

C Language

Star Pattern problems.



Saurabh Shukla (MySirG)

# Agenda

- ① Nested loop
- ② Basic skeleton code
- ③ Practic problem

# Nested loop

```
while (—)  
{
```

```
    while ( )  
    {
```

```
    }  
    ==
```

```
}
```

```
while (—)  
{
```

```
    ==  
    for ( ; ; )  
    {  
        ==
```

```
    }
```

```
    ==
```

```
}
```

Find the output of the following program

```
int main()
{
```

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

```
    for(a=5; a>1; a--)
```

```
    {
        for(b=6-a; b<=5; b++)
```

```
        {
```

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

```
        }
```

```
    }
```

```
}
```

<u>a</u>	<u>b</u>	<u>c</u>
1	6	7

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

3 3 6

3 4 7

3 5 8

2 4 6

2 5 7

# Find output

a  
2

b  
1

```
int main()
```

```
{
```

```
    int a, b;
```

```
    for (a=1; a<=4; a++)
```

```
    {
```

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

```
        { printf("%d ", b*a);
```

```
        } printf("\n");
```

```
    }
```

```
}
```

1 2 3 4 5

2 4 6 8 10

3 6 9 12 15

4 8 12 16 20

①

# Basic Skeleton

	1	2	3	4	5
1	*	*	*	*	*
2	*	*	*	*	##
3	*	*	*	##	##
4	*	*	##	##	##
5	*	##	##	##	##

③

i  
1  
2  
3  
4  
5

j  
j <= 5  
j <= 4  
j <= 3  
j <= 2  
j <= 1

②

<u>i</u>	<u>j</u>
1	1 2 3 4 5
2	1 2 3 4
3	1 2 3
4	1 2
5	1

④

$$j <= 6 - i$$

	1	2	3	4	5	6	7
1				*			
2			*	*	*		
3		*	*	*	*	*	
4	*	*	*	*	*	*	*

i	j
1	4
2	3 4 5
3	2 3 4 5 6
4	1 2 3 4 5 6 7

i	j
1	$j \geq 4$ && $j \leq 4$
2	$j \geq 3$ && $j \leq 5$
3	$j \geq 2$ && $j \leq 6$
4	$j \geq 1$ && $j \leq 7$

$$j \geq 5 - i \text{ \&\& } j \leq 3 + i$$

row

4

5

6

7

n

col:

7

9

11

13

$2 * n - 1$