Module 01

Loop

Data Science Developer

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Outline

- Looping Intro
- Looping with while
- Looping with for

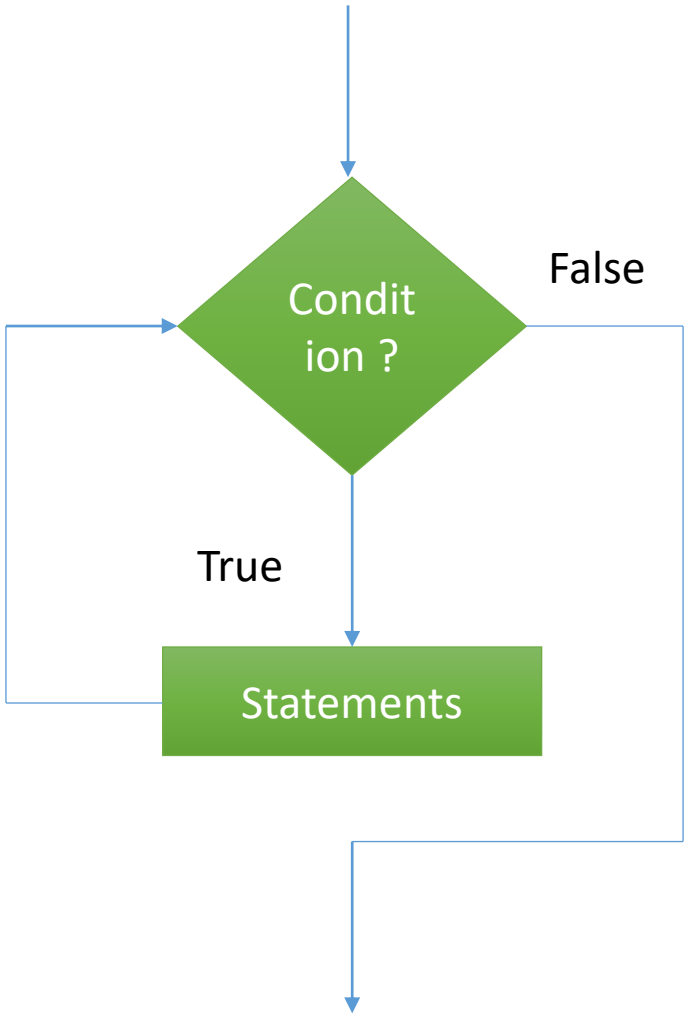
What is Loop ?

- One or more same or identical **statements** will be **executed repeatedly** based on certain **condition** or certain **number of times**
- **Condition** is an **expression**
- Executed statements called **loop statements**

Why do wee need loop ?

- You will find many activities in programming need to be done repeatedly
- Loop can make any algorithm or program more flexible and less code

Loop : While



Looping with while:

- Loop statements executed based on condition
- Loop stops when condition False
- Loop statements will be executed minimum nonce
- Format :

```
while condition :
    statement 1
    statement 2
    …
    statement n
    compound statement
```

Executed statements While still True

indentation

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While Loop

```
angka = 1
while(angka <= 10):
    print(angka)
    angka += 1
```

```
angka = 1
while(angka <= 10):
    print(angka, end = ' ')
    angka += 2
```

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Solve it!

Use while statement to write down a sequence of these numbers (left to right in the terminal):

14 8 2 –4 –10 –16

Use while statement to write down a sequence of these numbers :

5,7
7,9
9,11
11,13
13,15

Solved!

```
i = 14
while i >= -16 :
      print(i, end = " ")
      i -= 6
```

```
i = 5
while i <= 15:
      print(i, end = ",")
      i += 2
      print(i)
```

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Solve it!

