BITWISE OPERATOR

- << → LEFT SWIFT a*(2^k)
- >>→ RIGHT SWIFT

POINTER:

IT IS THE PERMISSION TO ACCESS THE HEAP MEMORY SECTION

SIZE OF () OPERATOR:

USED TO FIND THE SIZE OF DATA TYPES

LOOPING STATEMENTS

- BREAK
- CONTINUE
- GO TO
- DO WHILE
- WHILE
- FOR

FOR LOOP:

SYNTAX:

```
FOR (INITIALIZATION; TEST EXPRESSION; UPGRADATION)
{
        //STATEMENT
}
```

TILL CONDITION FAILS IT WILL CONTINUE ITS LOOP

WHILE LOOP:

SYNTAX:

```
WHILE(CONDITION)
{
        //STATEMENT
}
```

BREAK:

BREAK IS USED TO BREAK THE STATEMENT.

DO WHILE:

```
DO
{
        //STATEMENT
} WHILE (TEST EXP);
```

BREAK:

```
#include<stdio.h>
Int main()
{
        For(i=1;i<=5;i++)
        {
                If(i==3)
                {
                        Break;
                }
                Printf(“%d”,i);
        }
        Printf(“%d”,i);
        Return 0;
}
```

Break is used to exit from the loop at given condition

PROBLEM 1

PROGRAM:

```
#include<stdio.h>
int main()
{
   int i;
   while(1)
   {
      if(i==10)
      {
         printf("%d",i);
         break;

      }
      ++i;
   }
   return 0;

}
```

OUTPUT:

10

PROBLEM 2:(USING BREAK IN NESTED FOR LOOP)

```
#include<stdio.h>
int main()
{
   int i,j;
   for(i=0;i<3;++i)
   {
      for(j=1;j<3;++j)
      {
         if(i==j)
         {
            break;
         }
         printf("%d %d\n",i,j);
      }
      printf("%d %d\n",i,j);
   }
   return 0;
}
```

OUTPUT:

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

PROBLEM 3: (NESTED FOR LOOP)

```
#include<stdio.h>
void main(){

int i,j;

for(i=1;i<3;++i)
{
   for(j=1;j<3;++j)
   {
      printf("%d %d\n",i,j);
   }
   printf("%d %d\n",i,j);
}
```

```
}
```

OUTPUT:

1 1

1 2

1 3

2 1

2 2

2 3

PATTERNS

→THREE CONTROLS IN PATTERN THEY ARE:

- ROW
- COLUMN
- SPACE

PROBLEM 1 :(ROWS AND COLUMN)

```
#include <stdio.h>
int main(int argc, char const *argv[])
{
	int n;
	scanf("%d",&n);
	for (int i = 1; i <=n; ++i)
	{
		for (int j = 1; j<=n; ++j)
		{
			printf("*");
		}
		printf("\n");
	}
	return 0;
}
```

OUTPUT:

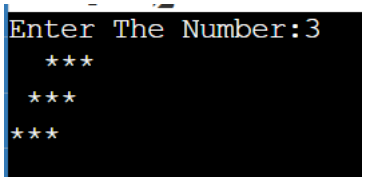
```
10
**********
**********
**********
**********
**********
```

****
****
****
****
****

PROBLEM 2 (WITH SPACE CONDITION)

```
#include <stdio.h>
int main()
{
	int n;
	printf("Enter The Number:");
	scanf("%d",&n);
	for (int i = 1; i<=n; ++i)
	{
		for (int k = 1; k<=n-i; ++k)
		{
			printf(" ");
		}
		for (int j = 1; j<=n; ++j)
		{
			printf("*");
		}
		printf("\n");
	}
	return 0;
}
```

OUTPUT:

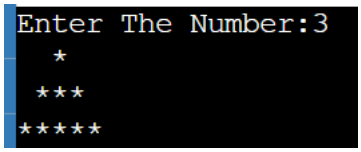


PROGRAM 2 (PYRAMID PATTERN)

```
#include <stdio.h>
int main()
{
	int n;
	printf("Enter The Number:");
	scanf("%d",&n);
	for (int i = 1; i<=n; ++i)
	{
```

```
                for (int k = 1; k<=n-i; ++k)
                {
                        printf(" ");
                }
                for (int j = 1; j<=2*i-1; ++j)
                {
                        printf("*");
                }
                printf("\n");
        }
        return 0;
}
```

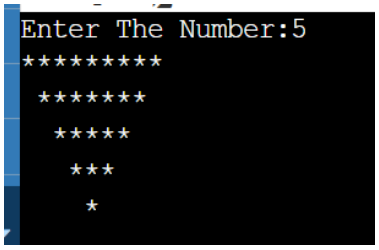
OUTPUT:



PROBLEM 3 (INVERTED PYRAMID)

```
#include <stdio.h>
int main()
{
        int n;
        printf("Enter The Number:");
        scanf("%d",&n);
        for (int i = n; i>=1; --i)
        {
                for (int k = 1; k<=n-i; ++k)
                {
                        printf(" ");
                }
                for (int j = 1; j<=2*i-1; ++j)
                {
                        printf("*");
                }
                printf("\n");
        }
        return 0;
}
```

OUTPUT:



PROBLEM 4(COMBINED PYRAMID)

```
#include <stdio.h>
int main()
{
	int n;
	printf("Enter The Number:");
	scanf("%d",&n);
	for (int i = 1; i<=n; ++i)
	{
		for (int k = 1; k<=n-i; ++k)
		{
			printf(" ");
		}
		for (int j = 1; j<=2*i-1; ++j)
		{
			printf("*");
		}
		printf("\n");
	}
	for (int i = n-1; i>=1; --i)
	{
		for (int k = 1; k<=n-i; ++k)
		{
			printf(" ");
		}
		for (int j = 1; j<=2*i-1; ++j)
		{
			printf("*");
		}
		printf("\n");
	}
   return 0;
}
```

OUTPUT:

```
Enter The Number:3
  *
 ***
*****
 ***
  *
```

PROBLEM 5 (NUMBER PATTERN)

```
#include<stdio.h>
int main()
{

   int n,i,j,k ,temp;
   printf("enter the number:");
   scanf("%d",&n);
   for(i=1;i<=n;i++)
   {
      temp=i;
      for(k=1;k<=n-i;++k)
      {
      printf(" ");
      }
      for(j=1;j<i;j++)
      {
      printf("%d",temp);
      --temp;
      }
      for(j=1;j<=i;j++)
      {
      printf("%d",j);
      }
   printf("\n");
   }
   return 0;
}
```

OUTPUT

```
enter the number:3
  1
 212
32123
```

PROBLEM 6 (COMBINED PYRAMID)

```
#include<stdio.h>
void main(){

   int n,i,j,k ,temp;
printf("enter the number:");
scanf("%d",&n);
for(i=1;i<=n;i++){
       temp=i;
   for(k=1;k<=n-i;++k){
      printf(" ");
   }
   for(j=1;j<i;j++){
      printf("%d",temp);
  --temp;
   }
   for(j=1;j<=i;j++){
      printf("%d",j);
   }
   printf("\n");
}
for(i=n-1;i>=1;i--){
       temp=i;
   for(k=1;k<=n-i;++k){
      printf(" ");
   }
   for(j=1;j<i;j++){
      printf("%d",temp);
  --temp;
   }
   for(j=1;j<=i;j++){
      printf("%d",j);
   }
   printf("\n");
}
}
```

OUTPUT: