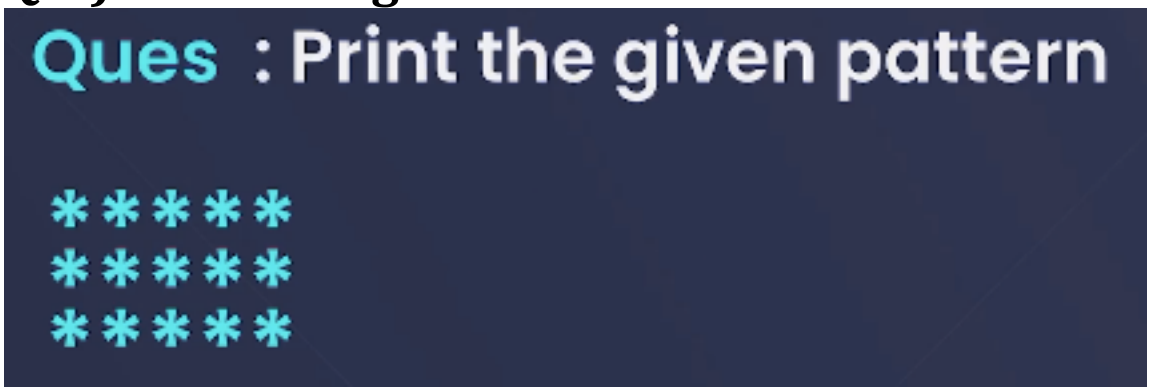
PATTREN PRINTING

Part - 1

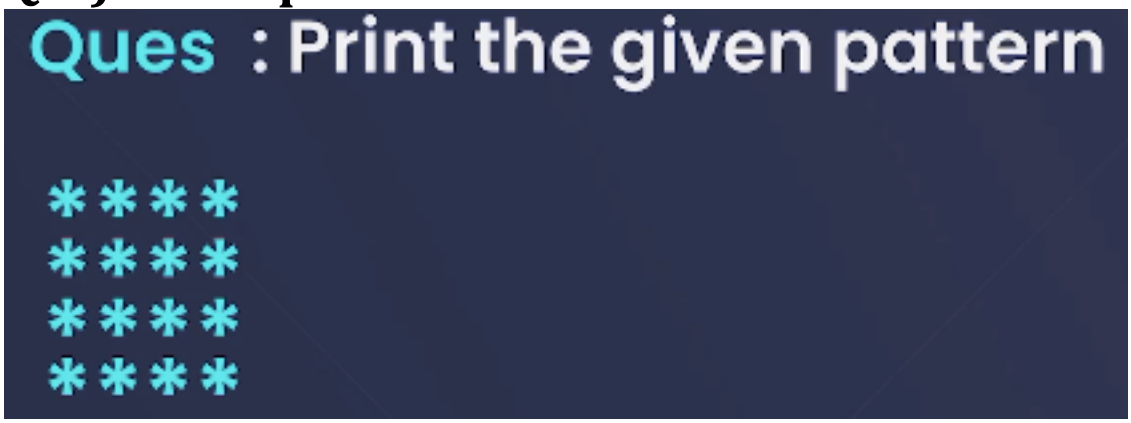
Q-1) Star Triangle




```
#include<iostream>
using namespace std;
int main() {
    int n;
    cout<<"No of rows : ";
    cin>>n;
    int m;
    cout<<"No of columns : ";
    cin>>m;
    for(int i=1; i<=n; i++){
        for(int j=1; j<=m; j++){
            cout<<"*";
        }
        cout<<endl;
    }
}
```

```
No of rows : 3
No of columns : 5
*****
*****
*****
```