What is the output of this syntax if we give some input. The input respectively are -5, 23, 21, 323, 121212, and then -99 ?

```
c = 0
bil = int(input())
while (bill != -99):
    c += 1
    bil = int(input())
print(c)
```

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Loop : for

- Looping with usually used to explore collection data type like string, tuple, list, dictionary, and set
- Loop statement will be executed for certain number of times

indentation

```
for index in range(start, end+1, step):
    statement 1
    statement 2
    ...
    statement n
```

Executed statements 1 2 .. and n repeatedly

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Loop : for

```
listItem = list(range(1,11,2))
print(listItem)

for item in listItem :
    print(item)
```

```
listItem = list(range(11,0,-1))
print(listItem)

for item in listItem :
    print(item)
```

Solve It!

```
PS D:\Purwadhika\Purwadhika\Python Fundamental> python fundamental.py
Nomor urut 1
Nomor urut 2
Nomor urut 3
Nomor urut 4
Nomor urut 5
Nomor urut 6
Nomor urut 7
Nomor urut 8
Nomor urut 9
Nomor urut 10
```

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Solved!

```
y = 'Nomor urut '

for item in range(1,11) :
    print(y + str(item))
```

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Solve It!

```
PS D:\Purwadhika\Purwadhika\Python Fundamental> python fundamental.py
Nomor urut 0
Nomor urut 2
Nomor urut 4
Nomor urut 6
Nomor urut 8
Nomor urut 10
Nomor urut 12
Nomor urut 14
Nomor urut 16
Nomor urut 18
Nomor urut 20
```

Solved!

```
y = 'Nomor urut '

for item in range(0,21,2) :
    print(y + str(item))
```

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Solve It!

```
PS D:\Purwadhika\Purwadhika\Python Fundamental> python fundamental.py
Nomor urut 1
Nomor urut 3
Nomor urut 5
Nomor urut 7
Nomor urut 9
Nomor urut 11
Nomor urut 13
Nomor urut 15
Nomor urut 17
Nomor urut 19
```

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Solved!

```
y = 'Nomor urut '

for item in range(1,21,2) :
    print(y + str(item))
```

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Nested loop

- Loop in loop:

```
for i in range(5): # first loop (rows)
    for j in range(5): # second loop (columns)
        print(1, end = ' ') # print left to right
    print('') # newlines
```

```
k = 1
for i in range(3):
    for j in range(3):
        print(k, end = ' ')
        k += 1
    print('')
```

For Loop Drawing

```
# 1
z=''

for item in range(0,5):
    z += ' * '
print(z)
```

```
# 2

for i in range(5):
    print(end = ' * ')
```

```
PS D:\Purwadhika\Purwadhika\Python Fundamental> python fundamental.py
 *  *  *  *  *
```

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For Loop Drawing

```
# 1
z=''

for item in range(0,5):
    if item < 4:
        z += ' * \n'
    else:
        z += ' * '

print(z)
```

```
PS D:\
 *
 *
 *
 *
 *
```

```
# 2

for item in range(5):
    print(end = " * \n")
```

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Solve It!

```
PS D:\Purwadhika\Purwa
  *   *   *   *   *
  *   *   *   *   *
  *   *   *   *   *
  *   *   *   *   *
  *   *   *   *   *
```

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Solved

```
# 1
z=''

for item in range(5):
    for item1 in range(5):
        z += ' * '
    z += '\n'

print(z)
```

Solved!

```
# 1
z=''

for item in range(5):
    for item1 in range(5):
        z += ' * '
    if item < 4:
        z += '\n'
    else:
        z += ''

print(z)
```

```
# 2

for item in range(5):
    for item1 in range(5):
        print(end = ' * ')
    print('\n')
```

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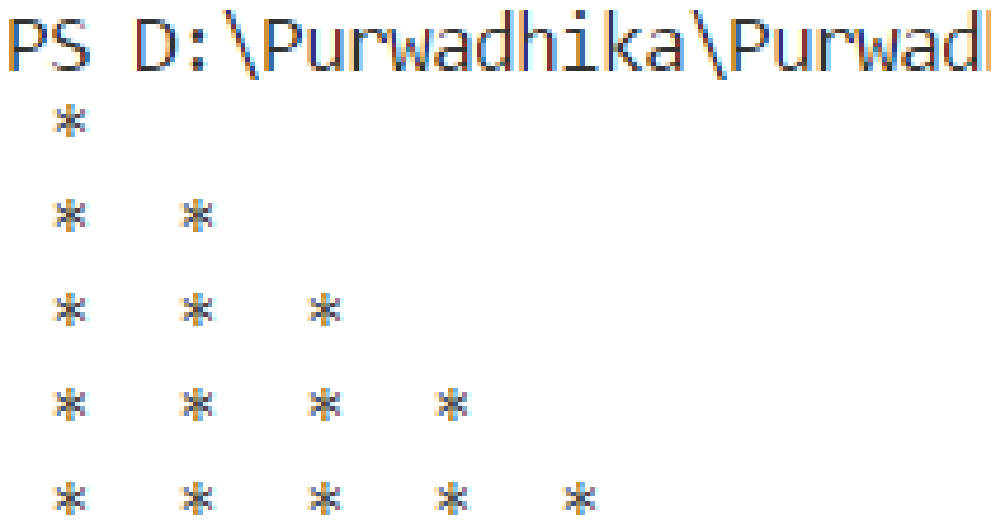
Solve It!



