Complete Python Pattern Printing Questions (Beginner to Advanced)

This guide provides 20 essential Python pattern printing questions with step-by-step logic and answers. It includes beginner, intermediate, and advanced patterns, covering normal, inverted, hollow, and number-based designs.

Pattern Questions

Square Star Pattern
```
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
```

Right-Angled Triangle
```
*
* *
* * *
* * * *
* * * * *
```

Inverted Right-Angled Triangle
```
* * * * *
* * * *
* * *
* *
*
```

Number Triangle
```
1
12
123
1234
12345
```

Pyramid Pattern
```
    *
   * * *
  * * * * *
 * * * * * * *
* * * * * * * * *
```

Hollow Square
```
* * * * *
*       *
*       *
*       *
* * * * *
```

Hollow Triangle

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

Diamond Pattern
```
    *
   ***
  *****
   ***
    *
```

Reverse Pyramid
```
*********
 *******
  *****
   ***
    *
```

Floyd's Triangle
```
1
2 3
4 5 6
7 8 9 10
```

Binary Triangle
```
1
01
101
0101
10101
```

Alphabet Triangle
```
A
A B
A B C
A B C D
```

Right-Angle Numbers
```
1
22
333
4444
55555
```

Pascal's Triangle (5 rows)
```
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
```

Hollow Pyramid
```
    *
```

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

Hourglass Pattern

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

Right-Shifted Triangle

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

X Pattern

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

Cross Pattern

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

Double Triangle

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

Logic Explanation

```
General Logic for Pattern Printing:
1. Use nested loops: Outer loop controls rows, inner loop controls columns.
2. For star patterns: print("*", end="") as per row requirement.
3. For number patterns: use print(j, end="") or increment counters.
```

4. For spaces (pyramids, diamonds): print(" " * (rows - i - 1)) before stars.
5. For hollow patterns: print star only at borders, else print space.
6. Always end each row with print() to move to next line.

Answers (Sample Code)

Below are answers for some patterns. Apply the same logic to solve others.

Square Star Pattern
```
for i in range(5):
    for j in range(5):
        print("*", end="")
    print()
```

Right-Angled Triangle
```
for i in range(1, 6):
    for j in range(i):
        print("*", end="")
    print()
```

Pyramid Pattern
```
rows = 5
for i in range(rows):
    print(" " * (rows - i - 1) + "*" * (2 * i + 1))
```

Hollow Square
```
size = 5
for i in range(size):
    for j in range(size):
        if i == 0 or i == size-1 or j == 0 or j == size-1:
            print("*", end="")
        else:
            print(" ", end="")
    print()
```

Diamond Pattern
```
rows = 3
for i in range(rows):
    print(" " * (rows - i - 1) + "*" * (2 * i + 1))
for i in range(rows-2, -1, -1):
    print(" " * (rows - i - 1) + "*" * (2 * i + 1))
```