

Question Set 8: Pattern Printing - 35 Patterns

- Write a program called SquareBoard that displays the following $n \times n$ ($n=5$) pattern using two nested for-loops.

```
#####
#####
#####
#####
#####
```

- Write a program called CheckerBoard (alternate dark white – see the indentation on even numbered rows) that displays the following $n \times n$ ($n=7$) checkerboard pattern using two nested for-loops.

```
#####
#####
#####
#####
#####
#####
#####
```

- Print each of the following patterns using nested loops. (18 Patterns)

```
#           # # # # # # # #           # # # # # # # #           #
# #         # # # # # # # #           # # # # # # # #           # #
# # #       # # # # # # #           # # # # # # # #           # # #
# # # #     # # # # # #           # # # # # #           # # # #
# # # # #   # # # # #           # # # # #           # # # # #
# # # # # # # # # #           # # # #           # # # # # # #
# # # # # # # # # #           # #           # #           # # # # # # #
# # # # # # # # # #           #           #           # # # # # # # #
```

(a)

(b)

(c)

(d)

```
# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
#           #           #           #           #           #           # #           # #
#           #           #           #           #           #           #           # #           # #
#           #           #           #           #           #           #           #           # #           # #
#           #           #           #           #           #           #           #           #           # #
#           #           #           #           #           #           #           #           #           # #
# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
```

(e)

(f)

(g)

(h)

(i)

```
a           1           1
b c         2 2         2 3
d e f       3 3 3       4 5 6
g h i j     4 4 4 4     7 8 9 10
k l m n o   5 5 5 5 5   11 12 13 14 15
```

```
#           1
# #         1 1
# # #       1 1 1
# # # #     1 1 1 1
# # # # #   1 1 1 1 1
# # # # #   1 1 1 1
# # #       1 1 1
# #         1 1
#           1
```

a	01
b c	02 03
d e f	04 05 06
g h i j	07 08 09 10
k l m n o	11 12 13 14 15
p q r s	16 17 18 19
t u v	20 21 22
w x	23 24
y	25

```

#           1
#         1 1
#       1 1 1
#     1 1 1 1
#   1 1 1 1 1
# 1 1 1 1 1 1
# 1 1 1 1 1
# 1 1 1 1
# 1 1 1
# 1 1
# 1

```

4. Write a method to print each of the following patterns using nested loops. The program shall prompt user for the size of the pattern. (12 Patterns)

# # # # # # # # # #	#	#
# # # # # # # #	# # #	# # #
# # # # # # #	# # # # #	# # # # #
# # # # #	# # # # # # #	# # # # # # #
# # #	# # # # # # # # #	# # # # # # # # #
#	# # # # # # # # # # #	# # # # # # # # # # #
(a)	(b)	# # # # # # # # #
		# # # # # # #
		# # # # #
		# # #
		#
		(c)

1	1 2 3 4 5 6 7 8	1	8 7 6 5 4 3 2 1
1 2	1 2 3 4 5 6 7	2 1	7 6 5 4 3 2 1
1 2 3	1 2 3 4 5 6	3 2 1	6 5 4 3 2 1
1 2 3 4	1 2 3 4 5	4 3 2 1	5 4 3 2 1
1 2 3 4 5	1 2 3 4	5 4 3 2 1	4 3 2 1
1 2 3 4 5 6	1 2 3	6 5 4 3 2 1	3 2 1
1 2 3 4 5 6 7	1 2	7 6 5 4 3 2 1	2 1
1 2 3 4 5 6 7 8	1	8 7 6 5 4 3 2 1	1
(d)	(e)	(f)	(g)

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

(h)

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

(i)

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

(j)

1
 2 1
 3 2 1
 4 3 2 1
 5 4 3 2 1
 6 5 4 3 2 1
 7 6 5 4 3 2 1
 1

(k)

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
 6 7 8 9 0 1 0 9 8 7 6
 7 8 9 0 1 2 3 2 1 0 9 8 7
 8 9 0 1 2 3 4 5 4 3 2 1 0 9 8

(l)

5. Write a method to print each of the following Triangle patterns using nested-loops. The program shall prompt user for the number of Rows. (3 Patterns)

```

      1
    1 2 1
  1 2 4 2 1
1 2 4 8 4 2 1
  1 2 4 8 16 8 4 2 1
1 2 4 8 16 32 16 8 4 2 1
  1 2 4 8 16 32 64 32 16 8 4 2 1
1 2 4 8 16 32 64 128 64 32 16 8 4 2 1
```

(a) PowerOf2Triangle

```

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
1 6 15 20 15 6 1
```

(b) PascalTriangle1

```

      1
    1 1
  1 2 1
1 3 3 1
  1 4 6 4 1
1 5 10 10 5 1
  1 6 15 20 15 6 1
```

(c) PascalTriangle2