

C Language

Star Pattern problems.



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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);
```

```
    }
```

```
  }
```

```
}
```



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

Find output

```
int main()
{
    int a, b;
    for (a=1; a<=4; a++)
    {
        for (b=1; b<=5; b++)
        {
            printf("%d  ", b*a);
        }
        printf("\n");
    }
}
```

Basic Skeleton

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

```
for (i=1; i<=3; i++)
```

```
{
```

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

```
    {
```

```
        printf("*");
```

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

```
}
```

Basic Skeleton

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

$i = \text{lines/rows}$

$j = \text{columns}$

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

```
{
```

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

```
    {
```

```
        printf("*");
```

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

```
}
```

①

	1	2	3	4
1	*			
2	*	*		
3	*	*	*	
4	*	*	*	*

③

i
1
2
3
4

j
 $j \leq 1$
 $j \leq 2$
 $j \leq 3$
 $j \leq 4$

 $j \leq i$

②

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

```
for (i=1; i<=4; i++)  
{  
    for (j=1; j<=4; j++)  
    {  
        if (j<=i)  
            printf("*");  
        else  
            printf(" ");  
    }  
    printf("\n");  
}
```