C Program to Print Pyramids and Patterns

In this example, you will learn to print half pyramids, inverted pyramids, full pyramids, inverted full pyramids, Pascal's triangle, and Floyd's triangle in C Programming.

To understand this example, you should have the knowledge of the following C programming topics:

- C if...else Statement
- C for Loop
- C while and do...while Loop
- C break and continue

Here is a list of programs you will find in this page.

C Examples

Half pyramid of *

Half pyramid of numbers

Half pyramid of alphabets

Inverted half pyramid of *

Inverted half pyramid of numbers

Full pyramid of *

C Examples

Full pyramid of numbers

Inverted full pyramid of *

Pascal's triangle

Floyd's triangle

Example 1: Half Pyramid of *

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

C Program

```c
#include <stdio.h>
int main() {
   int i, j, rows;
   printf("Enter the number of rows: ");
   scanf("%d", &rows);
   for (i = 1; i <= rows; ++i) {
      for (j = 1; j <= i; ++j) {
         printf("* ");
      }
      printf("\n");
   }
   return 0;
}
```

Example 2: Half Pyramid of Numbers

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

C Program

```c
#include <stdio.h>
int main() {
   int i, j, rows;
   printf("Enter the number of rows: ");
   scanf("%d", &rows);
   for (i = 1; i <= rows; ++i) {
      for (j = 1; j <= i; ++j) {
         printf("%d ", j);
      }
      printf("\n");
   }
   return 0;
}
```

Run Code

Example 3: Half Pyramid of Alphabets

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

C Program

```
#include <stdio.h>
int main() {
  int i, j;
  char input, alphabet = 'A';
  printf("Enter an uppercase character you want to print in the last row:
");
  scanf("%c", &input);
  for (i = 1; i <= (input - 'A' + 1); ++i) {
    for (j = 1; j <= i; ++j) {
      printf("%c ", alphabet);
    }
    ++alphabet;
    printf("\n");
  }
  return 0;
}
```

Run Code

Example 4: Inverted half pyramid of *

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

C Program

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

Run Code

Example 5: Inverted half pyramid of numbers

```
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

C Program

```c
#include <stdio.h>
int main() {
   int i, j, rows;
   printf("Enter the number of rows: ");
   scanf("%d", &rows);
   for (i = rows; i >= 1; --i) {
      for (j = 1; j <= i; ++j) {
         printf("%d ", j);
      }
      printf("\n");
   }
   return 0;
}
```

Run Code

Example 6: Full Pyramid of *

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

C Program

```
#include <stdio.h>
int main() {
  int i, space, rows, k = 0;
  printf("Enter the number of rows: ");
  scanf("%d", &rows);
  for (i = 1; i <= rows; ++i, k = 0) {
    for (space = 1; space <= rows - i; ++space) {
      printf("  ");
    }
    while (k != 2 * i - 1) {
      printf("* ");
      ++k;
    }
    printf("\n");
  }
  return 0;
}
```

Run Code

Example 7: Full Pyramid of Numbers

```
      1
    2 3 2
   3 4 5 4 3
  4 5 6 7 6 5 4
5 6 7 8 9 8 7 6 5
```

C Program

```
#include <stdio.h>
int main() {
  int i, space, rows, k = 0, count = 0, count1 = 0;
  printf("Enter the number of rows: ");
  scanf("%d", &rows);
  for (i = 1; i <= rows; ++i) {
    for (space = 1; space <= rows - i; ++space) {
      printf("  ");
      ++count;
    }
    while (k != 2 * i - 1) {
      if (count <= rows - 1) {
        printf("%d ", i + k);
        ++count;
      } else {
        ++count1;
        printf("%d ", (i + k - 2 * count1));
```

```
        }
        ++k;
      }
      count1 = count = k = 0;
      printf("\n");
    }
  return 0;
}
```

Run Code

Example 8: Inverted full pyramid of *

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

C Program

```
#include <stdio.h>
int main() {
  int rows, i, j, space;
  printf("Enter the number of rows: ");
  scanf("%d", &rows);
  for (i = rows; i >= 1; --i) {
```

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

Run Code

Example 9: Pascal's Triangle

```
        1
      1   1
    1   2   1
  1   3   3   1
1  4   6   4   1
1  5   10  10  5   1
```

C Program

```
#include <stdio.h>
int main() {
  int rows, coef = 1, space, i, j;
```

```
  printf("Enter the number of rows: ");
  scanf("%d", &rows);
  for (i = 0; i < rows; i++) {
    for (space = 1; space <= rows - i; space++)
      printf("  ");
    for (j = 0; j <= i; j++) {
      if (j == 0 || i == 0)
        coef = 1;
      else
        coef = coef * (i - j + 1) / j;
      printf("%4d", coef);
    }
    printf("\n");
  }
  return 0;
}
```

Run Code

Example 10: Floyd's Triangle.

```
1
2 3
4 5 6
7 8 9 10
```

C Program

```c
#include <stdio.h>
int main() {
   int rows, i, j, number = 1;
   printf("Enter the number of rows: ");
   scanf("%d", &rows);
   for (i = 1; i <= rows; i++) {
      for (j = 1; j <= i; ++j) {
         printf("%d ", number);
         ++number;
      }
      printf("\n");
   }
   return 0;
}
```

Run Code