

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

```
#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));
```

```

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 );
}

```

The screenshot shows a C++ IDE interface. On the left is a file explorer with a list of files: main.c, a.out, q1.c (selected), q2.c, q3.c, q4.c, q5.c, q6.c, and q7.c. The main editor displays the source code for q1.c, which includes headers, a gcd function, a sort function, and a main function. The terminal window on the right shows the execution of the program, with input and output values.

```

q1.c
1  #include <stdio.h>
2  #include <stdlib.h>
3  int* sort(int a[],int n){ ...
17 }
18 int gcd(int a[], int n){
19     int c=2,c1=0,b=1;
20
21     int *d = (int*)malloc(n*sizeof(int));
22     d= sort(a,n);
23
24     do{
25         for (int i = 0; i < n; ++i)
26         {
27             if (*(d+i)%c == 0)
28             {
29                 c1++;
30             }
31         }
32         if (c1 == n){
33             b=c;c++;c1=0;
34         }else{
35             c++;c1=0;
36         }
37     }while(c<=(d+0));
38     return b;
39 }
40
41 int main(){ ...
54 }

```

```

https://TNP-Assignment-1.ankan03.repl.run
> gcc q1.c
> ./a.out
Enter no of items
5
Enter the no
10
5
15
25
20
GCD = 5
> ./a.out
Enter no of items
6
Enter the no
4
10
22
16
6
12
GCD = 2
>

```

Q2.

Program to print nth Fibonacci number. 0 1 1 2 3 5 8 13 21.....

Input: n=7

Output: 8

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

```

#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);
}

```

The screenshot shows a web-based IDE interface for 'TNP Assignment-1' by user 'ankan03'. The left sidebar displays a file explorer with files: main.c, a.out, q1.c, q2.c (selected), q3.c, q4.c, q5.c, q6.c, and q7.c. The main editor area shows the C code for the Fibonacci program, with line numbers 1 through 24. The code is identical to the one provided in the first block. The right sidebar shows the terminal output of the program. The terminal prompt is 'https://TNP-Assignment-1.ankan03.repl.run'. The execution shows the command 'gcc q2.c' and './a.out' being run. The program prompts 'Enter value of n' and receives input '7', resulting in the output '7 th Fibonacci number is = 8'. It then prompts 'Enter value of n' again and receives input '10', resulting in the output '10 th Fibonacci number is = 34'.

Q3.

Program to print nth prime number.

Input: n=5

Output: 11

```

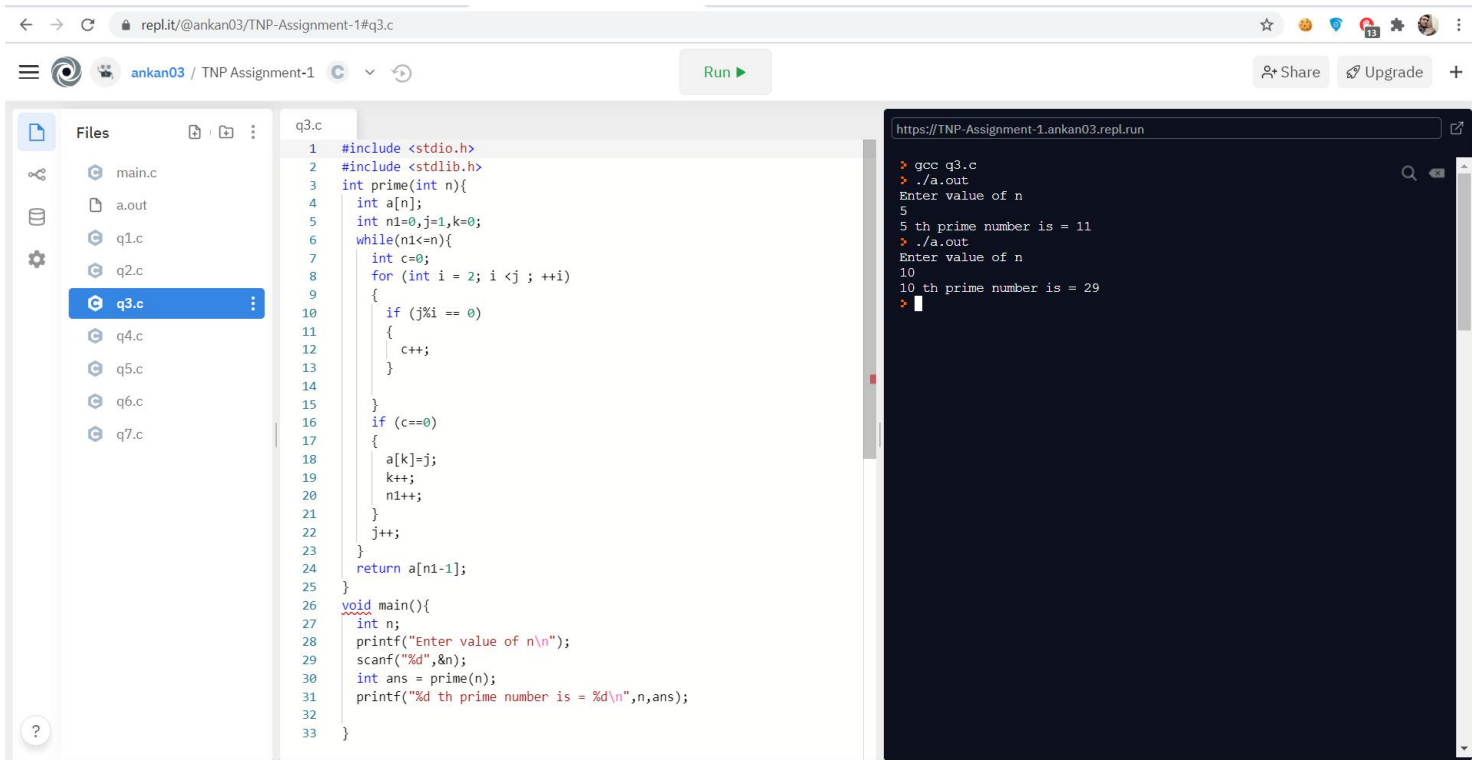
#include <stdio.h>
#include <stdlib.h>
int prime(int n){
    int a[n];
    int n1=0,j=1,k=0;
    while(n1<=n){
        int c=0;
        for (int i = 2; i <j ; ++i)
        {
            if (j%i == 0)
            {
                c++;
            }

        }
        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);

}

