

DATA STRUCTURES

1.EVEN OR ODD NUMBER

```
#include<stdio.h>

int main()
{
    int n;

    printf("enter n value");

    scanf("%d",&n);

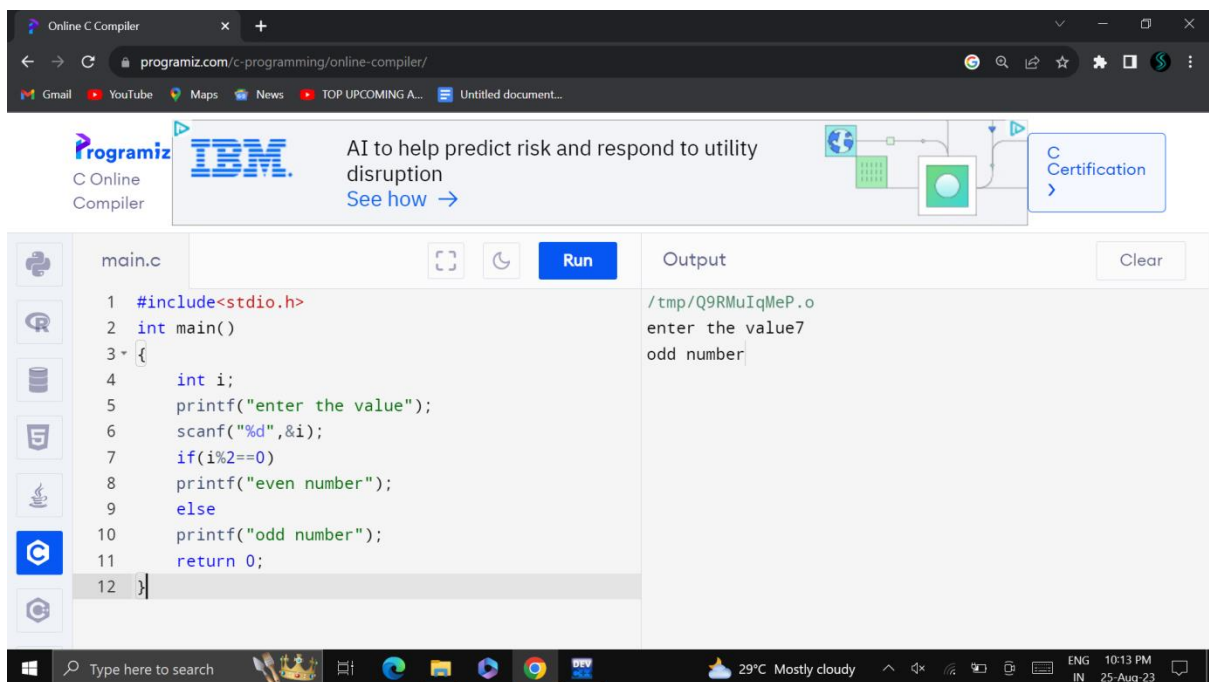
    if(n%2==0)

    printf("even number");

    else

    printf("odd number");

}
```



The screenshot shows a web browser window with the URL `programiz.com/c-programming/online-compiler/`. The page features the Programiz logo, an IBM logo, and a banner for AI risk prediction. Below the banner is a C Online Compiler interface. The code editor on the left shows a C program named `main.c` with the following code:

```
1 #include<stdio.h>
2 int main()
3 {
4     int i;
5     printf("enter the value");
6     scanf("%d",&i);
7     if(i%2==0)
8     printf("even number");
9     else
10    printf("odd number");
11    return 0;
12 }
```

The 'Run' button is highlighted. The output window on the right shows the following text:

```
/tmp/Q9RMuIqMeP.o
enter the value7
odd number
```

The Windows taskbar at the bottom shows the date and time as 10:13 PM on 25-Aug-23, and the weather as 29°C Mostly cloudy.

