Date 25/09/2023
Page

Pattern Printing

(i) * * * * *

```
for(i=1 ; i<=5 ; i++)
{
    cout<<"*"<<" ";
}
```

(ii)
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *

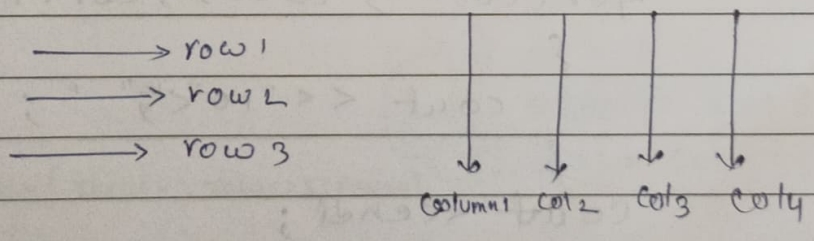
Method-I

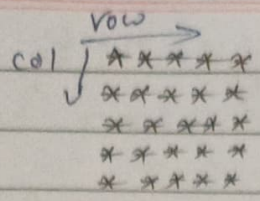
```
for (i=1 ; i<=5; i++)
{
    cout<<"*"<<" ";
}
cout<<endl;
// same loop 4 more times.
```

Method-II

```
for(i=1 ; i<=5 ; i++)
{ for(j=1; j<=5; j++)
    {
        cout<<"*"<<" ";
    }
cout<<endl;
}
```

Nested loop (loop within another loop)





(i) row = 1
(ii) row <= 5
(iii) print * 5 times
(iv) r: row + 1

```
for(row=1 ; row<=5)
{
  for(col=1 ; col<=5 ; col++)
  {
    cout<<"*"<<" " ;
  }
  cout<<endl;
}
```

(iii)

```
10  10  10  10  10
10  10  10  10  10
10  10  10  10  10
10  10  10  10  10
```

(1) row = 1
(2) r<=4
(3) print 10 5 times
(4) row = row+1

(i) col = 1
(ii) col<=5
(iii) print 10
(iv) col = col+1

code

```
for(row=1 ; row<=4 ; row=row+1)
{
  for(col=1 ; col<=5 ; col++)
  {
    cout << "10" << " " ;
  }
  cout <<endl;
}
```

(iv)

row →

col ↓

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

(i) row = 1
(ii) row <= 5
(iii) print row 5 times
(iv) row = row + 1

(a) col = 1
(b) col <= 5
(c) prin row
(d) col = col + 1

Code

```
for( row=1 ; row<=5 ; row++)
{
for(col=1 ; col<=5 ; col=col+1)
{
cout<<row<<" ";
}
cout<<endl;
}
```

(v)

col ↓

row → 1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5

(i) row = 1
(ii) row <= 5
(iii) print i to 5 stimes.
(iv) row ++

(a) col = 1
(b) col <= 5
(c) print col ;
(d) col = col + 1 ;

```
for(row=1 ; row<=5; row++)
{
for (col=1 ;col<=5; col++)
{ cout<<col<<" ";
}
cout<<endl;
}
```

vi

col

row 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

(i) row = 1
(ii) row <= 5
(iii) print 5 to 1 5 times
(iv) row = row + 1

(a) col = 5
(b) col >= 1
(c) print col
(d) col--

```
for(row=1; row<=5; row++)
{
for(col=5; col>=1; col--)
{
cout<<col<<" ";
}
cout<<endl;
}
```

vii

row →

col ↓

1 4 9 16 25
1 4 9 16 25
1 4 9 16 25
1 4 9 16 25
1 4 9 16 25

H/W

viii

1 8 27 64 125
1 8 27 64 125
1 8 27 64 125
1 8 27 64 125
1 8 27 64 125

(ix) row → col

```
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
```

1. row = 1
2. row <= 5
3. name = 'a' + (row - 1)
4. print name 5 times
5. row++

```
char = 'a' + (row - 1)

for(row=1; row<=5; row++)
{
  char name = 'a' + (row-1);
  for(col=1; col<=5; col++)
  {
    cout << name << " ";
  }
  cout << endl;
}
```

(x)

```
a b c d e
a b c d e
a b c d e
a b c d e
a b c d e
```

HW

```
for(row=1; row<=5; row++)
{
  for(col='a'; col<='e'; col++)
  {
    cout << col << " ";
  }
  cout << endl;
}
```

(xi)

```
1  2  3  4  5
6  7  8  9  10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
```

1. row = 1
2. row <= 5
3. cout = 1, print = count
4. count++
5. row++

```
count=1
for(row=1; row<=5; row=row+1)
{
  for(col=1; col<=5; col++)
  {
    cout<<count;
    count++;
  }
  cout<<endl;
}
```

Method - II

① → 1 2 3 4 5
② → 6 7 8 9 10
③ → 11 12 13 14 15
④ → 16 17 18 19 20
21 22 23 24 25

$((row-1)*5)+1$ → first element of every row.

$((row-1)*5)+5$ → last element of every row.

$((row-1)*5)+col$

first element → last element of every row