Python – Nested Loops

Purpose

This project was designed to teach you how to use nested loops in python.

Description

Implement the 10 functions from the python shell provided. There are explanations with every function. You may assume all arguments are valid. A screenshot of the executed code is below. Please note that none of the outputs have trailing whitespace. rstrip() may be useful.

Program Shell

nestedloops_project.py, test_nestedloops.py

Sample Execution

```
Rectangle of stars 9 X 6

*********
*********
*********
*********
*********
*********



Grid of Numbers w/ size 10:


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

Staircase of numbers w/ size 10:

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

Staircase of numbers w/ size 10 reflected:

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

Multiplication table(size=9):

1	2	3	4	5	6	7	8	9
2	4	6	8	10	12	14	16	18
3	6	9	12	15	18	21	24	27
4	8	12	16	20	24	28	32	36
5	10	15	20	25	30	35	40	45
6	12	18	24	30	36	42	48	54
7	14	21	28	35	42	49	56	63
8	16	24	32	40	48	56	64	72
9	18	27	36	45	54	63	72	81

Pyramid w/ 9 rows:

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

Diamond:

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

Box: 10 X 5

```
XXXXXXXXXX
X        X
X        X
X        X
XXXXXXXXXX
```

```
Box: 16 X 8

XXXXXXXXXXXXXXXX
X              X
X              X
X              X
X              X
X              X
X              X
XXXXXXXXXXXXXXXX


X marks the spot:

X_______X
_X_____X_
__X___X__
___X_X___
____X____
___X_X___
__X___X__
_X_____X_
X_______X

Reverse Diamond(3):

1 3 5 5 3 1
3 5     5 3
5         5
5         5
3 5     5 3
1 3 5 5 3 1

Reverse Diamond(6):

1 3 5 7 9 11 11 9 7 5 3 1
3 5 7 9 11     11 9 7 5 3
5 7 9 11         11 9 7 5
7 9 11             11 9 7
9 11                 11 9
11                     11
11                     11
9 11                 11 9
7 9 11             11 9 7
5 7 9 11         11 9 7 5
3 5 7 9 11     11 9 7 5 3
1 3 5 7 9 11 11 9 7 5 3 1
```