2. SUM OF FIRST N NUMBERS

```
#include<stdio.h>

int main()
{
    int n,i,s=0;

    printf("enter n value");
```

```

scanf("%d",&n);

for(i=1;i<=n;i++)

s=s+i;

printf("sum=%d",s);

}

```

The screenshot shows the Programiz Online C Compiler interface. The code in main.c is as follows:

```

1 #include<stdio.h>
2 int main()
3 {
4     int i,n,sum=0;
5     printf("enter the n value");
6     scanf("%d",&n);
7     for(i=1;i<=n;i++)
8     {
9         sum=sum+i;
10    }
11    printf("%d",sum);
12    return 0;
13 }

```

The output of the program is:

```

/tmp/Q9RMuIqMeP.o
enter the n value10
55

```

3.EVEN NUMBERS SUM IN FIRST N NATURAL NUMBERS

```

#include<stdio.h>

int main()
{
    int n,i,s=0;

    printf("enter n value");

    scanf("%d",&n);

    for(i=1;i<=n;i++)
    {
        if(i%2==0)

s=s+i;

    }
}

```

```

printf("sum=%d",s);
}

```

The screenshot shows the Programiz Online C Compiler interface. The code editor contains the following C program:

```

main.c
1 #include<stdio.h>
2 int main()
3 {
4     int i,n,sum=0;
5     printf("enter the n value");
6     scanf("%d",&n);
7     for(i=1;i<=n;i++)
8     if(i%2==0)
9     sum=sum+i;
10    printf("%d",sum);
11    return 0;
12 }
13

```

The output window shows the execution results:

```

/tmp/Q9RMuIqMeP.o
enter the n value20
110

```

The browser address bar shows the URL: programiz.com/c-programming/online-compiler/. The top navigation bar includes links for Gmail, YouTube, Maps, News, and a 'TOP UPCOMING A...' link. The main banner promotes learning programming with Programiz at no cost, featuring a 'C Certification' button.

4. ODD NUMBERS SUM IN FIRST N NUMBERS

```

#include<stdio.h>

int main()
{
    int n,i,s=0;

    printf("enter n value");

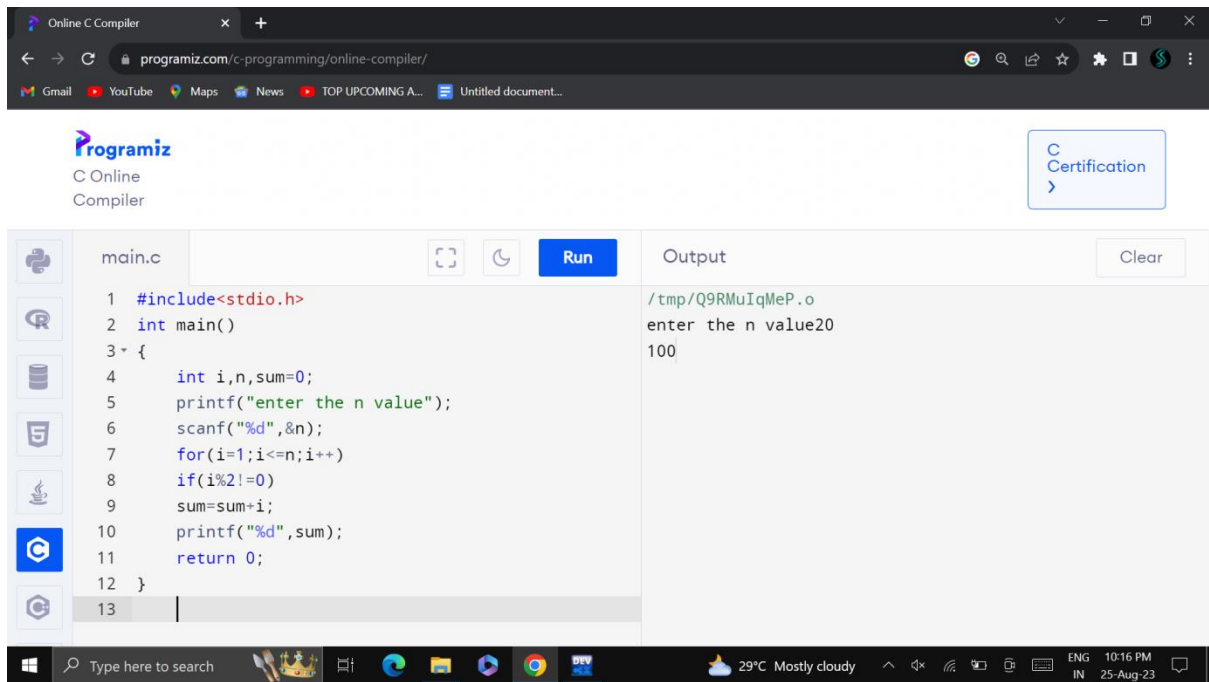
    scanf("%d",&n);

    for(i=1;i<=n;i++)
    {
        if(i%2==1)
        s=s+i;
    }

    printf("sum=%d",s);

}

