29th January 2023 (Homework Solutions)

Q1. What will happen if we use cin inside the if as a condition?

Ans1.

```
int n;
if (cin >> n) {
    cout << "Bhavya";
}
```

This will always print Bhavya for all values.

cin_inside_if.cpp

```cpp
// Prints Bhavya in all cases
#include<iostream>
using namespace std;
int main(){
    int n;
    // This code will always give Bhavya as output
    if(cin>>n){
        cout<<"Bhavya";
    }
}
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

C:\Users\Asus\Desktop\DSA Supreme\29th January 2023>cd "c:\User
.cpp -o cin_inside_if && "c:\Users\Asus\Desktop\DSA Supreme\29
1
Bhavya
C:\Users\Asus\Desktop\DSA Supreme\29th January 2023>cd "c:\User
.cpp -o cin_inside_if && "c:\Users\Asus\Desktop\DSA Supreme\29
-1
Bhavya
C:\Users\Asus\Desktop\DSA Supreme\29th January 2023>cd "c:\User
.cpp -o cin_inside_if && "c:\Users\Asus\Desktop\DSA Supreme\29
0
Bhavya
C:\Users\Asus\Desktop\DSA Supreme\29th January 2023>
```

Q2. What will happen if we use cout inside the if as a condition?

(ii)

```
int n;   cin>>n;
if (cout<<n) {
    cout << "Bhavya";
}
```

This will first print the value of n & then print Bhavya for all value be it -ve, +ve or 0.

cout_inside_if.cpp

```cpp
// Print the number first and then Bhavya in all cases -ve, +ve or 0.
#include<iostream>
using namespace std;
int main(){
    int n;
    cin>>n;
    if(cout<<n){
        cout<<"Bhavya";
    }
}
```

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```
Microsoft Windows [Version 10.0.22000.1455]
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C:\Users\Asus\Desktop\DSA Supreme\29th January 2023>cd "c:\Users\Asus\Desktop\DSA
f.cpp -o cout_inside_if && "c:\Users\Asus\Desktop\DSA Supreme\29th January 2023\"
0
0Bhavya
C:\Users\Asus\Desktop\DSA Supreme\29th January 2023>cd "c:\Users\Asus\Desktop\DSA
f.cpp -o cout_inside_if && "c:\Users\Asus\Desktop\DSA Supreme\29th January 2023\"
1
1Bhavya
C:\Users\Asus\Desktop\DSA Supreme\29th January 2023>cd "c:\Users\Asus\Desktop\DSA
f.cpp -o cout_inside_if && "c:\Users\Asus\Desktop\DSA Supreme\29th January 2023\"
-1
-1Bhavya
C:\Users\Asus\Desktop\DSA Supreme\29th January 2023>
```

Q3. Write a code to make Full Pyramid Pattern.

Ans3.

Homework_Pattern_Full_Pyramid_Pattern.cpp > main()

```cpp
#include<iostream>
using namespace std;
int main(){
    int n = 6; // for generic code
    for(int row = 0;row<n;row=row+1){
        // Spaces
        int space = n - 1 - row;  // Now for row-0 there are n - 1 spaces, row-1 there are n - 2 space
        (formulae -> space = n - 1- row)
        for(;space>=0;space=space-1){ // First we will be printing the spaces by the formulae above
            cout<<" ";
        }
        // Stars
        for(int col = 0;col<row+1;col=col+1){ // After we print the spaces we will be printing the stars
            cout<<"* ";
        }
        cout<<endl;
    }
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
Microsoft Windows [Version 10.0.22000.1455]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Asus\Desktop\DSA Supreme\29th January 2023>cd "c:\Users\Asus\Desktop\DSA Supreme\29th January 2023\" && g++ Home
ern_Full_Pyramid_Pattern.cpp -o Homework_Pattern_Full_Pyramid_Pattern && "c:\Users\Asus\Desktop\DSA Supreme\29th January
ework_Pattern_Full_Pyramid_Pattern
     *
    * *
   * * *
  * * * *
 * * * * *
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```

