log2(n) +1];
9        while(n>0){
10           a[j] = n % 2;
11           j++;
12           n /= 2;
13       }
14
15       for (int i = j-1; i >=0; i--)
16       {
17           printf("%d", a[i]);
18       }
19   }
```

```
C:\Windows\System32\cmd.exe
C:\Users\KIIT\Desktop\TNP\coding assignment-1 answer>gcc q6.c

C:\Users\KIIT\Desktop\TNP\coding assignment-1 answer>a
Enter no
5
Binary value of 5 = 101
C:\Users\KIIT\Desktop\TNP\coding assignment-1 answer>a
Enter no
10
Binary value of 10 = 1010
C:\Users\KIIT\Desktop\TNP\coding assignment-1 answer>
```

Q7.
Program to check whether a number is a Harshad number or not. Harshad Number is an integer that is divisible by the sum of its digits.
Input: 1729
Output: Harshad Number

```c
#include <stdio.h>
void harshadNumber(int n){
    int n1=n,s=0;
    while(n1>=1){
        s = s + n1%10;
        n1 /= 10;
    }
    if (n%s == 0)
        printf("Harshad number\n");
    else
        printf("Not a Harshad number\n");
}
int main(){
    int n;
    printf("Enter no\n");
    scanf("%d",&n);
    harshadNumber(n);
```

return 0;
}

Files

- main.c
- a.out
- q1.c
- q2.c
- q3.c
- q4.c
- q5.c
- q6.c
- **q7.c**

q7.c

```c
#include <stdio.h>
void harshadNumber(int n){
  int n1=n,s=0;
  while(n1>=1){
    s = s + n1%10;
    n1 /= 10;
  }
  if (n%s == 0)
    printf("Harshad number\n");
  else
    printf("Not a Harshad number\n");
}
int main(){
  int n;
  printf("Enter no\n");
  scanf("%d",&n);
  harshadNumber(n);
  return 0;
}
```

https://TNP-Assignment-1.ankan03.repl.run

```
> gcc q7.c
> ./a.out
Enter no
1729
Harshad number
> ./a.out
Enter no
1728
Harshad number
> ./a.out
Enter no
1727
Not a Harshad number
>
```