

# Programs

1

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

```
#include <iostream>  
using namespace std;  
int main()  
{  
    for (int i=1; i<=5; i++)  
    {  
        for (int j=1; j<=5; j++)  
        {  
            cout << "x";  
        }  
        cout << endl;  
    }  
    return 0;  
}
```

```
5 5 5 5 5  
4 4 4 4 4  
3 3 3 3 3  
2 2 2 2 2  
1 1 1 1 1
```

```
#include <iostream>  
using namespace std;  
int main()  
{  
    for (int i=1; i<=5; i++)  
    {  
        for (int j=1; j<=5; j++)  
        {  
            cout << i;  
        }  
        cout << endl;  
    }  
    return 0;  
}
```

```
1 1 1 1 1  
2 2 2 2 2  
3 3 3 3 3  
4 4 4 4 4  
5 5 5 5 5
```

```
#include <iostream>  
using namespace std;  
int main()  
{  
    for (int i=1; i<=5; i++)  
    {  
        for (int j=1; j<=5; j++)  
        {  
            cout << i << j;  
        }  
        cout << endl;  
    }  
    return 0;  
}
```

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

```
#include <iostream>  
using namespace std;  
int main()  
{  
    int n=5;  
    int n1;  
    for (int i=1; i<n; i++)  
    {  
        for (int j=i; j<=n; j++)  
        {  
            cout << i << j << " ";  
        }  
        cout << endl;  
    }  
    return 0;  
}
```

```
1 2 3 4 5  
2 4 6 8 10  
3 6 9 12 15  
4 8 12 16 20  
5 10 15 20 25
```

```
#include <iostream>  
using namespace std;  
int main()  
{  
    int n=5;  
    for (int i=1; i<n; i++)  
    {  
        for (int j=1; j<=n; j++)  
        {  
            cout << i << j;  
        }  
        cout << endl;  
    }  
    return 0;  
}
```

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

```
cout << endl;  
return 0;
```

```
5 4 3 2 1  
5 4 3 2 1  
5 4 3 2 1  
5 4 3 2 1  
5 4 3 2 1
```

```
#include <iostream>  
using namespace std;  
int main()
```

```
{  
    for (int i=1; i>=5; i--)  
    {  
        for (int j=1; j>=5; j--)  
        {  
            cout << j << i;  
        }  
        cout << endl;  
    }  
    return 0;  
}
```

```
1 1 1 2 1 3  
2 2 2 2 2 3  
3 2 2 2 3 3  
4 3 2 2 4 3  
5 3 2 2 5 3
```

```
#include <iostream>  
using namespace std;  
int main()  
{  
    for (int i=1; i<=5; i++)  
    {  
        for (int j=1; j<=5; j++)  
        {  
            cout << i << " " << j << " "  
        }  
        cout << endl;  
    }  
    return 0;  
}
```

```
cout << endl;  
return 0;
```

```
1 1 1 2 1 3  
2 2 2 2 2 3  
3 2 2 2 3 3  
4 3 2 2 4 3  
5 3 2 2 5 3
```

①

1	6	11	16	11
2	7	12	17	12
3	8	13	18	13
4	9	14	19	14
5	10	15	20	15

```
#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    int m;
    for (int i=1; i<n; i++)
    {
        for (int j=i; j<n; j++)
        {
            cout << n << endl;
        }
    }
    return 0;
}
```

②

1	2	3	2	2
2	3	2	1	2
3	8	13	18	22
4	9	14	19	23
5	6	15	16	24

```
#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    int m;
    for (int i=1; i<n; i++)
    {
        if ((j)%2 == 1)
        {
            cout << n << endl;
        }
        else
        {
            cout << y << endl;
        }
    }
    return 0;
}
```

③

0	1	0	1	0
1	0	1	0	1
0	2	0	1	0
1	0	1	0	1
0	1	0	1	0

```
#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    for (int i=1; i<n; i++)
    {
        for (int j=i; j<n; j++)
        {
            cout << (i+j)/2 << endl;
        }
    }
    return 0;
}
```

A	A	A	A	A
B	B	B	B	B
C	C	C	C	C
D	D	D	D	D
E	E	E	E	E

```
#include <iostream>
using namespace std;
int main ()
{
    Char i,j;
    for (int i='A'; i<='E'; i++)
    {
        for (int j='A'; j<='E'; j++)
        {
            cout << char(i) << endl;
        }
    }
    return 0;
}
```

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y

```
#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    Char cho='A';
    for (int i=1; i<n; i++)
    {
        for (int j=1; j<n; j++)
        {
            cout << cho << endl;
            if (cho<'Z')
                cho++;
            else
                cho='A';
        }
    }
    return 0;
}
```

15

```

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

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    for(int i=0; i<n; i++)
    {
        for(int j=0; j<n; j++)
        {
            cout<<(char)(i+j+65)<<" ";
        }
        cout<<endl;
    }
    return 0;
}

```

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```

E J O T Y
D I N S X
C H M R W
B G L Q V
A F K P U

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    for(int i=1; i<n; i++)
    {
        for(int j=1; j<=i; j++)
        {
            cout<<(char)(i+j+65)<<" ";
        }
        cout<<endl;
    }
    return 0;
}

```

17

```

1 2
1 2 3
1 2 3 4
1 2 3 4 5

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    for(int i=1; i<n; i++)
    {
        for(int j=1; j<=i; j++)
        {
            cout<<j<<" ";
        }
        cout<<endl;
    }
    return 0;
}

```

18

```

5
4 5
3 4 5
2 3 4 5
1 2 3 4 5

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    for(int i=n-1; i>0; i--)
    {
        for(int j=i; j<=n; j++)
        {
            cout<<j<<" ";
        }
        cout<<endl;
    }
    return 0;
}

```

19