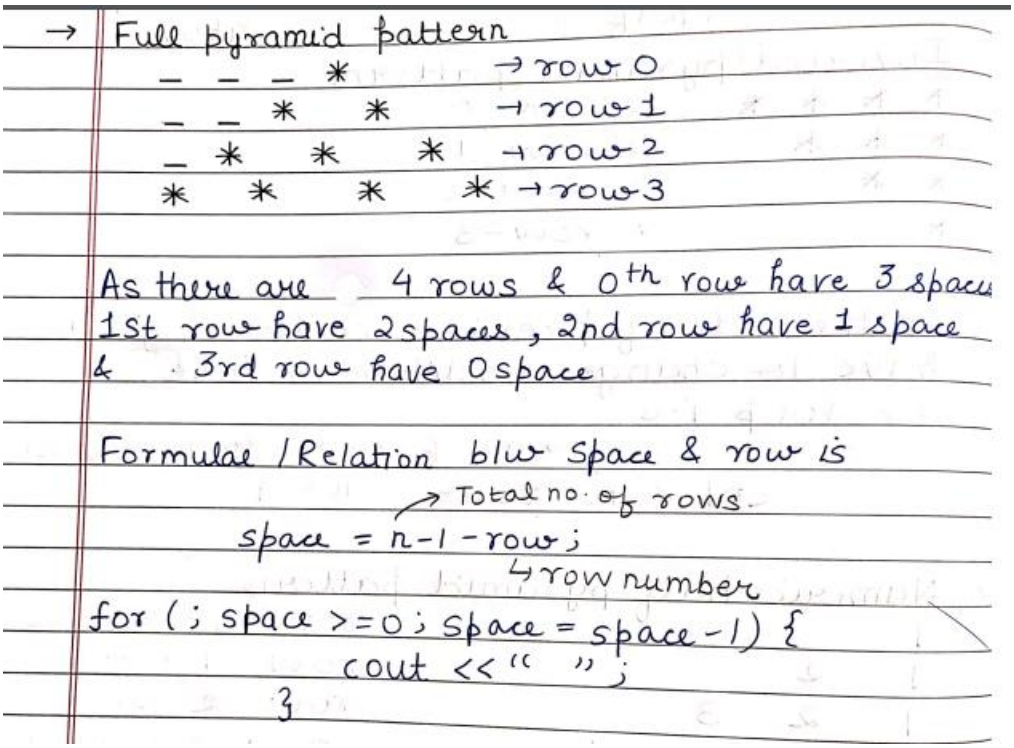

Stars will be printed the same way as was done in the half pyramid pattern.

Q4. Write a code to make Inverted Full Pyramid Pattern.

Homework_Pattern_Inverted_Full_Pyramid.cpp

```cpp
#include<iostream>
using namespace std;
int main(){
    int n = 5;
    for(int row = 0;row < n;row=row+1){
        // Space
        int space = row; // Now row-0 has 0 space, row-1 has 1 space, row-2 has 2 space so formulae is space = row
        for(;space>=0;space--){ // First printing the space
            cout<<" ";
        }
        // Stars
        for(int col = n-row;col>0;col=col-1){ // If we have to print n rows, then 0th row will have n-0 starts, 1st row will have n-1 star and so on
            cout<<"* "; // Printing the start
        }
        cout<<endl;
    }
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
C:\Users\Asus\Desktop\DSA Supreme\29th January 2023>cd "c:\Users\Asus\Desktop\DSA Supreme\29th January 2023\" && g++ Homework_
ern_Inverted_Full_Pyramid.cpp -o Homework_Pattern_Inverted_Full_Pyramid && "c:\Users\Asus\Desktop\DSA Supreme\29th January 202
omework_Pattern_Inverted_Full_Pyramid
* * * * *
 * * * *
  * * *
   * *
    *
```

→ Inverted Full Pyramid pattern

```
* * * *   → row 0
_ * * *   → row 1
_ _ * *   → row 2
_ _ _ *   → row 3
```

As there are 4 rows & 0th row have 0 spaces, 1st row has 1 space, 2nd row has 2 spaces & 3rd row has 3 spaces. So relation blw no. of spaces & row numbe is

space = row

```
for (  ; space >= 0; space = space - 1) {
        cout << " ";
}
```

Now 0th row have 4 stars, 1st row have 3 stars, 2nd row have 2 stars, 3rd row have 1 star.

(n → no. of rows)

0th row → n - 0 stars
1st row → n - 1 stars
⋮

```
for (int col = n-row; col > 0; col = col-1){
        cout << "* ";
}
```