```



5.FACTORIAL WITHOUT USING RECURSION

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

```
int main()
```

```
{
```

```
    int n,i,f=1;
```

```
    printf("enter n value");
```

```
    scanf("%d",&n);
```

```
    for(i=1;i<=n;i++)
```

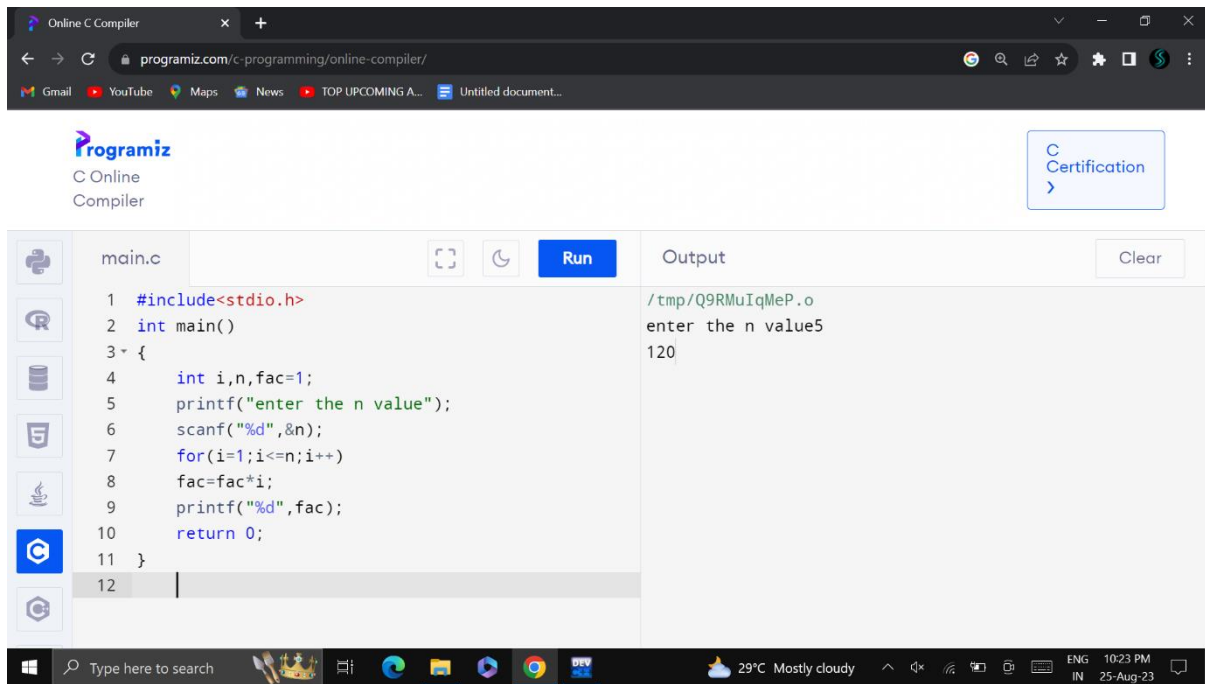
```
    {
```

```
f=f*i;
```

```
}
```

```
    printf("factorial=%d",f);
```

```
}
```



6.FACTORIAL USING RECURSIONS

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

```
int fact(int);
```

```
int main()
```

```
{
```

```
    int f,n;
```

```
    printf("enter n value");
```

```
    scanf("%d",&n);
```

```
    f=fact(n);
```

```
    printf("factorial=%d",f);
```

```
    return 0;
```

```
}
```

```
int fact(int n)
```

```
{
```