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Solved!

```
z=''

for item in range(5):
    for item1 in range(0, item+1):
        z += ' * '
    z += '\n'

print(z)
```

Solved!

```
for i in range(5):
    for j in range(0, i+1):
        print(' * ', end = '')
    print()
```

```
z=''

for item in range(5):
    for item1 in range(0, item+1):
        z += ' * '
    if item < 4:
        z += '\n'
    else:
        z += ''
print(z)
```

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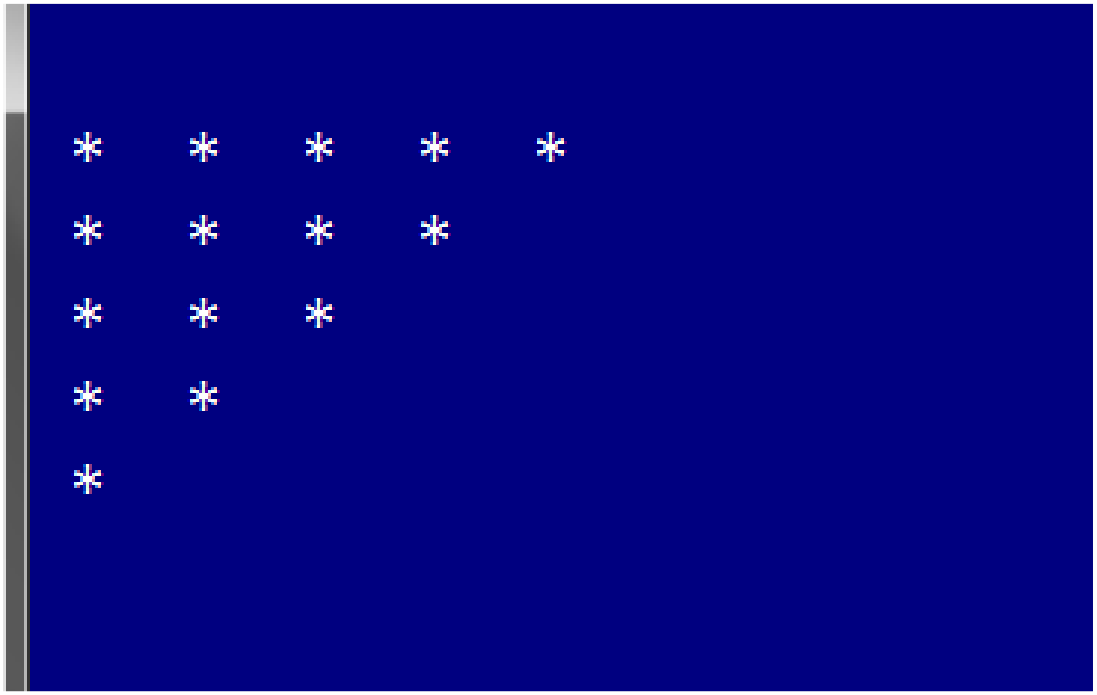
Solve It! #1



