Warm up Problem

Reverse the number

```python
# rev

n = int(input())
rev = 0

while n > 0:
    # last digit
    d = n % 10
    # update the number
    n = n // 10
    # update the rev
    rev = rev * 10 + d
    #print(rev)

print(rev)
```

```
 1234

4321
```

Pattern

```python
n = int(input())

for i in range(1, n+1):
    # spaces
    for s in range(n-i):
        print("-", end="")
    # print stars
    for star in range(i):
        print("*", end="")
    # move to next row
    print()
```

```
 4

---*
--**
-***
****
```

```python
n = int(input())

for i in range(1, n+1):
    # spaces
    for s in range(n-i):
```

```
        print(" ", end="")
    # print stars
    for star in range(i):
        print("*", end="")
    # move to next row
    print()
```

 5

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

```
n = int(input())

for i in range(1, n+1):
    # spaces
    for s in range(n-i):
        print(" ", end="")
    # print stars
    for star in range(i):
        print(str(i), end="")
    # move to next row
    print()
```

 5

```
    1
   22
  333
 4444
55555
```

```
n = int(input())

for i in range(1, n+1):
    # spaces
    for s in range(n-i):
        print(" ", end="")
    # print stars
    for k in range(1, i+1):
        print(str(k), end="")
    # move to next row
    print()
```

 5

```
    1
   12
  123
```

```
  1234
12345
```

```python
n = int(input())

for i in range(1, n+1):
    for k in range(1, i+1):
        print(str(k), end="")
    # move to next row
    print()
```

```
 5

1
12
123
1234
12345
```

Pattern 2

```python
n = int(input())

for i in range(1, n+1):
    # spaces
    for j in range(i-1):
        print(" ", end="")
    # stars
    for k in range(n-i+1):
        print("*", end="")
    # next line
    print()
```

```
 5

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

```python
n = int(input())

for i in range(1, n+1):
    # spaces
    for j in range(i-1):
        print(" ", end="")
    # stars
    for k in range(n-i+1):
        print(k, end="")
    # next line
    print()
```

```
 5

01234
 0123
  012
   01
    0
```

```python
n = int(input())

for i in range(1, n+1):
    # spaces
    for j in range(i-1):
        print(" ", end="")
    # stars
    for k in range(1, n-i+2):
        print(k, end="")
    # next line
    print()
```

```
 5

12345
 1234
  123
   12
    1
```

```python
n = int(input())

for i in range(1, n+1):
    # spaces
    for j in range(i-1):
        print(" ", end="")
    # stars
    for k in range(1, n-i+2):
        print(i, end="")
    # next line
    print()
```

```
5
```

```
11111
 2222
  333
   44
    5
```

```python
n = int(input())

for i in range(1, n+1):
    # spaces
    for j in range(i-1):
        print(" ", end="")
    # stars
    for k in range(1, n-i+2):
        print(n, end="")
    # next line
    print()
```

```
 5
```

```
55555
 5555
  555
   55
    5
```

Upper part of hollow diamond

```python
n = int(input())

for i in range(1, n+1):
    # star
    for j in range(n - i + 1):
        print("*", end="")
    # spaces
    for k in range(2*(i-1)):
        print(" ", end="")
    # other half stars
    for m in range(n - i + 1):
        print("*", end="")

    # next line
    print()
```

```
 3
```

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

```python
n = int(input())

for i in range(1, n+1):
    # star
    for j in range(n - i + 1):
        print(j, end="")
    # spaces
    for k in range(2*(i-1)):
        print(" ", end="")
    # other half stars
    for m in range(n - i + 1):
        print(m, end="")

    # next line
    print()
```

```
 5

0123401234
0123  0123
012    012
01      01
0        0
```

Lower part of Hollow diamond

```python
n = int(input())

for i in range(1, n+1):
    # star
    for j in range(i):
        print("*", end="")
    # spaces
    for k in range(2*(n-i)):
        print(" ", end="")
    # other half stars
    for m in range(i):
        print("*", end="")

    # next line
    print()
```

```
  3

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

```
# i: 3
# j: 0, 1, 3
# k: 0
# m: 0, 1, 3
```

Full Hollow diamond

```python
n = int(input())

for i in range(1, n):
    # star
    for j in range(n - i + 1):
        print("*", end="")
    # spaces
    for k in range(2*(i-1)):
        print(" ", end="")
    # other half stars
    for m in range(n - i + 1):
        print("*", end="")

    # next line
    print()

# Lower part
for i in range(1, n+1):
    # star
    for j in range(i):
        print("*", end="")
    # spaces
    for k in range(2*(n-i)):
        print(" ", end="")
    # other half stars
    for m in range(i):
        print("*", end="")

    # next line
    print()
```

```
  3

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

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

Filled diamond

```python
n = int(input())

for i in range(1, n):
    # star
    for j in range(n - i + 1):
        print(" ", end="")
    # spaces
    for k in range(2*(i-1)):
        print("*", end="")
    # other half stars
    for m in range(n - i + 1):
        print(" ", end="")

    # next line
    print()

# Lower part
for i in range(1, n+1):
    # star
    for j in range(i):
        print(" ", end="")
    # spaces
    for k in range(2*(n-i)):
        print("*", end="")
    # other half stars
    for m in range(i):
        print(" ", end="")

    # next line
    print()
```

```
 5
```

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

```python
# HW: Add 1 star at top and 1 at bottom


# Recap
l = [12, "Rahul", 12.3, True]
type(l)
list
type(l[1])
str
type(l[3])
bool
# append: adds value as it is in last
# extend: Iterates on the values of the iterable and adds
# item by item
# count: gives you count of an object in our list
# index: gives first occurence idex of an object
# If element not present then it gives error
# remove: It removes just the first occurence
l = [1,2,2,1,3,1,4,1,5]
l.remove(1)
while (1 in l):
    l.remove(1)
l
[2, 2, 3, 4, 5]
# 2D-list
l = [[1, 2], [3, 4], [5, 6]]
len(l)
3
l[0]
[1, 2]
l[2]
```

```
[5, 6]
```

```python
# Iteration in 2D-list

# Using range: index
# without index

l
```

```
[[1, 2], [3, 4], [5, 6]]
```

```python
for i in l:
    for j in i:
        print(j**2)
```

```
1
4
9
16
25
36
```

```python
for i in range(len(l)):
    for j in range(len(l[i])):
        if l[i][j] == 2:
            print(i, j)
```

```
0 1
```

```python
# tuples

t = ([1, 2], [3, 4])

type(t)
```

```
tuple
```

```python
type(t[0])
```

```
list
```

```python
id(t)
```

```
140463569098304
```

```python
# Can we change elements in tuples
# Can we change elements in a list

t[0][0] = 12

id(t)
```

```
140463569098304
```

```python
# Set
s = {}
type(s)
```
```
dict
```
```python
# Set only takes unique elements
s = {"Rahul", "rahul", "Rahul"}
s
```
```
{'Rahul', 'rahul'}
```
```python
ord("A")
```
```
65
```
```python
ord("a")
```
```
97
```

HW add 1 star at top and bottom

Doubts