

19. Write a program in C++ to display following series $1 + 1/2! + 1/3! + 1/4! + 1/5! + \dots + 1/n! = ?$.

```
#include <iostream.h>

#include <conio.h>

void main() {

    int n;

    double sum = 1;

    clrscr();

    cout << "Enter the value of n: ";

    cin >> n;

    double fact = 1;

    cout << "1+";

    for (int i = 2; i <= n; i++) {

        cout << "1/" << i << "!+";

        fact *= i;

        sum += 1/ fact;

    }

    cout << "....=" << sum;

    getch();

}
```

output

Enter the value of n: 5

$1 + 1/2! + 1/3! + 1/4! + 1/5! \dots = 1.71667$

20. Write a program in C++ to display following series $1+x/2!+x/3!+x/4!+x/5!+.....+x/n! = ?$.

```
#include <iostream.h>

#include <conio.h>

void main() {

    int n;

    double x, sum = 1;

    clrscr();

    cout << "Enter the value of x: ";

    cin >> x;

    cout << "Enter the value of n: ";

    cin >> n;

    double fact = 1;

    cout << "1+";

    for (int i = 2; i <= n; i++) {

        fact *= i;

        sum += x / fact;

        cout << x << "/" << i+ << "!";

    }

    cout << "....= " << sum;

    getch();

}
```

Enter the value of x: 3

Enter the value of n: 5

$1 + 3/2! + 3/3! + 3/4! + 3/5!.... = 3.15$

21. Print this pattern.

```
*  
* *  
* * *  
* * * *  
* * * * *
```

```
#include <iostream.h>
```

```
#include <conio.h>
```

```
Void main()
```

```
{
```

```
int i,j;
```

```
for(i=1;i<=5;i++)
```

```
{
```

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

```
cout<<"*"<<" ";
```

```
cout<<"\n";
```

```
}
```

```
getch();
```

```
}
```

22. Print this pattern.

```
* * * * *
* * * *
* * *
* *
*
```

```
#include <iostream.h>
```

```
#include <conio.h>
```

```
void main()
```

```
{
```

```
    int i,j;
```

```
    for(i=1;i<=5;i++)
```

```
{
```

```
    for(j=i;j<=5;j++)
```

```
        cout<<"*";
```

```
        cout<<"\n";
```

```
    }
```

```
    getch();
```

```
}
```

23. Print this pattern.

1
1 2 3
1 2 3 4 5
1 2 3 4 5 6 7
1 2 3 4 5 6 7 8 9

```
#include <iostream.h>
```

```
#include <conio.h>
```

```
Void main()
```

```
{
```

```
int i,j,k;
```

```
for(i=1;i<=5;i++)
```

```
{
```

```
for(j=i;j<=5;j++)
```

```
cout<<" ";
```

```
for(k=1;k<=(i*2)-1;k++)
```

```
{
```

```
cout<<k<<" ";
```

```
}
```

```
cout<<"\n";
```

```
}
```

```
getch();
```

```
}
```

24. Print this pattern.

A
A B C
A B C D E
A B C D E F G
A B C D E F G H I

```
#include <iostream.h>
#include <conio.h>
Void main()
{
    int i,j,k;
    char ch;
    clrscr();
    for(i=1;i<=5;i++)
    { ch='A';
      for(j=i;j<=5;j++)
      cout<<" ";
      for(k=1;k<=(i*2)-1;k++)
      {
          cout<<ch<<" ";
          ch++;
      }
      cout<<"\n";
    }
    getch();
}
```

25. **Print this pattern.**

```
    1
  1 2 3
1 2 3 4 5
1 2 3 4 5 6 7
1 2 3 4 5 6 7 8 9
  1 2 3 4 5 6 7
    1 2 3 4 5
      1 2 3
        1
```

```
#include <iostream.h>
```

```
#include <conio.h>
```

```
Void main()
```

```
{
```

```
int a,b,c;
```

```
    for(a=1;a<=5;a++)
```

```
    {
```

```
        for(b=a;b<=4;b++)
```

```
            cout<<" ";
```

```
        for(c=1;c<=(a*2)-1;c++)
```

```
        {
```

```
            cout<<c<<" ";
```

```
        }
```

```
        cout<<"\n";
```

```
    }
```

```
    for(a=4;a>=1;a--)
```

```
{  
cout<<" ";  
for(b=a;b<=3;b++)  
cout<<" ";  
for(c=1;c<=(a*2)-1;c++)  
{  
cout<<c<<" ";  
}  
cout<<"\n";  
}  
getch();  
}
```