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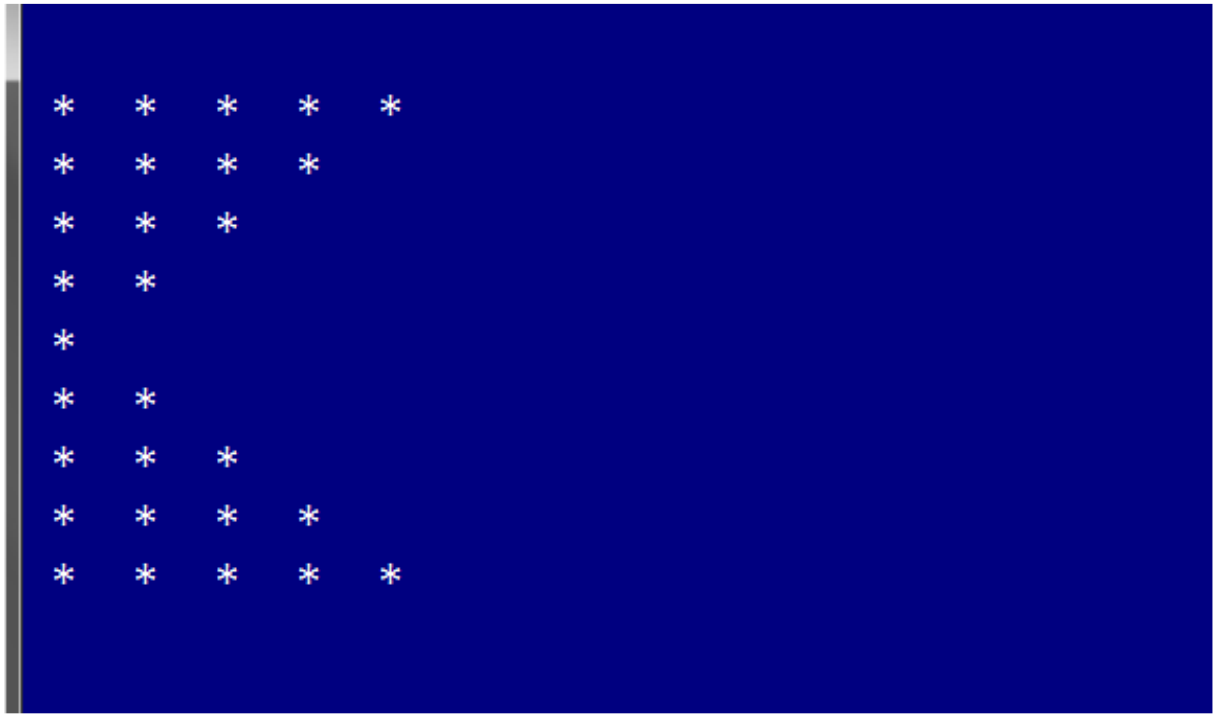
Solve It! #2