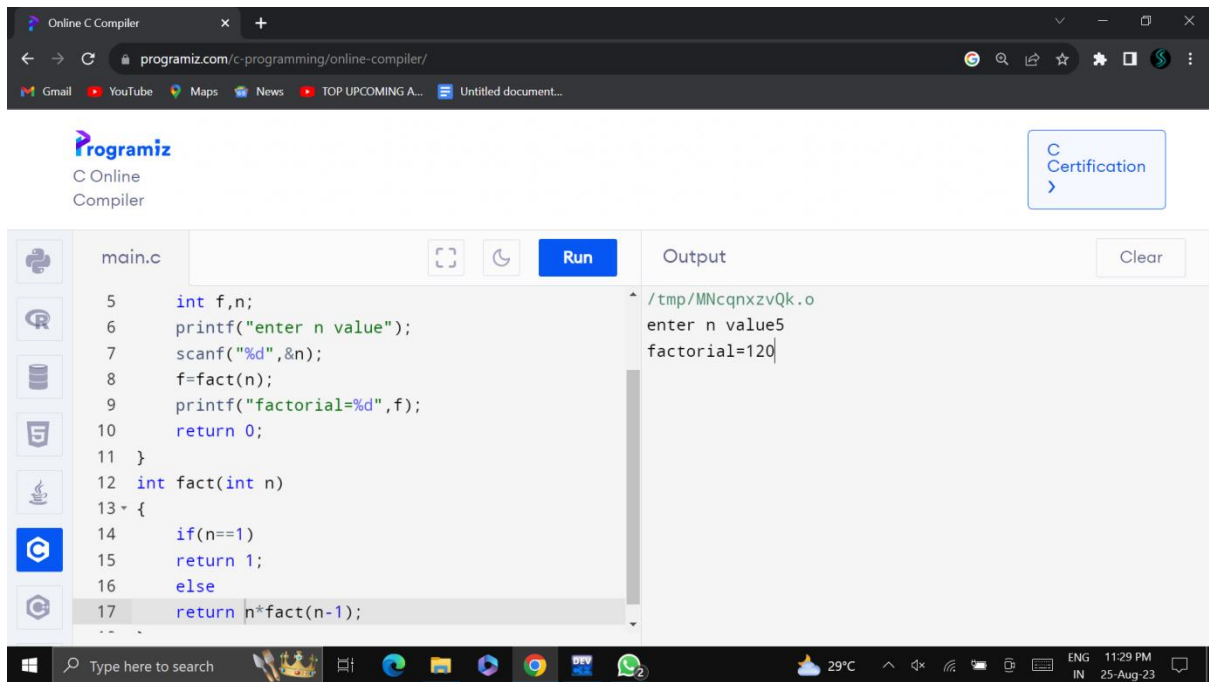
```
    if(n==1)
```

```
        return 1;
```

```
    else
```

```
        return n*fact(n-1);
```

```
}
```



7.FIBONACCI SERIES WITHOUT RECURSION

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

```
int fact(int);
```

```
int main()
```

```
{
```

```
    int a=0,b=1,c,n,t;
```

```
    printf("enter no of terms");
```

```
    scanf("%d",&n);
```

```
    printf("%d\n%d\n",a,b);
```

```
    t=3;
```

```
    while(t<=n)
```

```
    {
```

```
        c=a+b;
```

```
        printf("%d\n",c);
```

