C Programs for Practice (Pattern Printing)

1. **C Program to print the following triangle:**

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

```
// C program to print a triangle
#include <stdio.h>

// Driver code
int main()
{
        int n = 6;

        // ith row has i elements
        for (int i = 1; i <= n; i++) {
                for (int j = 1; j <= i; j++) {
                        printf("*");
                }
                printf("\n");
        }
        return 0;
}
```

2. **C Program to print 180^0 rotation of Simple Pyramid**

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

```
// C program to print
// inverted pyramid
// pattern
#include <stdio.h>

// Driver code
int main()
{
```

```
int rows = 8, i, j, space;

for (i = rows; i >= 1; --i)
{
        // Loop to print the blank space
        for (space = 0;
                        space < rows - i; ++space)
                printf(" ");

        // Loop to print the half of
        // the star triangle
        for (j = i; j <= 2 * i - 1; ++j)
                printf("* ");

        // Loop to print the rest of
        // the star triangle
        for (j = 0; j < i - 1; ++j)
                printf("* ");
        printf("\n");
}

return 0;
}
```

3. C Program to print the following pattern of numbers

```
    1
   232
  34543
 4567654
567898765
```

```
// C program to illustrate the
// given pattern of numbers.
#include <stdio.h>

int main()
{
        int n = 5, i, j, num = 1, gap;

        gap = n - 1;

        for (j = 1; j <= n; j++) {
                num = j;
```

```
            for (i = 1; i <= gap; i++)
                printf(" ");

            gap--;

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

        return 0;
}
```

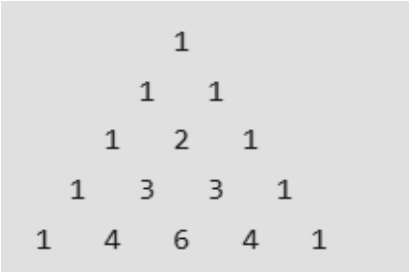
4. C Program to print the following character pattern

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

```
// C program to print character pattern

#include <stdio.h>

int main()
{
        int i, j;

        // input entering number of rows
        int rows = 5;

        // taking first character of alphabet
        // which is useful to print pattern
        char character = 'A';
```

```
        // first for loop is used to identify number rows
        for (i = 0; i < rows; i++) {

                // second for loop is used to identify number
                // of columns based on the rows
                for (j = 0; j <= i; j++) {

                        // printing character to get the required
                        // pattern
                        printf("%c ", character);
                }
                printf("\n");

                // incrementing character value so that it
                // will print the next character
                character++;
        }
        return 0;
}
```

5. **C Program to print the Pascal's triangle pyramid as follows:**




```
// C program to print Pascal's Triangle
// using combinations in O(n^2) time
// and O(1) extra space function
#include <stdio.h>
void printPascal(int n)
{
   for (int line = 1; line <= n; line++) {
      for (int space = 1; space <= n - line; space++)
         printf("  ");
      // used to represent C(line, i)
      int coef = 1;
      for (int i = 1; i <= line; i++) {
         // The first value in a line
         // is always 1
         printf("%4d", coef);
```

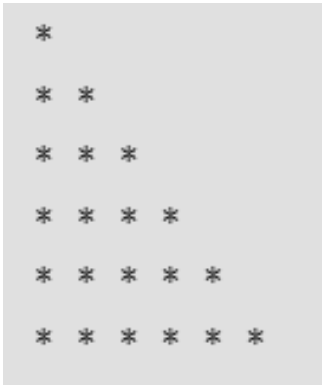
```
            coef = coef * (line - i) / i;
        }
        printf("\n");
    }
}

// Driver code
int main()
{
    int n = 5;
    printPascal(n);
    return 0;
}
```

6. **C Program to print Floyd's triangle pattern as follows:**

```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21
```

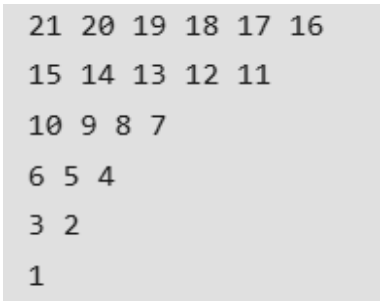
```
// C program to Demonstrate Floyd's Triangle
#include <stdio.h>
void floyd(int n)
{
        int i, j = 1;

        // Condition printing the number of element
        for (i = 1; i <= (n * (n + 1)) / 2; i++) {

                printf("%d ", i);

                // condition for row of number of element printing
                if (i == (j * (j + 1)) / 2) {
                        printf("\n");
                        j++;
                }
        }
}
int main() { floyd(6); }
```

7. **C Program to print Floyd's star triangle pattern as follows:**




```
// C program to Demonstrate Floyd's
// Star Triangle Using for loop
#include <stdio.h>
void floyd(int n)
{
        int i, j = 1;
        for (i = 1; i <= (n * (n + 1)) / 2; i++) {
                printf("* ");
                if (i == (j * (j + 1)) / 2) {
                        printf("\n");
                        j++;
                }
        }
}
int main() { floyd(6); }
```

8. **C Program to print Floyd's inverted triangle pattern as follows:**




```
// C program to Demonstrate Reverse Floyd's
// Triangle Using for loop
#include <iostream>
using namespace std;

void reverse_floyd(int n)
{
        // total number of elements
        int i = n * (n + 1) / 2;
```

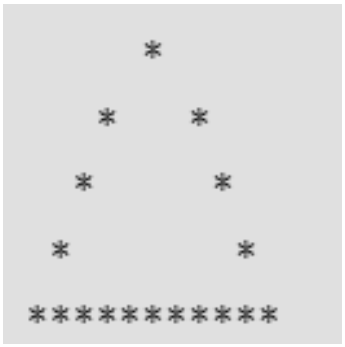
```
        // condition for printing them
        while (i > 0) {
                for (int j = 0; j < n; j++)
                        printf("%d ", i--);
                n--;
                printf("\n");
        }
}
int main()
{
        reverse_floyd(6);
        return 0;
}
```

9. C Program to print Floyd's alphabet triangle pattern as follows:

```
a
b c
d e f
g h i j
k l m n o
p q r s t u
```

```
// C program to Demonstrate Alphabet Floyd's
// Triangle Using for loop
#include <stdio.h>

void alpha_floyd(int n)
{
        int k = 'a';
        for (int i = 1; i <= n; i++) {
                for (int j = 1; j <= i; j++)
                        printf("%c ", k++);
                printf("\n");
        }
}
int main()
{

        alpha_floyd(6);
        return 0;
}
```

10. C Program to print the following Hollow Star pyramid pattern:



```
// C Program to Demonstrate
// a Hollow Star Pyramid
#include <stdio.h>

int main()
{
	int i, space, n = 5, j = 0;

	// first for loop is used to
	// iterate number of rows
	for (i = 0; i < n - 1; i++) {

		// second for loop is used to print spaces
		for (space = 1; space < n - i; space++) {
			printf(" ");
		}
		// third for loop is used
		// to print the required
		// pattern
		for (j = 0; j <= 2 * i; j++) {
			if (j == 0 || j == 2 * i)
				printf("*");
			else
				printf(" ");
		}
		// print the new line after every row
		printf("\n");
	}
	// used to print last row
	for (i = 0; i < 2 * n - 1; i++) {
		printf("*");
	}
	return 0;
}
```