```

1
2 3
4 5 6
7 8 9 10

#include <iostream>
using namespace std;
int main ()
{
    int i,j;
    int n=5;
    for(int i=1; i<=4; i++)
    {
        for(int j=i; j<=i+j; j++)
        {
            cout<<n;
            n+=1;
        }
        cout<<endl;
    }
    return 0;
}

```

20

```

1
3 5
5 7 9
7 9 11 13
9 11 13 15 17

#include <iostream>
using namespace std;
int main ()
{
    #include <iostream>
    for(int i=1; i<=5; i++)
    {
        for(int j=1; j<=i; j++)
        {
            cout<<j;
        }
        cout<<endl;
    }
    return 0;
}

```

21

```

t = 2;
cout<< endl;
return 0;

int i,j,t;
for (i=1; i<=5; i++)
{
    t = i-2;
    for (j=1; j<=i; j++)
    {
        cout<<t<<" ";
    }
    cout<< endl;
}

```

21 2  
 32  
 6 54  
 209 8 7

```

#include <iostream>
using namespace std;
int main ()
{
    int i,j,k=0;
    int n=4; //size
    for (int i=1; i<n; i++)
    {
        k+=i;
        for (int j=k;j>k-i;j--)
        {
            cout<<j;
            cout<<" ";
        }
        cout<<j;
        cout<<"\n";
    }
    return 0;
}
  

```

22 2  
 4 6  
 8 10 12  
 14 16 18 20  
 22 24 26 28 30

```

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    for (int i=1; i<n; i++)
    {
        for (int j=i; j<=i; j++)
        {
            cout<< (i+j)<<" ";
        }
        cout<< endl;
    }
    return 0;
}
  

```

23 2  
 4 6  
 8 10 12  
 14 16 18 20  
 22 24 26 28 30

```

#include <iostream>
using namespace std;
int main ()
{
    int n=6,n2;
    for (int i=n;i>1;i--)
    {
        for (int j=n;j>i;j--)
        {
            cout<<n<<" ";
            n-=2;
        }
        cout<< endl;
    }
    return 0;
}
  

```

24 15  
 14 13  
 12 11 10  
 9 8 7 6  
 5 4 3 2 1

```

#include <iostream>
using namespace std;
int main ()
{
    int n=8;
    int m=(n*(n+1))/2;
    for (int i=n; i>1; i--)
    {
        for (int j=n; j>i; j--)
        {
            cout<<n--<<" ";
        }
        cout<< endl;
    }
    return 0;
}
  

```

25 1  
 1 2  
 3 5 8  
 13 21 34 55  
 99 144 223 447 618

```

#include <iostream>
using namespace std;
int main ()
{
}
  

```

```

int i,j;
int n=6,n2,i,r=n1+n2;
for (int i=1; i<=5; i++)
{
    for (int j=1; j<=i; j++)
    {
        cout<<(char)(j+65)<<" ";
    }
    cout<< endl;
}
  

```

26 1  
 2 3 4  
 5 6 7  
 8 9 10  
 11 12 13

```

#include <iostream>
using namespace std;
int main ()
{
}
  

```

```

int n=5;
for (int i=5; i>1; i--)
{
    for (int j=i; j>0; j--)
    {
        cout<<(char)(j+65)<<" ";
    }
    cout<< endl;
}
return 0;
}
  

```

27 1  
 2 3 4  
 5 6 7  
 8 9 10  
 11 12 13

```

#include <iostream>
using namespace std;
int main ()
{
    for (int i=5; i>1; i--)
    {
        for (int j=1; j<=i; j++)
        {
            cout<<j;
        }
        cout<< endl;
    }
    return 0;
}
  

```

" " : blank char or sym

29

```

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

```

```

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    for (int i=1; i<=n; i++)
    {
        for (int j=1; j<=n-i; j++)
        {
            cout << (n-j) << " ";
        }
        cout << endl;
    }
    return 0;
}

```

```

15 14 13 12 11
10 9 8 7
6 5 4
3 2
1

```

```

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    int x=(n*(n+1))/2;
    for (int i=1; i<n; i++)
    {
        for (int j=i; j>i; j--)
        {
            cout << n-i << " ";
        }
        cout << endl;
    }
    return 0;
}

```

30

```

2 2 3 4 5
6 4 8 9
10 0 12 11
13 14
15

```

```

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    int k=1;
    for (int i=n; i>=1; i--)
    {
        for (int j=1; j<=i; j++)
        {
            cout << k << " ";
            k++;
        }
        cout << endl;
    }
    return 0;
}

```

31

```

17 18 19 20
14 15 16
12 13
11

```

```

#include <iostream>
using namespace std;
int main ()
{
    int d1=1; // for printing
    int n=4; // size
    int d2=(n*n)+1;
    for (int i=n; i>=1; i--)
    {
        // for 2nd part
        for (int k=1; k<=i; k++)
        {
            cout << d2 << " ";
            d2++;
        }
        cout << endl;
    }
    return 0;
}

```

```

return 0;
}

```

```

5 9 12 14 15
4 8 11 16
3 7 10
2 6
1

```

```

#include <iostream>
using namespace std;
int main ()
{
    int n=10; // size
    int k=1;
    for (int i=n; i>=1; i--)
    {
        k=i;
        for (int j=1; j<=i; j++)
        {
            cout << k << " ";
            k=k+(n-j);
        }
        cout << endl;
    }
    return 0;
}

```

34)

A	B	C	D	E
A	B	C	D	
A	B	C		
A	B			
A				