```



```
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         if (c==0)
16         {
17             a[k]=j;
18             k++;
19             n1++;
20         }
21         j++;
22     }
23     return a[n1-1];
24 }
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 }
```

```
> gcc q3.c
> ./a.out
Enter value of n
5
5 th prime number is = 11
> ./a.out
Enter value of n
10
10 th prime number is = 29
>
```

Q4.

Program to find sum of the prime factors of a number.

Input: n=100

Output: 2+5=7

```
#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;
```

```

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);
}

```

The screenshot shows a C++ IDE with a file explorer on the left, a code editor in the center, and a terminal on the right. The file explorer shows a project named 'ankan03 / TNP Assignment-1' with files 'main.c', 'a.out', 'q1.c', 'q2.c', 'q3.c', 'q4.c' (selected), 'q5.c', 'q6.c', and 'q7.c'. The code editor displays the C++ code for finding the sum of prime factors. The terminal shows the execution of the program with the following output:

```

> 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

```
#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);
}
```

The screenshot shows an online C compiler interface. On the left, a file explorer lists files: main.c, a.out, q1.c, q2.c, q3.c, q4.c, q5.c (selected), q6.c, and q7.c. The main editor displays the code for q5.c, which is a C program to generate the first n terms of a Fibonacci sequence. The code includes headers for stdio.h and stdlib.h, defines a fib() function, and a main() function that prompts the user for the number of terms and prints the sequence. The output window on the right shows the execution results for three different inputs: 5, 10, and 100. For input 5, the output is 'Upto 5 'th Non Fibonacci series is' followed by the sequence 4, 6, 7, 9, 10. For input 10, the output is 'Upto 10 'th Non Fibonacci series is' followed by the sequence 4, 6, 7, 9, 10, 11, 12, 14, 15, 16. For input 100, the output is 'Upto 100 'th Non Fibonacci series is' followed by a long sequence of numbers starting from 4 and ending with 1001.

```
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
34 void main(){
35     int n;
36     printf("Enter value of n\n");
37     scanf("%d",&n);
38     fib(n);
39 }
```

```
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

```
#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]);
    }
}
```



```
#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:\Windows\System32\cmd.exe
C:\Users\KIIIT\Desktop\TNP\coding assignment-1 answer>gcc q6.c
C:\Users\KIIIT\Desktop\TNP\coding assignment-1 answer>a
Enter no
5
Binary value of 5 = 101
C:\Users\KIIIT\Desktop\TNP\coding assignment-1 answer>a
Enter no
10
Binary value of 10 = 1010
C:\Users\KIIIT\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

```
#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;  
}
```

ankan03 / TNP Assignment-1

Run

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Files

main.c

a.out

q1.c

q2.c

q3.c

q4.c

q5.c

q6.c

q7.c

q7.c

```
1 #include <stdio.h>
2 void harshadNumber(int n){
3     int n1=n,s=0;
4     while(n1!=1){
5         s = s + n1%10;
6         n1 /= 10;
7     }
8     if (n%s == 0)
9         printf("Harshad number\n");
10    else
11        printf("Not a Harshad number\n");
12    }
13 int main(){
14     int n;
15     printf("Enter no\n");
16     scanf("%d",&n);
17     harshadNumber(n);
18     return 0;
19 }
```

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
> 
```