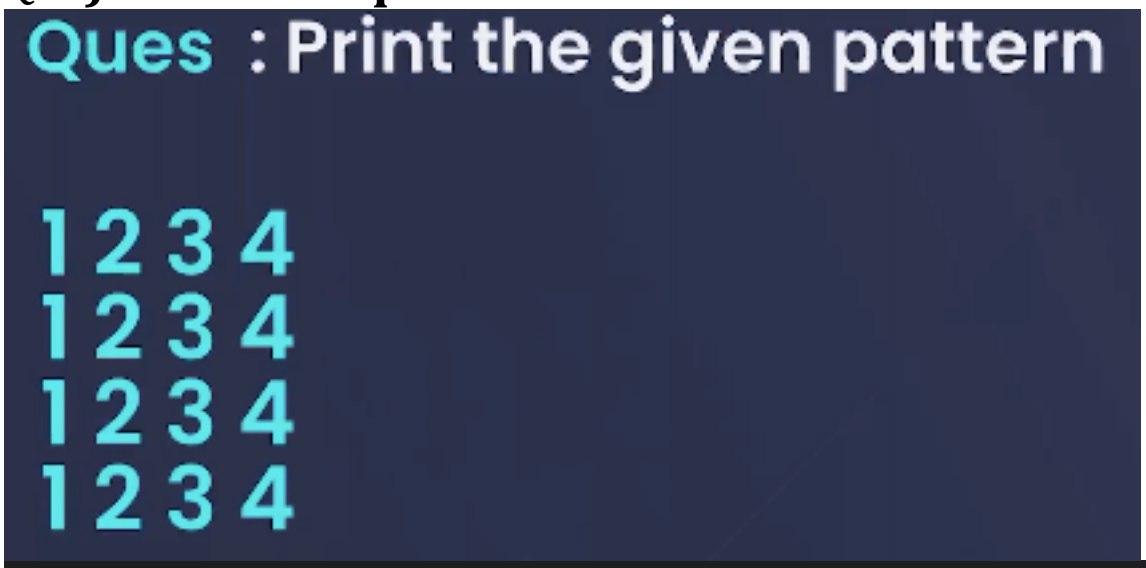
Q-2) Star Square




```cpp
#include<iostream>
using namespace std;
int main() {
    int n;
    cout<<"No of rows : ";
    cin>>n;
    for(int i=1; i<=n; i++){
        for(int j=1; j<=n; j++){
            cout<<"*";
        }
        cout<<endl;
    }
}
```

```
No of rows : 4
****
****
****
****
```