```

#include <iostream>
using namespace std;
int main ()
{

```

```

int i,j;
for (int i=4; i>=0; i--)
{
    for (int j=0; j<=i; j++)

```

```

    cout << (char)(j+65);
    cout << endl;
}
return 0;
}

```

35)

F	F	F	E	E
B	D	D	D	
C	C	C	C	
B	B			
A				

```

#include <iostream>
using namespace std;
int main ()
{

```

```

    int i,j;
    for (int i=4; i>=0; i--)
    {
        for (int j=0; j<=i; j++)
        {
            cout << (char)(j+65);
        }
        cout << endl;
    }
    return 0;
}

```

```

}
return 0;
}

```

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

D E F  
G H I J  
L M N O

```
#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    for(int i=1; i<n; i++)
    {
        for(int j=1; j<=n-i+1; j++)
        {
            cout << char( (n-i+j+65) );
        }
        cout << endl;
    }
    return 0;
}
```

```
#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    char ch='A';
    for(int i=1; i<n; i++)
    {
        for(int j=1; j<=i; j++)
        {
            cout << ch;
            if(ch<'Z')
                ch++;
            else
                ch='A';
        }
        /*reset char*/
        cout << endl;
    }
    return 0;
}
```

38

x	x	x
x	x	x
x	x	x

```
#include <iostream>
using namespace std;
int main ()
{
    int n=5; //size
    int i,j,k;
    for(int i=1; i<n; i++)
    {
        for(int j=n-1; j>=i; j--)
        {
            cout << " ";
            for(int k=i; k<=i+k; k++)
            {
                cout << "X";
            }
            cout << endl;
        }
        return 0;
    }
}
```

39

x	x	x
x	x	x
x	x	x

```
#include <iostream>
using namespace std;
int main ()
{
    int n=5; //size
    int i,j,k;
    for(int i=1; i<n; i++)
    {
        for(int j=n-1; j>=i; j--)
        {
            cout << " ";
            for(int k=i; k<=i+k; k++)
            {
                cout << "X";
            }
            cout << endl;
        }
        return 0;
    }
}
```

Another logic if-else

```
int main ()
{
    int n=5;
    int i,j;
    for(int i=1; i<n; i++)
    {
        for(int j=n; j>=i; j--)
        {
            if(i>j)
                cout << "X";
            else
                cout << " ";
        }
        cout << endl;
    }
    return 0;
}
```

40

4	6			
8	10	12		
14	16	18	20	
22	24	26	28	30

41

1	1			
1	2	1		
1	3	3	1	
1	4	6	4	1

42

4	9		
26	25	36	
49	64	82	100

43

15				
14	13			
12	11	10		
9	8	7	6	
5	4	3	2	1

```

#include <iostream>
using namespace std;
int main ()
{
    int n=5, n=2;
    for (int i=n; i>=1; i--)
    {
        for (int j=1; j<=n; j++)
        {
            if (i==j)
                cout << setw(3) << n;
            n+=2;
        }
        else
            cout << setw(3) << "";
        cout << endl;
    }
    return 0;
}

#include <iostream>
using namespace std;
int main ()
{
    int n=4;
    int n=2;
    for (int i=1; i<n; i++)
    {
        for (int s=n-1; s>=i; s--)
        {
            for (int j=n; j>=i+1; j--)
            {
                if (i>=j)
                    cout << setw(4) << (n*n);
                n+=2;
            }
            else
                cout << setw(4) << " ";
        }
        cout << endl;
    }
    return 0;
}

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    int k=(n*(n+1))/2;
    for (int i=1; i<n; i++)
    {
        for (int j=n; j>=i+1; j--)
        {
            if (i>=j)
                cout << setw(3) << k;
            k-=2;
        }
        cout << endl;
    }
    return 0;
}

```

44)

45)

		5
	4	
9		
12	8	3
11	7	2
15	13	10 6 2

```

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    int n=x,y,t;
    for (int i=n;i>=1;i--)
    {
        t=n;
        y=i+1;
        for (int s=1;s<=i;s++)
        {
            cout<<setw(3)<<" ";
        }
        for (int j=n;j>=i;j--)
        {
            cout<<setw(3)<<" ";
            for (int k=i;k>=j;k--)
            {
                cout<<(char)(t+k);
            }
            cout<<endl;
        }
        cout<<endl;
        return 0;
    }
    n=n+1;
    cout<<endl;
}
return 0;

```

45)

C	D
B	B
A	A
A	A

```

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    for (int i=n;i>=1;i--)
    {
        for (int j=i;j>=1;j--)
        {
            cout<<setw(3)<<" ";
            for (int k=i;k>=j;k--)
            {
                cout<<(char)(i+k);
            }
            cout<<endl;
        }
        cout<<endl;
        return 0;
    }
}

```

46)

X	X	X
X	X	X
X	X	X
X	X	X
X	X	X

```

#include <iostream>
using namespace std;
int main ()
{
    int n=5; //Size
    int i,j,k;
    for (int i=n;i>=1;i--)
    {
        for (int j=n-1;j>=i;j--)
        {
            cout<<setw(3)<<" ";
            for (int k=i;k>=j;k++)
            {
                cout<<(char)(k+i);
            }
            cout<<endl;
        }
        cout<<endl;
        return 0;
    }
}

```

47)

1	2	3	4	5
5	6	7	8	
8	9	10		
10	11			
				11

```

#include <iostream>
using namespace std;
int main ()
{
    int n=5;
    int n=t;
    for (int i=0;i<=n;i++)
    {
        for (int j=0;j<=i;j++)
        {
            cout<<setw(3)<<(n-i);
            n++;
        }
        cout<<endl;
    }
    return 0;
}

```

5

X	X			
X	X	X		
X	X	X	X	
X	X	X	X	X