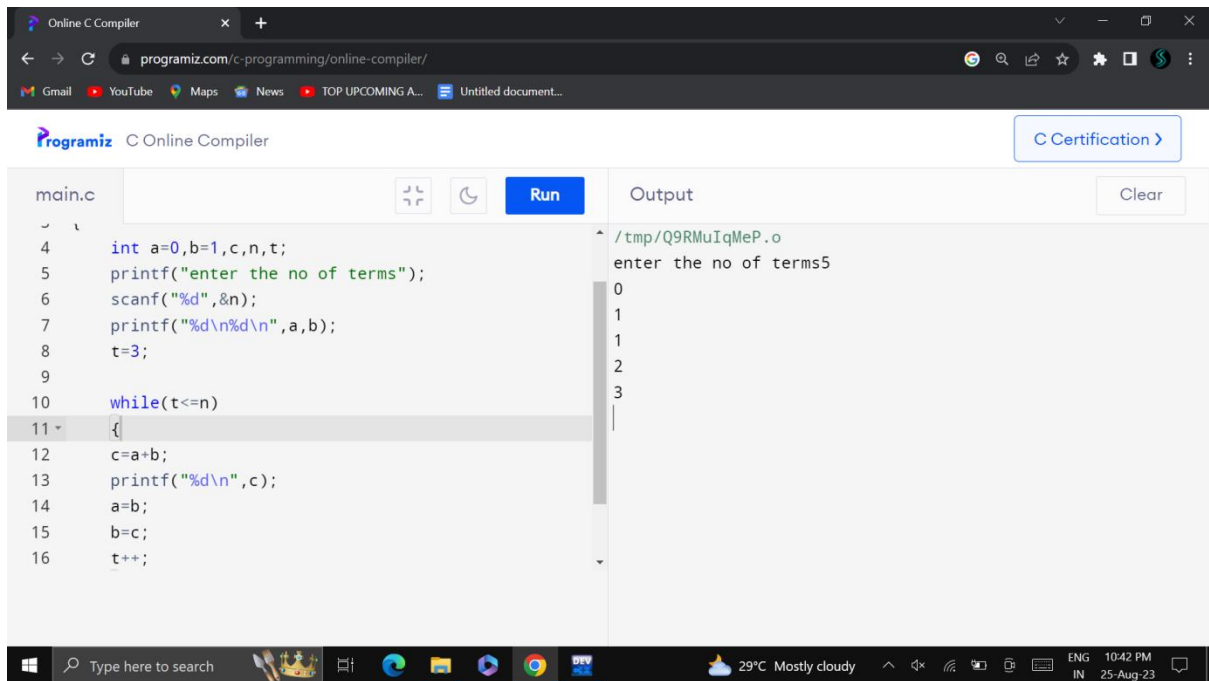
```
        a=b;
```

```
        b=c;
```

```
        t++;
```

```
    }
```

```
}
```



The screenshot shows a web browser window with the URL `programiz.com/c-programming/online-compiler/`. The page title is "Online C Compiler". The main content area is divided into two panels: "main.c" on the left and "Output" on the right. The "main.c" panel contains the following C code:

```
4 int a=0,b=1,c,n,t;
5 printf("enter the no of terms");
6 scanf("%d",&n);
7 printf("%d\n%d\n",a,b);
8 t=3;
9
10 while(t<=n)
11 {
12     c=a+b;
13     printf("%d\n",c);
14     a=b;
15     b=c;
16     t++;
```

The "Output" panel shows the execution results:

```
/tmp/Q9RMuIqMeP.o
enter the no of terms5
0
1
1
2
3
```

The browser's taskbar at the bottom shows the Windows logo, a search bar, and various application icons. The system tray on the right indicates the temperature is 29°C, mostly cloudy, and the time is 10:42 PM on 25-Aug-23.

8. FIBONACCI SERIES USING RECURSIONS

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

```
int fib(int);
```

```
int main()
```

```
{
```

```
    int n,f,i;
```

```
    printf("enter no of terms ");
```

```
    scanf("%d",&n);
```

```
for(i=0;i<n;i++)
```

```
{
```

```
    f=fib(i);
```

```
    printf("\n%d",f);
```

```
}
```

```
}
```

```
int fib(int n)
```

```
{
```

```
    if(n==0)
```

```
        return 0;
```

```

        if(n==1)

        return 1;

        else

        return (fib(n-1)+fib(n-2));

}

```

The screenshot shows a web browser window with the URL `programiz.com/c-programming/online-compiler/`. The page title is "Online C Compiler". The main content area is divided into two sections: "main.c" on the left and "Output" on the right. The "main.c" section contains the following C code:

```

1  int fib(int n)
2  {
3      if(n==0)
4          return 0;
5      if(n==1)
6          return 1;
7      else
8          return (fib(n-1)+fib(n-2));
9  }
10
11 int main()
12 {
13     int n;
14     printf("enter no of terms ");
15     scanf("%d",&n);
16     for(i=0;i<n;i++)
17     {
18         f=fib(i);
19         printf("\n%d",f);
20     }
21 }

```

The "Output" section shows the result of running the program:

```

/tmp/MNcqnxzvQk.o
enter no of terms 5
0
1
1
2
3

```

The browser's taskbar at the bottom shows the Windows logo, a search bar, and several application icons. The system tray on the right indicates the temperature is 29°C, the time is 11:31 PM, and the date is 25-Aug-23.