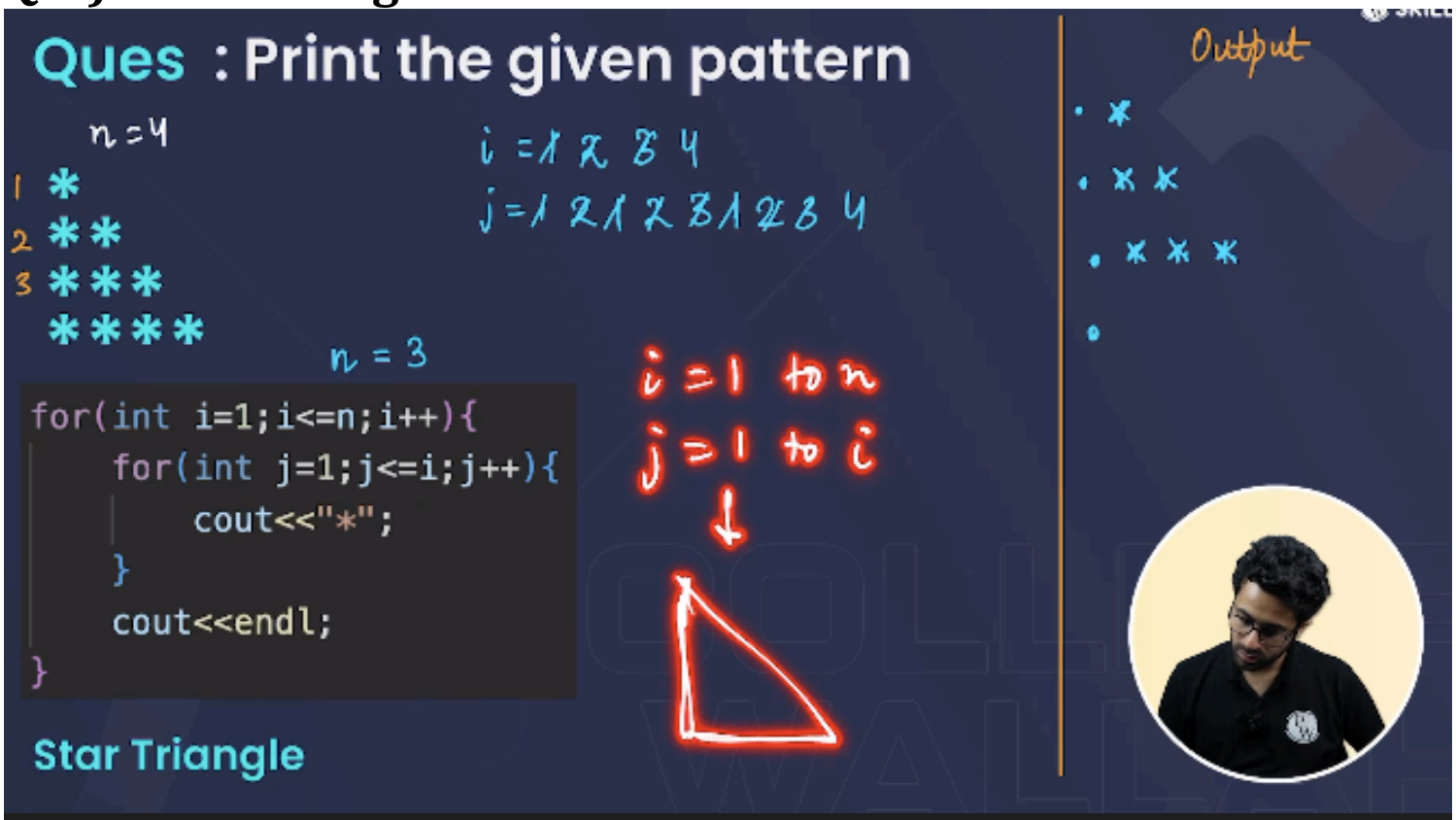
Q-3) Number Square




```cpp
#include<iostream>
using namespace std;
int main() {
    int n;
    cout<<"No of rows : ";
    cin>>n;
    for(int i=1; i<=n; i++){
        for(int j=1; j<=n; j++){
            cout<<j;
        }
        cout<<endl;
    }
}
```

```
No of rows : 4
1234
1234
1234
1234
```

Q-4) Star Triangle

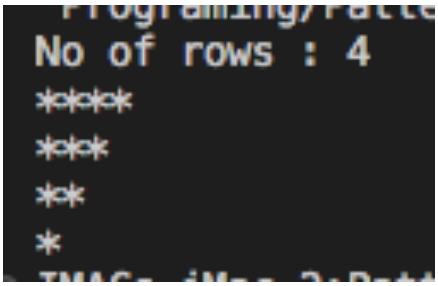



```cpp
#include<iostream>
using namespace std;
int main() {
    int n;
    cout<<"No of rows : ";
    cin>>n;
    for(int i=1; i<=n; i++){
        for(int j=1; j<=i; j++){
            cout<<"*";
        }
        cout<<endl;
    }
}
```

```
No of rows : 4
*
**
***
****
```

Q-5) Star Triangle Reverse


```
#include<iostream>
using namespace std;
int main() {
    int n;
    cout<<"No of rows : ";
    cin>>n;
    //on of starts =  + 1 - i
    for(int i=1; i<=n; i++){
        for(int j=1; j<=n+1-i; j++){
            cout<<"*";
        }
        cout<<endl;
    }
}
```



Q-6) Number Triangle

Mahboob Alar


```cpp
#include<iostream>
using namespace std;
int main() {
    int n;
    cout<<"No of rows : ";
    cin>>n;
    for(int i=1; i<=n; i++){
        //first "i" odd numbers
        for(int j=1; j<=2*i-1; j+=2){
            cout<<j;
        }
        cout<<endl;
    }
}
```

```
No of rows : 4
1
13
135
1357
```

Q-7) Star Plus

Mahboob Alar

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

```cpp
#include<iostream>
using namespace std;
int main(){
    int n;
    cout<<"No of rows : ";
    cin>>n;
    int mid = n/2 + 1;
    for(int i=1; i<=n; i++){
        for(int j=1; j<=n; j++){
            if(i==mid || j==mid) cout<<"*";
            else cout<<" ";
        }
    }
}
```

```
No of rows : 5
  *
  *
*****
  *
  *
```