```

#include <iostream>
using namespace std;
int main ()
{
    int p.height=5;
}

```

```

int i,j,k;
for (int i=1;i<=p.height;i++)
{
    for (int k=p.height-1;k>=i;k--)
    {
        cout<<setw(3)<<" ";
    }
}

```

```

cout<<endl;
}
return 0;

```

X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X

```

cout<<endl;
}
cout<<endl;
}
return 0;

```

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```
#include <iostream>
using namespace std;
int main ()
{
    int i,j,k;
    for (int i=1; i<=5; i++)
    {
        for (int k=i; k<=5; k++)
        {
            cout << " ";
        }
        for (int j=1; j<=i; j++)
        {
            cout << " ";
        }
        cout << endl;
    }
    return 0;
}
```

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```
#include <iostream>
using namespace std;
int main ()
{
    int i,j,k;
    int p_height=5;
    for (int i=p_height; i>=1; i--)
    {
        for (int k=p_height-i; k>=1; k--)
        {
            cout << " ";
        }
        for (int j=1; j<=i; j++)
        {
            cout << " ";
        }
        cout << endl;
    }
    return 0;
}
```

51

```
#include <iostream>
using namespace std;
int main ()
{
    int i,j,k;
    for (int i=0; i<5; i++)
    {
        for (int k=0; k<=i; k++)
        {
            cout << " ";
        }
        for (int j=0; j<=i; j++)
        {
            cout << char(j+65);
        }
        cout << endl;
    }
    return 0;
}
```

52

```
3 4 3 2 2
4 3 2 2 2
3 2 2
2 2 2
```

53

```
#include <iostream>
using namespace std;
int main ()
{
    int i,j,k;
    int p_height = 5;
    for (int i=p_height; i>=1; i--)
    {
        for (int k=p_height-i; k>=1; k--)
        {
            cout << " ";
        }
        for (int j=1; j<=i; j++)
        {
            cout << " ";
        }
        cout << endl;
    }
    return 0;
}
```

54

```
#include <iostream>
using namespace std;
int main ()
{
    int i,j,k;
    int i,j,k;
    for (int i=0; i<5; i++)
    {
        for (int k=0; k<=i; k++)
        {
            cout << " ";
        }
        for (int j=0; j<=i; j++)
        {
            cout << " ";
        }
        cout << endl;
    }
    return 0;
}
```

55

```
A B C D E
A B C D
A B
A B
```

55) Factorial

```
#include <iostream>
using namespace std;
void main ()
{
    int i,n,fact=1;
    cout << "Enter a number: ";
    cin >> n;
    for (int i=n; i>=1; i--)
    {
        fact = fact * i;
    }
    cout << "Factorial of " << n << " is " << fact;
    cout << endl;
}
```

56

```
#include <iostream>
using namespace std;
int main ()
{
    int n,y,temp;
    cout << "Enter the value of n and y\n";
    cin >> n >> y;
    cout << "Before Swapping\nn=" << n << endl;
    cout << "y=" << y << endl;
    temp = n;
    n = y;
    y = temp;
    cout << "After swapping\nn=" << n << endl;
    cout << "y=" << y << endl;
    return 0;
}
```

57

Swap without using third variable

```
#include <iostream>
using namespace std;
void main ()
{ int a,b;
```

```
clrscr ();
cout << "Enter value for A:";
```

```
cin >> a;
```

```
cout << "Enter Value of B:";
```

```
cin >> b;
```

```
cout << "Initial value of A and B  
before swapping is A:" << a <<  
" B :" << b;
```

```
a = a+b
```

```
b = a-b
```

```
a = a-b
```

```
cout << "Initial value of A and B  
after swapping is A:" << a <<  
" B :" << b;
```

```
getch ();
```

58)

Fibonacci Series

```
#include <iostream>
using namespace std;
void main ()
```

```
{ clrscr ();
```

```
int first no=a;
```

```
int second no=b;
```

```
int result; user no; cout <<
```

```
"Enter any number:";
```

```
cin >> user no;
```

```
while (1)
```

```
{ result = first no + second no;
```

```
count +=;
```

```
if (result >= user no)
```

```
{
```

```
break;
```

```
}
```

```
first no=second no;
```

```
second no=result;
```

```
cout << "fibonacci No.";
```

```
<< count << ":" << result;
```

```
}
```

```
getch ();
```

59)

Palindrome

```
#include <iostream>
using namespace std;
void main ()
```

```
{ char a[100], b[100];
```

```
cout << "Enter the string to  
check if it is a palindrome\n";
```

```
cin >> a;
```

```
strcpy (b,a);
```

```
strrev (b);
```

```
if (strcmp (a,b) == 0)
```

```
cout << "Entered string is a  
palindrome \n";
```

```
else
```

```
cout << "Entered string is not  
a palindrome \n";
```

```
}
```

60)

Leap Year

```
#include <iostream>
using namespace std;
void main ()
```

```
{ clrscr ();
```

```
int year;
```

```
cout << "Enter the YEAR";
```

```
cin >> year;
```

```
if (year % 400 == 0)
```

```
{
```

```
cout << "year is a leap
```

```
};
```

```
else if (year % 100 == 0)
```

```
{
```

```
cout << "year is not a leap
```

```
};
```

```
else if (year % 4 == 0)
```

```
{
```

```
cout << "year is a leap
```

```
};
```

```
else
```

```
{
```

```
cout << "year is not a leap
```

```
};
```

```
cout << "year is not a leap
```

```
};
```

```
getch ();
```

63)

