PATTERN PROBLEMS

```
/* aaaaa
   bbbbb
   ccccc
   ddddd
   eeeee*/



#include <iostream>
using namespace std;

int main() {
  int row,col;
  char name;
  for (row=1; row<=5; row++){
    name='a'+row-1;
    for(col=1; col<=5; col++)
    {
      cout<<name<<" ";

    }
    cout<<endl;


  }
    return 0;
}
```

```
/*
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
*/


#include <iostream>
using namespace std;

int main() {
  int row;
  char col;

  for (row=1; row<=5; row++){

    for(col='a'; col<='e'; col++)
    {
      cout<<col<<" ";
```

```cpp
        }
        cout<<endl;


    }
    return 0;
}
```

```cpp
/*
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
*/

#include <iostream>
using namespace std;

int main() {
  int row, col, count=1;

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

    return 0;
}
```

```cpp
/*
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
*/
#include <iostream>
using namespace std;

int main() {
  int row, col;

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

```
        cout<<endl;
    }

    return 0;
}
```

```
/*
Enter the Number Of rows5
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
*/

#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows";
    cin>>n;
    for (row=1; row<=n; row++){
        for (col=1;col<=row; col++){
            cout<<row<<" ";
        }
        cout<<endl;
    }
    return 0;
}
```

```
/*
Enter the Number Of rows5
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
*/

#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=1; row<=n; row++){
        for (col=1;col<=row; col++){
            cout<<col<<" ";
        }
        cout<<endl;
    }
```

```
    return 0;
}
```

```
/* Enter the Number Of rows: 5
1
2 1
3 2 1
4 3 2 1
5 4 3 2 1
*/

#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=1; row<=n; row++){
        for (col=row;col>=1; col--){
            cout<<col<<" ";
        }
        cout<<endl;
    }
    return 0;
}
```

```
/*
Enter the Number Of rows: 5
a
b b
c c c
d d d d
e e e e e
*/
#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    char c;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=1; row<=n; row++){
        c='a'+(row-1);
        for (col=1;col<=row; col++){

            cout<<c<<" ";
        }
        cout<<endl;
    }
    return 0;
}
```

```
/*

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

*/


#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=1; row<=n; row++){
        for (col=1;col<=n-(row-1); col++){

            cout<<"*"<<" ";
        }
        cout<<endl;
    }
    return 0;
}
```

```
/*

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

*/


#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=n; row>=1; row--){
        for (col=1;col<=row; col++){

            cout<<"*"<<" ";
        }
        cout<<endl;
    }
    return 0;
}
```

```
/*
1 1 1 1 1
2 2 2 2
3 3 3
4 4
5
*/

#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=1; row<=n; row++){
        for (col=1;col<=n-(row-1); col++){

            cout<<row<<" ";
        }
        cout<<endl;
    }
    return 0;
}
```

```
/*
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
*/
#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=1; row<=n; row++){
        for (col=1;col<=n-(row-1); col++){

            cout<<col<<" ";
        }
        cout<<endl;
    }
    return 0;
}
```

```
/*
1 2 3 4 5
1 2 3 4
1 2 3
1 2
```

```
1
*/
#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=n; row>=1; row--){
        for (col=1;col<=row; col++){

            cout<<col<<" ";
        }
        cout<<endl;
    }
    return 0;
}
```

```
/*
5
5 4
5 4 3
5 4 3 2
5 4 3 2 1
*/
#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=1; row<=n; row++){
        for (col=n;col>=n-(row-1); col--){