Q-8) Star cross

Mahboob Alar

```
#include<iostream>
using namespace std;
int main(){
    int n;
    cout<<"No of rows : ";
    cin>>n;
    for(int i = 1; i<=n; i++){
        for(int j = 1; j<=n; j++){
            if(i==j || i+j==n+1) cout<<"*";
            else cout<<" ";
        }
        cout<<endl;
    }
}
```

```
No of rows : 5
*   *
 * *
  *
 * *
*   *
```

Q-9) Floyds Triangle

Mahboob Alar


```
#include<iostream>
using namespace std;
int main() {
    int n;
    cout<<"No of rows : ";
    cin>>n;
    int k=1;
    for(int i=1; i<=n; i++){
        for(int j=1; j<=i; j++){
            cout<<k<<" ";
            k++;
        }
        cout<<endl;
    }
}
```

```
No of rows : 5
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

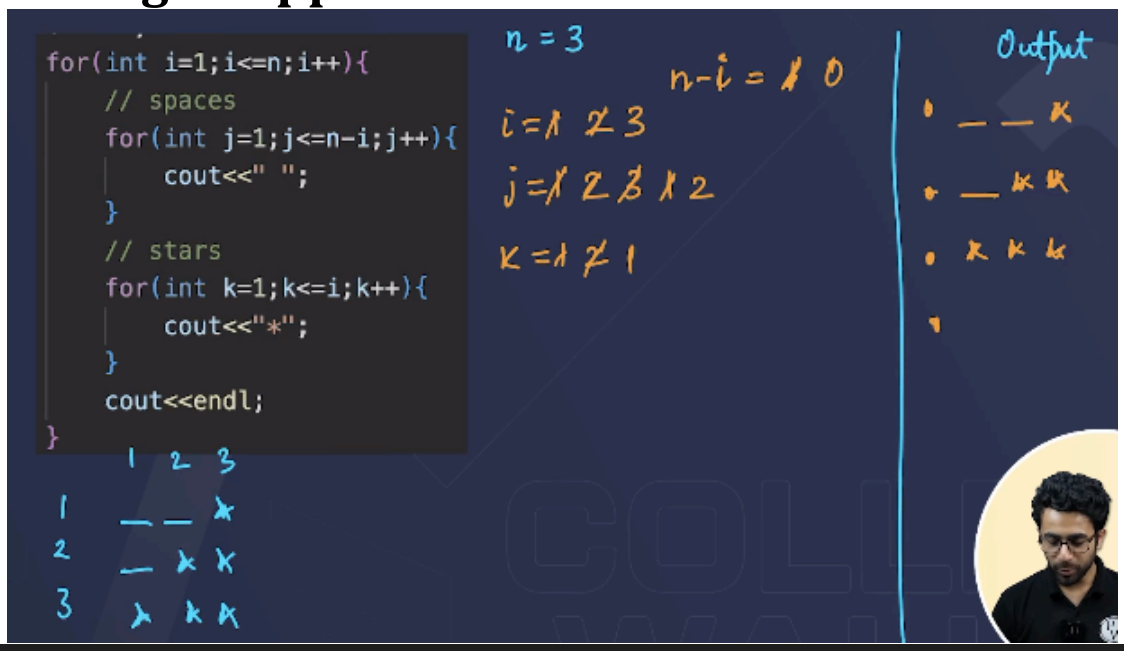
Q-10) BinaryTriangle

Mahboob Alar


```
#include<iostream>
using namespace std;
int main() {
    int n;
    cout<<"No of rows : ";
    cin>>n;
    int a = 5; //kuchh bhi value de do
    for(int i=1; i<=n; i++){
        if(i%2!=0) a = 1; //row no. odd
        else a = 0; //row no. even
        for(int j=1; j<=i; j++){
            cout<<a;
            //flipping
            if(a==1) a = 0;
            else a = 1;
        }
        cout<<endl;
    }
}
```