```

Strong Number
#include <iostream>
using namespace std;
Void main ()
{
    int num,i,p,r,sum=0,save_no;
    cout<<"Enter a number";
    cin>>num;
    Save_num=num;
    while (num)
    {
        i=1,p=1;
        r=num%10;
        while (i<=r)
        {
            p=p*i;
            i++;
        }
        //while
        sum=sum+p;
        num=num/10;
    }
    //while
    if (sum==Save_num)
        cout<<"Save number is a
        strong number";
    else
        cout<<"Save number is Not a
        strong number";
}

```

62)

Revers Number

```

#include <iostream>
using namespace std;
void main ()
{
    long a,b,d=0;
    clrscr();
    cout<<"Enter any no.";
    cin>>a;
    while (a>0)
    {
        b=a%10
        a=a/10
        d=(d*10)+b;
    }
    cout<<"reverse is:">>d;
    getch ();
}

```

63)

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

```

#include <iostream>
using namespace std;
int main ()
{

```

```

    int n=5; // size
    int z=1;
    for (int i=0;i<n;i++)
    {
        for (int j=n-i;j>i;j--)
        {

```

```

            cout<<" ";
        }
        for (int k=0;k<z;k++)
        {

```

```

            cout<<" ";
        }
        z+=2;
    }
    cout<<endl;
}

```

```

return 0;
}

```

64)

2	3	4
5	6	7
8	9	10
11	12	13
14	15	16
17	18	19
20	21	22
23	24	25

```

#include <iostream>
using namespace std;
int main ()
{

```

```

    int n=5, n=1;
    for (int i=1;i<n;i++)
    {
        for (int j=1;j<=n-i;j++)
        {

```

```

            if (j>=n-i&&j!=i)
                cout<<setw(3)<<i;
            else
                cout<<setw(3)<<" ";
        }
    }

```

```

    cout<<endl;
}
return 0;
}

```

66)  $\begin{array}{ccccc} 1 & 2 & 3 & 4 & 5 \\ 2 & 3 & 4 & 5 & 6 \\ 3 & 4 & 5 & 6 & 7 \\ 4 & 5 & 6 & 7 & 8 \\ 5 & 6 & 7 & 8 & 9 \end{array}$

```
#include <iostream>
using namespace std;
int main()
{
    int n=4; //size
    int z=1;
    int i,j,k;
    for (i=1;i<=n;i++)
    {
        for (j=n-i;j>=1;j--)
        {
            cout << " ";
        }
        for (k=i;k>=1;k--)
        {
            cout << z;
            z++;
        }
        cout << endl;
    }
    return 0;
}
```

67)  $\begin{array}{ccccc} 1 & 2 & 3 & 4 & 5 \\ 2 & 3 & 4 & 5 & 6 \\ 3 & 4 & 5 & 6 & 7 \\ 4 & 5 & 6 & 7 & 8 \\ 5 & 6 & 7 & 8 & 9 \end{array}$

```
#include <iostream>
using namespace std;
int main()
{
    int i,j,k=1;
    int n=3; //size
    int m,k,z;
    int q;
    for (i=0;i<n;i++)
    {
        for (j=0;j<z;j++)
        {
            cout << " ";
        }
        for (k=0;k<=i;k++)
        {
            cout << q;
            q++;
        }
        cout << endl;
        z++;
    }
}
```

68)  $\begin{array}{ccccccc} 1 & & & & & & \\ 2 & 3 & 4 & 5 & 6 & 7 & 8 \\ 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 5 & 6 & 7 & 8 & 9 & 10 \\ 5 & 6 & 7 & 8 & 9 & 10 & 11 \\ 6 & 7 & 8 & 9 & 10 & 11 & 12 \\ 7 & 8 & 9 & 10 & 11 & 12 & 13 \end{array}$

```
#include <iostream>
using namespace std;
int main()
{
    int n=3; //prefer odd
    int z=1;
    int p=1;
    for (int i=1;i<=n;i++)
    {
        for (int j=n-1;j>=i;j--)
        {
            cout << setw(3)<< z << endl;
        }
        for (int k=0;k<z;k++)
        {
            cout << setw(3)<< p << endl;
            p++;
        }
        z++;
    }
    cout << endl;
    return 0;
}
```

69)  $\begin{array}{ccccccc} 1 & & & & & & \\ 2 & 3 & 4 & 5 & 6 & 7 & 8 \\ 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 5 & 6 & 7 & 8 & 9 & 10 \\ 5 & 6 & 7 & 8 & 9 & 10 & 11 \\ 6 & 7 & 8 & 9 & 10 & 11 & 12 \\ 7 & 8 & 9 & 10 & 11 & 12 & 13 \end{array}$

```
#include <iostream>
using namespace std;
int main()
{
    int p=height-1;
    int man_stars=p*height;
    int p_space=height-p;
    int i,j,k;
    for (int i=0;i<height;i++)
    {
        for (int j=0;j<p_space;j++)
        {
            cout << " ";
        }
        for (int j=p_space;j>=i;j--)
        {
            cout << " ";
        }
        for (int k=0;k<man_stars-k;k++)
        {
            cout << " ";
        }
        cout << endl;
    }
    cout << endl;
    return 0;
}
```

73)

```

    x
   xx
  xxx
 xxxx
xxxx

```

```

#include <iostream> #include <iostream>
using namespace std; using namespace std;
int main () int main ()
{
    int size=3; int size=3;
    for(int i=size;i>=size;i--) int i,j;
    for(i=size;i>=size;i--) for(i=i;i>=size;i--)
    {
        for(int j=size;j>=abs(i);j--) for(j=abs(i);j<=size;j++)
        {
            cout<<"x";
            cout<<endl;
        }
        cout<<endl;
    }
    return 0;
}

```

74)