            cout<<col<<" ";
        }
        cout<<endl;
    }
    return 0;
}
```

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```
/*.         *
        *  *
     *  *  *
   *  *  *  *
*  *  *  *  *

*/
#include<iostream>
using namespace std;
```

```
int main(){

    int row, col, n;
    cout<<"Enter the number of rows: ";
    cin >>n;
    for (row=1; row<=n; row++)
    {
        for (col=1; col<=n-row; col++){
            cout<<"  ";
        }
        for (col=1; col<=row; col++)
        {
            cout<<"* ";
        }
        cout<<endl;
    }

}
```

```
/*
    1
   22
  333
 4444
55555
*/
#include<iostream>
using namespace std;

int main(){

    int row, col, n;
    cout<<"Enter the number of rows: ";
    cin >>n;
    for (row=1; row<=n; row++)
    {
        for (col=1; col<=n-row; col++){
            cout<<" ";
        }
        for (col=1; col<=row; col++)
        {
            cout<<row;
        }
        cout<<endl;
    }

}
```

```
/*   1
    1 2
   1 2 3
1 2 3 4
*/
#include<iostream>
```

```cpp
using namespace std;

int main(){

    int row, col, n;
    cout<<"Enter the number of rows: ";
    cin >>n;
    for (row=1; row<=n; row++)
    {
        for (col=1; col<=n-row; col++){
            cout<<"  ";
        }
        for (col=1; col<=row; col++)
        {
            cout<<col<<" ";
        }
        cout<<endl;
    }

}
```

```cpp
/*
        A
      A B
    A B C
  A B C D
A B C D E

*/
#include<iostream>
using namespace std;

int main(){

    int row,  n;
    char col;
    cout<<"Enter the number of rows: ";
    cin >>n;
    for (row=1; row<=n; row++)
    {

        for (col=1; col<=n-row; col++){
            cout<<"  ";
        }
        for (col='A'; col<='A'+(row-1); col++)
        {
            cout<<col<<" ";
        }
        cout<<endl;
    }

}
```

```cpp
/*
        A
```

```
        A B
      A B C
    A B C D
  A B C D E

*/
#include<iostream>
using namespace std;

int main(){

    int row,col,  n;

    cout<<"Enter the number of rows: ";
    cin >>n;
    for (row=1; row<=n; row++)
    {

        for (col=1; col<=n-row; col++){
            cout<<"  ";
        }
        for (col=1; col<=row; col++)
        {
            char name='A'+col-1;
            cout<<name<<" ";
        }
        cout<<endl;
    }

}
```

```
/*
      *
     ***
    *****
   *******
  *********
*/
#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=1; row<=n; row++){
        for (col=1;col<=n-row; col++){
            cout<<" ";
        }
        for (col=1; col<=2*row -1; col++)
        {
            cout<<"*"<<"";
        }
        cout<<endl;
    }
    return 0;
}
```

```
/*
        1
      1 2 1
    1 2 3 2 1
  1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1

*/

#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=1;row<=n;row++){
        //space
        for(col=1;col<=n-row;col++)
        {
            cout<<"  ";
        }
        //1to n
        for (col=1;col<=row;col++)
        {
            cout<<col<<" ";
        }
        //n-1 to 1
        for(col=row-1;col>=1;col--){
            cout<<col<<" ";

        }
        cout<<endl;
    }
    return 0;
}
```

```
/*
*********
 *******
  *****
   ***
    *
*/

#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;
    for (row=1;row<=n;row++){
        //space
        for(col=1;col<=(2*n)-1;col++)
        {
            if(col >=row&& col<=(2*n)-row)
```

```cpp
                cout<<"*";
            else
                cout<<" ";

        }

        //1to n

        cout<<endl;
    }
    return 0;
}
```

```cpp
/*
ALTERNATIVE METHOD FOR above QUESTION

*/
#include <iostream>
using namespace std;

int  main(){
    int row, col,n;
    cout<<"Enter the Number Of rows: ";
    cin>>n;

    for(row=n;row>=1; row--)
    {
        //space
        for(col=1; col<=n-row; col++)
        {
            cout<<" ";
        }

        //star
        for(col=1; col<=2*row-1;col++)
        {
            cout<<"*";
        }
        cout<<endl;
    }
    return 0;
}
```

```
/**/
```

```
/**/
```

```
/**/
```

```
/**/
```

```
/**/
```

```
/**/
```