9.REVERSE A NUMBER

```

#include<stdio.h>

int main()
{
    int n,r,s=0,x;

    printf("enter a number ");

    scanf("%d",&n);

    x=n;

    while(n>0)
    {
        r=n%10;

        s=s*10+r;

        n=n/10;
    }
}

```



```

    }

    printf("reverse number =%d",s);

    return 0;

}

```

The screenshot shows a web browser window with the URL `programiz.com/c-programming/online-compiler/`. The page title is "Programiz C Online Compiler". There is a "C Certification >" button in the top right. The main area is split into two panes. The left pane, titled "main.c", contains the following C code:

```

3 * {
4     int n,s,r,x;
5     printf("enter the number");
6     scanf("%d",&n);
7     x=n;
8     while(n>0)
9     {
10        r=n%10;
11        s=s*10+r;
12        n=n/10;
13    }
14    printf("%d",s);
15    return 0;

```

The right pane, titled "Output", shows the execution results:

```

/tmp/Q9RMuIqMeP.o
enter the number123
321

```

At the bottom of the browser window, the Windows taskbar is visible, showing the search bar, task view, and several application icons. The system tray on the right shows the date and time as "25-Aug-23 11:06 PM" and the language as "ENG IN".

10.PALINDROME NUMBER

```

#include<stdio.h>

int main()
{
    int n,r,s=0,x;

    printf("enter a number ");

    scanf("%d",&n);

    x=n;

    while(n>0)
    {
        r=n%10;

        s=s*10+r;

        n=n/10;
    }

    if(x==s)

```

```

printf("palindrome number");

else

printf("not palindrome number");

return 0;

}

```

The screenshot shows a web browser window with the URL `programiz.com/c-programming/online-compiler/`. The page title is "Online C Compiler". Below the browser window, there is a "Programiz C Online Compiler" interface. On the left, the code in `main.c` is displayed:

```

4  int n,s,r,x;
5  printf("enter the number");
6  scanf("%d",&n);
7  x=n;
8  while(n>0)
9  {
10     r=n%10;
11     s=s*10+r;
12     n=n/10;
13 }
14 if(s==x)
15     printf("given number is palindrome");
16 else
17     printf("given number is not palindrome");

```

On the right, the "Output" window shows the execution results:

```

/tmp/Q9RMuIqMeP.o
enter the number121
given number is palindrome

```

The Windows taskbar at the bottom shows the system time as 11:04 PM on 25-Aug-23.

11.ARMSTRONG NUMBER

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

```
int main()
```

```
{
```

```
    int n,r,s=0,x;
```

```
    printf("enter a number ");
```

```
    scanf("%d",&n);
```

```
    x=n;
```

```
    while(n>0)
```

```
    {
```

```
        r=n%10;
```

```
        s=s+r*r*r;
```

```
        n=n/10;
```

```

    }

    if(s==x)

    printf("armstrong number ");

    else

    printf("not armstrong number");

    return 0;

}

```

The screenshot shows a web browser window with the URL `programiz.com/c-programming/online-compiler/`. The page title is "Online C Compiler". Below the browser window, there is a "Programiz C Online Compiler" interface. It includes a "Run" button and a "C Certification" link. The code editor shows the following C program:

```

main.c
4  int n,s,r,x;
5  printf("enter the number");
6  scanf("%d",&n);
7  x=n;
8  while(n>0)
9  {
10     r=n%10;
11     s=s*r*r*r;
12     n=n/10;
13 }
14 if(s==x)
15 printf("given number is armstrong");
16 else
17 printf("given number is not armstrong");

```

The output window shows the following text:

```

/tmp/Q9RMuIqMeP.o
enter the number153
given number is armstrong

```

The Windows taskbar at the bottom shows the date and time as 10:58 PM on 25-Aug-23, and the weather as 29°C Mostly cloudy.