```

PC
DCB
DCEA
DCBA
DCB
BC
D

```

```

#include <iostream>
using namespace std;
int main ()
{
    int size=3;
    int i,j;
    for(i=size;i>=size;i--) for(i=1;i<n;i++)
    {
        for(j=size;j>=abs(i);j--) for(j=0;j<=n-i;j++)
        {
            cout<<char(j+65);
            cout<<endl;
        }
        cout<<endl;
    }
    return 0;
}

```

75)

```

2 3
2 2 3
0 1 2 3
2 3
3

```

```

#include <iostream> #include <iostream>
using namespace std; using namespace std;
int main () int main ()
{
    int size=3; int size=3;
    for(int i=1;i<=size;i++) int i,j;
    for(i=1;i<=size;i++) for(j=1;j<=size;j++)
    {
        cout<<"x";
        cout<<endl;
    }
    cout<<endl;
    return 0;
}

```

76)

```

AB
ABC
ABC
ABC
ABC
ABC
G

```

```

#include <iostream>
using namespace std;
int main ()
{
    int n=3;
    int n=0;
    for(int i=1;i<n;i++) for(int i=1;i<n;i++)
    {
        for(int j=0;j<abs(i);j++) for(int j=0;j<n-i;j++)
        {
            cout<<(char)(i+65);
            cout<<endl;
        }
        cout<<endl;
    }
    cout<<endl;
    return 0;
}

```

77)

```

xxx
xxx
xxx
xxx
x

```

```

#include <iostream> #include <iostream>
using namespace std; using namespace std;
int main () int main ()
{
    int size=3; int size=3;
    int info_k;
    for(i=1;i<=size;i--) for(i=1;i<=size;i--)
    {
        for(j=1;j<=size;j++) for(j=1;j<=size;j++)
        {
            cout<<" ";
            cout<<endl;
        }
        cout<<endl;
    }
    cout<<endl;
    return 0;
}

```

78)

```

A B
A B C
A B C D
A B C D E
A B C D E F
G

```

```

#include <iostream>
using namespace std;
int main ()
{
    int n=3;
    for(int i=1;i<=n;i++) for(int i=1;i<=n;i++)
    {
        for(int j=0;j<abs(i);j++) for(int j=0;j<n-i;j++)
        {
            cout<<" ";
            cout<<endl;
        }
        cout<<(char)(i+65)<<endl;
    }
    cout<<endl;
    return 0;
}

```

79)