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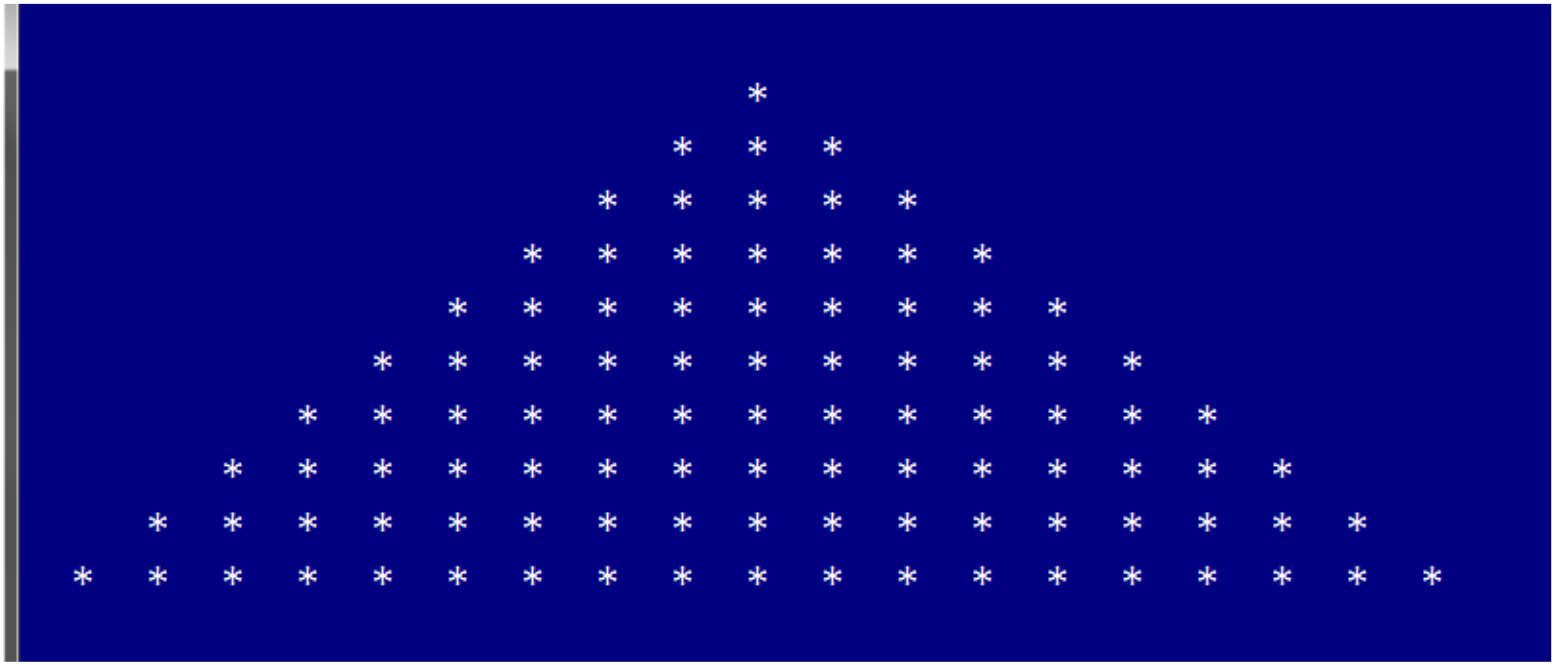
Solve It! #3



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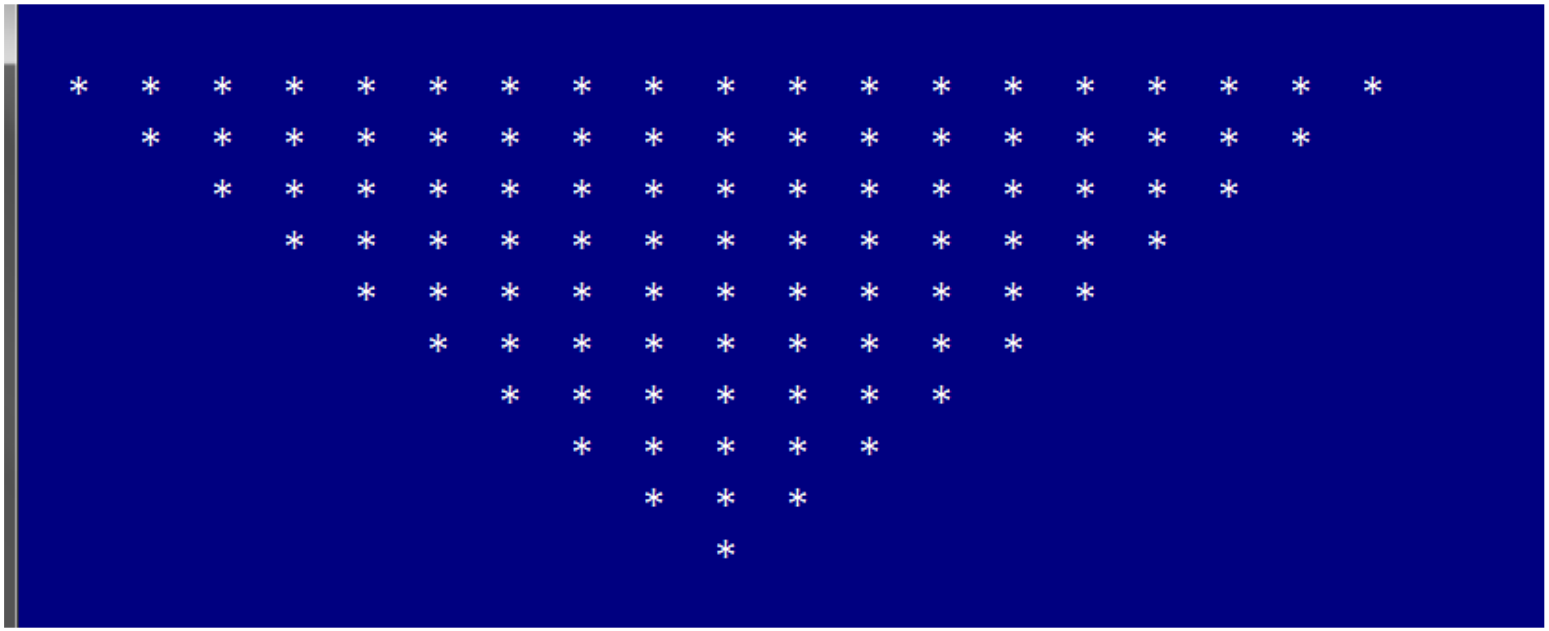
Solve It! #4