```
No of rows : 5
1
01
101
0101
10101
```

Q-11) Star triangle flipped



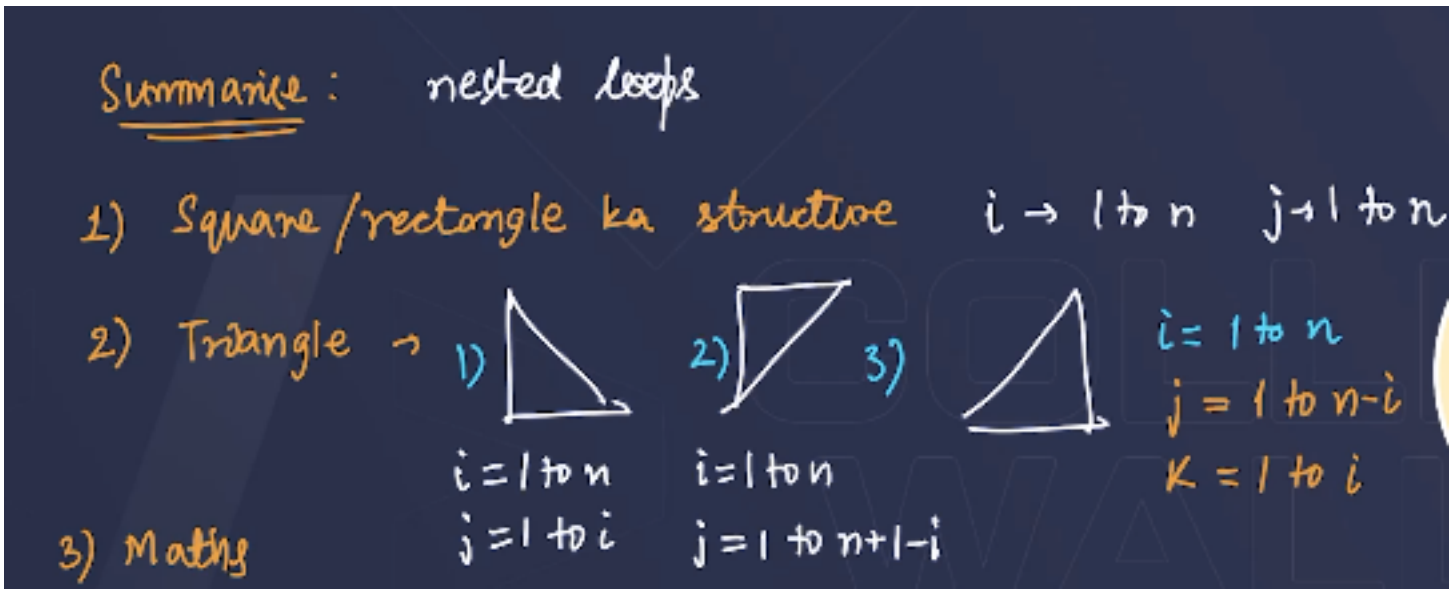

```cpp
#include<iostream>
using namespace std;
int main(){
    int n;
    cout<<"No of rows : ";
    cin>>n;
    for(int i=1; i<=n; i++){
        //spaces
        for(int j=1; j<=n-i; j++){
            cout<<" ";
        }
        // stars
        for(int k=1; k<=i; k++){
         cout<<"*";
        }
        cout<<endl;
    }
}
```

```
No of rows : 6
     *
    **
   ***
  ****
 *****
******
```

Q-12) Number flipped triangle.

```
#include<iostream>
using namespace std;
int main(){
    int n;
    cout<<"No of rows : ";
    cin>>n;
    for(int i=1; i<=n; i++){
       //spaces
       for(int j=1; j<=n-i; j++){
            cout<<" ";
       }
       // number
       for(int k=1; k<=i; k++){
        cout<<k;
       }
       cout<<endl;
    }
}
```

```
No of rows : 5
    1
   12
  123
 1234
12345
```


Summarize : nested loops
1) Square / rectangle ka structure
i → 1 to n
j → 1 to n
2) Triangle →
1)
i = 1 to n
j = 1 to i
2)
i = 1 to n
j = 1 to n+1-i
3)
i = 1 to n
j = 1 to n-i
K = 1 to i
3) Maths