```

3 2 3
4 3 2 4
5 4 3 2 5
6 7

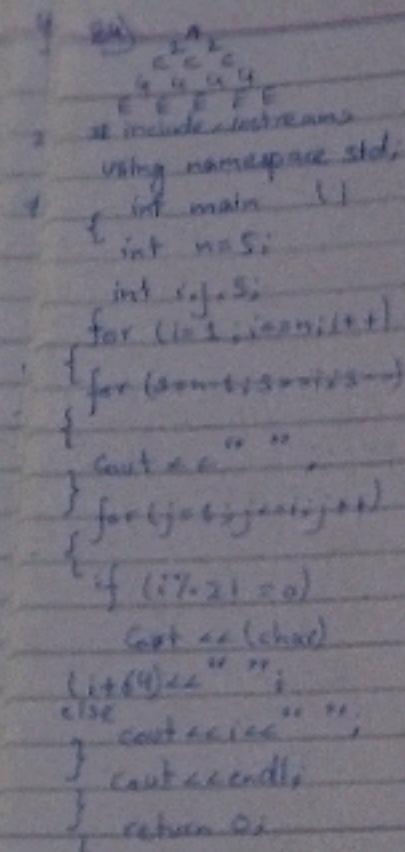
```

```

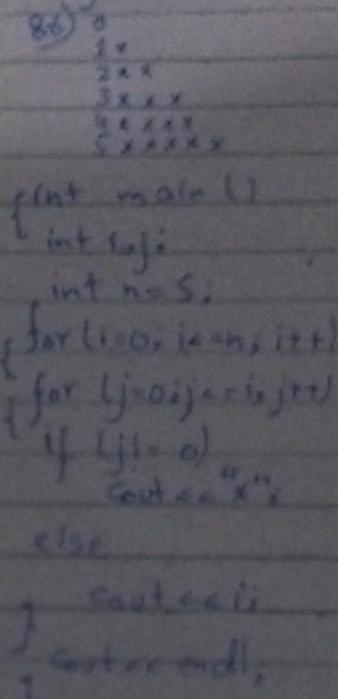
#include <iostream> #include <iostream>
using namespace std; using namespace std;
int main () int main ()
{
    int n=9;
    int n=n/2;
    for(int i=1;i<=n;i++)
    {
        for(int j=0;j<=n-i;j++)
        {
            if(j==n)
            {
                cout<<" ";
            }
            else
            {
                cout<<(char)(j+65)<<endl;
            }
        }
        if(i==n/2)
        {
            n-=i;
        }
        else
        {
            n+=i;
        }
        cout<<endl;
    }
    return 0;
}

```

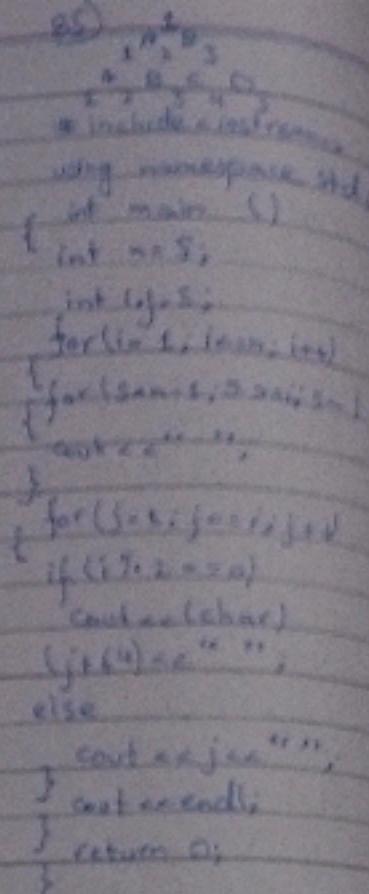
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85) 

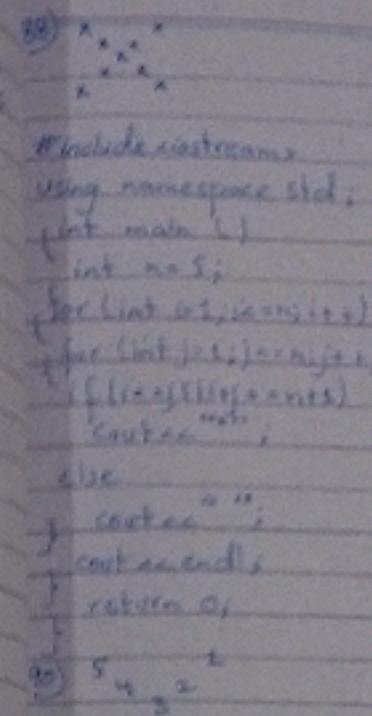
```
#include <iostream>
using namespace std;
int main()
{
    int n=5;
    int i,j;
    for (i=1;i<=n;i++)
    {
        for (j=1;j<=n;j++)
        {
            cout << " ";
        }
        for (j=i;j>i;j--)
        {
            if ((j-i)==0)
                cout << (char)(i+64);
            else
                cout << j;
        }
        cout << endl;
    }
    return 0;
}
```

86) 

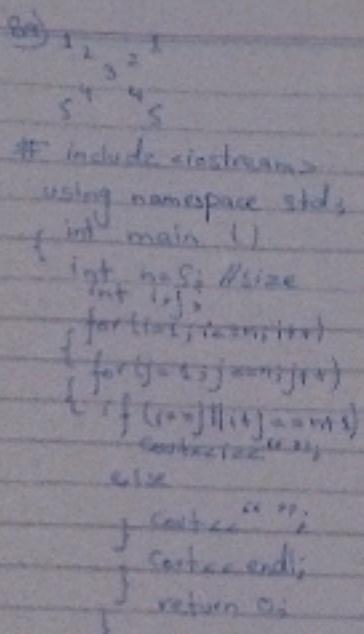
```
int main()
{
    int n=5;
    for (i=1;i<n;i++)
    {
        for (j=0;j<i;j++)
        {
            if (j!=0)
                cout << " ";
            cout << i;
        }
        cout << endl;
    }
    return 0;
}
```

87) 

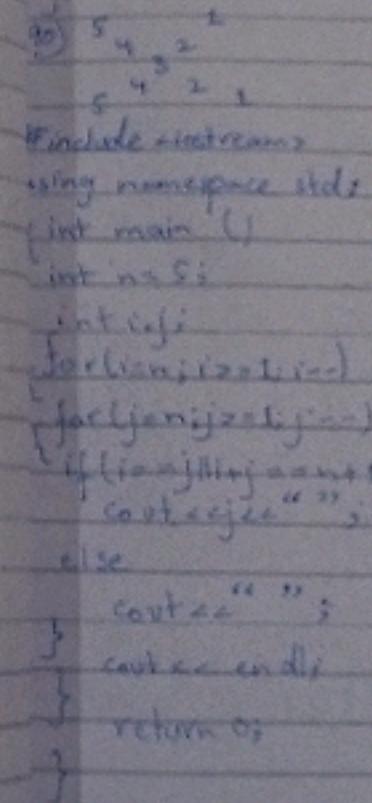
```
#include <iostream>
using namespace std;
int main()
{
    int n=5;
    int i,j;
    for (i=1;i<n;i++)
    {
        for (j=0;j<i;j++)
        {
            if ((i+j)>=5)
                cout << " ";
            else
                cout << i;
        }
        cout << endl;
    }
    return 0;
}
```

88) 

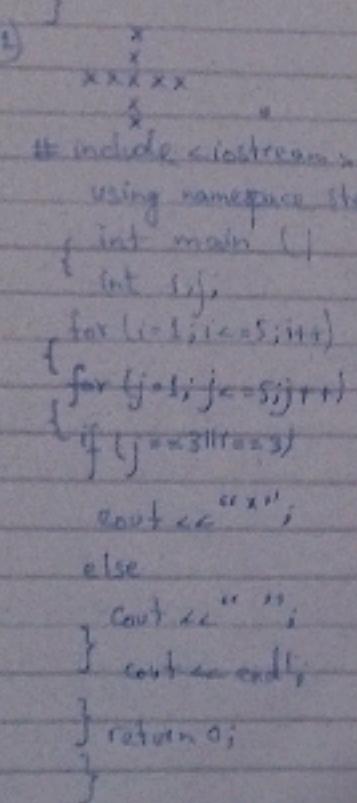
```
#include <iostream>
using namespace std;
int main()
{
    int n=5;
    int i,j;
    for (i=1;i<n;i++)
    {
        for (j=0;j<i;j++)
        {
            if ((i+j)>=5)
                cout << " ";
            else
                cout << i;
        }
        cout << endl;
    }
    return 0;
}
```

89) 