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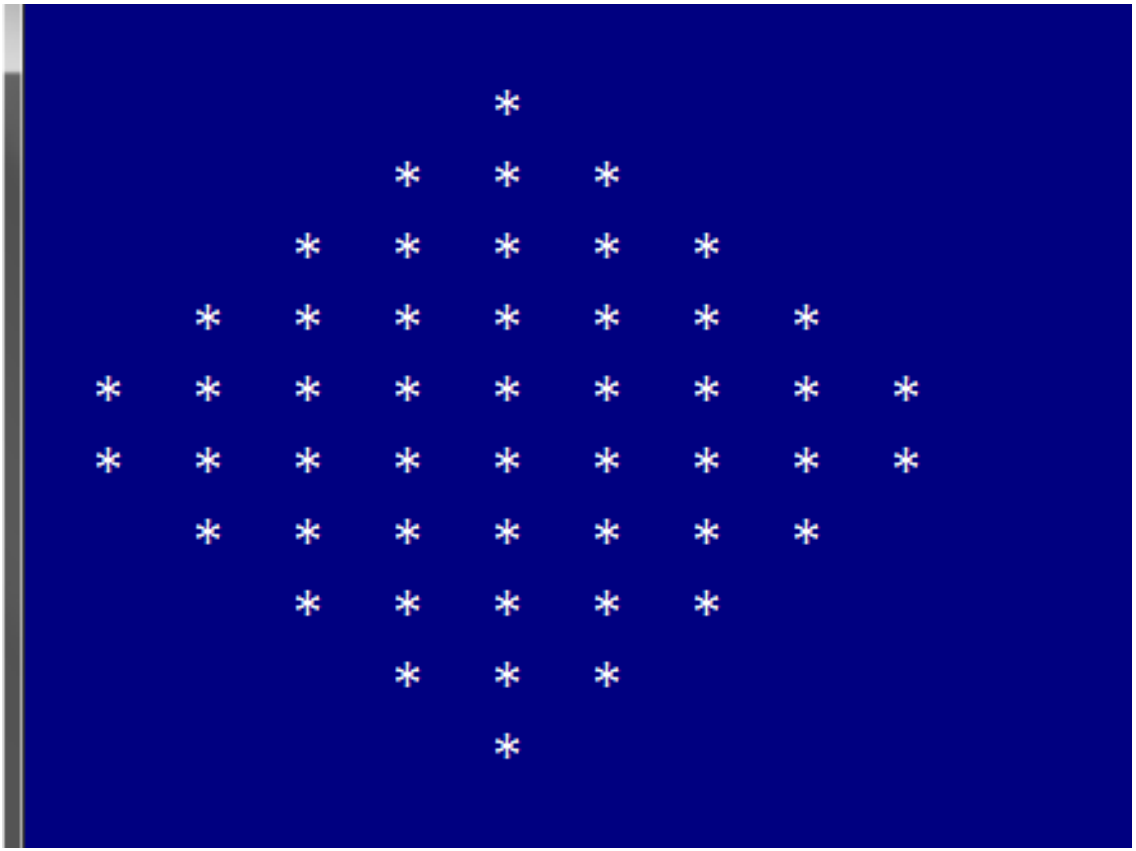
Solve It! #5



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