```
#include <iostream>
using namespace std;
int main()
{
    int n=5;
    int i,j;
    for (i=1;i<n;i++)
    {
        for (j=0;j<i;j++)
        {
            if ((i+j)>=5)
                cout << " ";
            else
                cout << i;
        }
        cout << endl;
    }
    return 0;
}
```

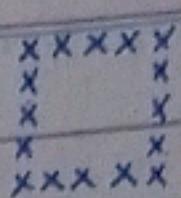
90) 

```
#include <iostream>
using namespace std;
int main()
{
    int n=5;
    int i,j;
    for (i=1;i<n;i++)
    {
        for (j=0;j<i;j++)
        {
            if ((i+j)>=5)
                cout << " ";
            else
                cout << i;
        }
        cout << endl;
    }
    return 0;
}
```

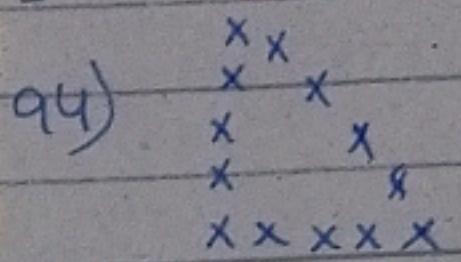
91) 

```
#include <iostream>
using namespace std;
int main()
{
    int n=5;
    int i,j;
    for (i=1;i<n;i++)
    {
        for (j=0;j<i;j++)
        {
            if ((i+j)>=5)
                cout << " ";
            else
                cout << i;
        }
        cout << endl;
    }
    return 0;
}
```

11-J

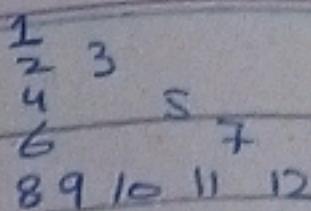
92) 

```
#include <iostream>
using namespace std;
int main ()
{ int n=5;
for(int i=1; i<=n; i++)
{ for(int j=1; j<=n; j++)
{ if((j==1||j==n)|| (i==1||i==n))
cout << "xx";
else
cout << " ";
}
cout << endl;
}
return 0;
}
```

94) 

```
#include <iostream>
using namespace std;
int main()
{ int n=7; //size
int i,j;
for(i=1; i<=n; i++)
{ for(j=1; j<=n; j++)
{ if(j==1||j==n||i==n)
cout << "x";
else
cout << " ";
}
cout << endl;
}
return 0;
}
```

93)



#include <iostream>

using namespace std;

{ int main ()

int n=5, m=1;

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

{ for (int j=1; j<=i; j++)
{

{ if (j==1||j==i||m==1)
{

{ cout << n+m << " ";

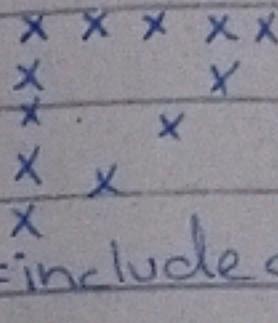
} else
{

{ cout << " ";

} } cout << endl;

} return 0;
}

95)



#include <iostream>

using namespace std;

{ int main ()

int n=7;

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

{ for (int j=1; j<=n-i+1; j++)
{

{ if (j==1||j==n-i+1||i==1)
{

{ cout << "x";

} else
{

{ cout << " ";

} } cout << endl;

} return 0;
}

96)

```
#include <iostream>
using namespace std;
int main ()
{ int n=7;
for (int i=1; i<=n; i++)
{ for (int j=1; j<=n; j++)
{ if (j==n-i+1 || j==n || i==n)
{ cout << "x";
} else
{ cout << " ";
}
cout << endl;
}
return 0;
}
```

97)

6	4	2	$\frac{1}{3}$	5	1
8	9	10	11	12	

```
#include <iostream>
using namespace std;
int main ()
{ int n=5;
int u=1;
for (int i=1; i<=n; i++)
{ for (int j=1; j<=n; j++)
{ if (j==n-i+1 || j==n || i==n)
{ cout << setw(2) << u++;
} else
{ cout << setw(2) << " ";
}
cout << endl;
}
return 0;
}
```

98)

```
#include <iostream>
using namespace std;
int main ()
{ int n=5; // size
int pn=n; // print controls
int py=n;
int i,j; // loop var
for (i=1; i<=n; i++)
{
for (j=1; j<=n*2; j++)
{ if (j==pn || j==py)
{ cout << "x";
}
```

}

else

{ cout << " ";

}

pn--;

py++;

cout << endl;

}

return 0;
}

99)

(100)

```
#include <iostream>
using namespace std;
int main()
{
    int n=5; //size
    int pn=1; //print controls
    int py=n*2 - 1;
    int i,j; //loop vars
    for (i=1; i<=n; i++)
    {
        for (j=1; j<=n*2; j++)
        {
            if (j==pn || j==py)
            {
                cout << "x";
            }
            else
            {
                cout << " ";
            }
        }
        pn++;
        py--;
        cout << endl;
    }
    return 0;
}
```

```
#include <iostream>
using namespace std;
int main()
{
    int n=9; //size
    int pn=n /
    2 + 1; //print controls
    int i,j; //loop vars
    for (i=1; i<=n; i++)
    {
        for (j=1; j<=n; j++)
        {
            if (j==pn || j==n-pn)
            {
                cout << "x";
            }
            else
            {
                cout << " ";
            }
        }
        if (i<=n/2)
            pn--;
        else
            pn++;
        cout << endl;
    }
    return 0;
}
```