Introduction to Python: Repetition Statements (Loops)

APRIL 2024

Contents

Let's use Git to save our job Today

- Before start, make sure you have cloned the repository from:
  - https://github.com/ericrommel/ekids

```
$ cd path/to/your/local/repository
$ git checkout main
$ git pull
$ git checkout YOUR_BRANCH_HERE
$ git merge main
```
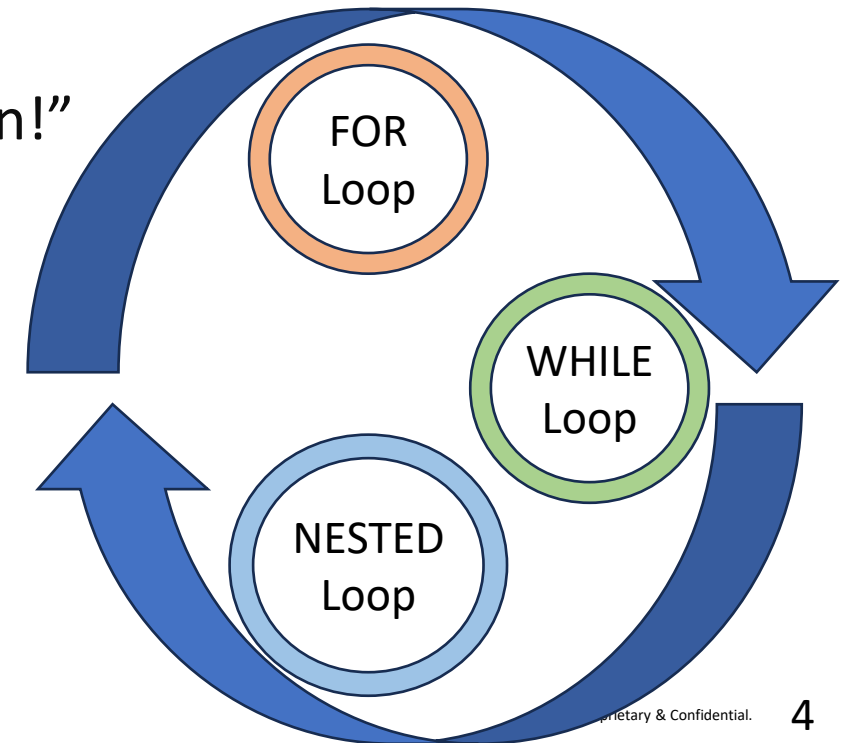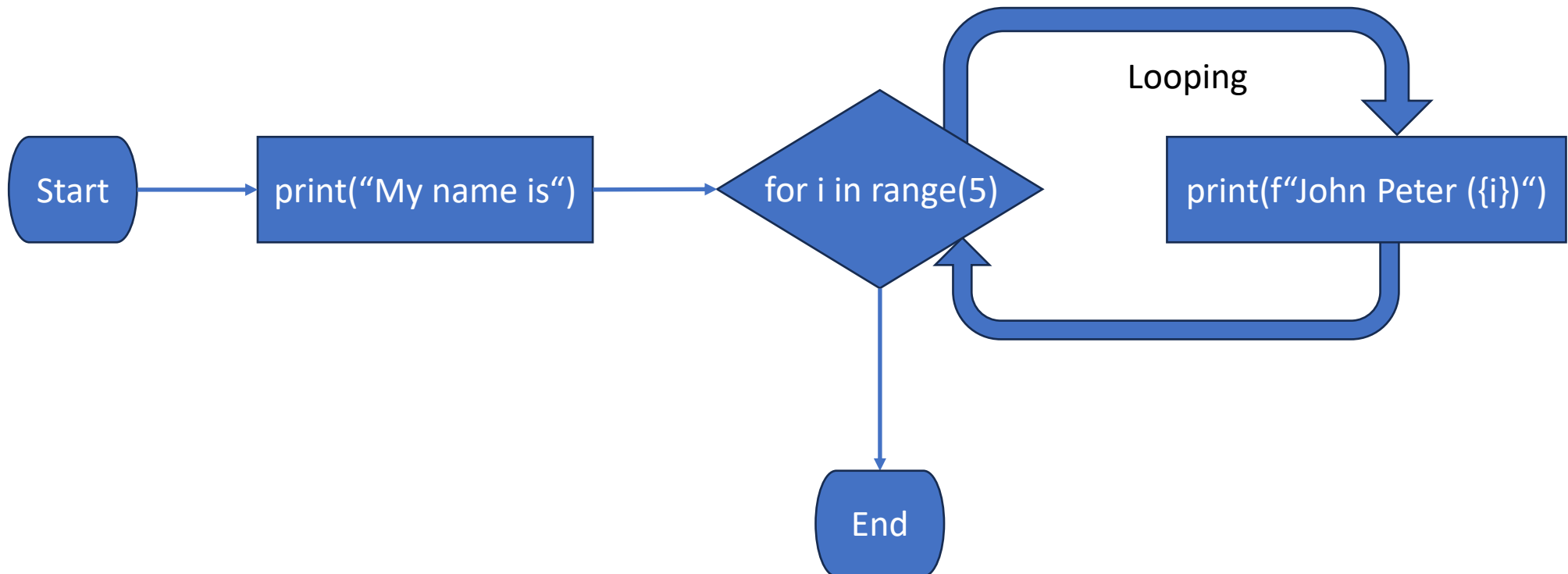
- Let's have fun...

Introduction to Loops

- What is a loop?
  - It is a way to repeat actions in a computer program

- Imagine asking your robot to pick up all the toys in your room. Instead of telling it each step for each toy, you just say:
  - "Hey, keep picking up toys until the room is clean!"

- That's what a loop does in programming.

FOR Loop

WHILE Loop

NESTED Loop

Type of Loops

- **FOR** statement
  - When you **KNOW** how many times to repeat

Type of Loops

- Example: How to write a multiply table for the number 1? And 2? And 3? And so on???

```
print("Let's print out the multiply table for 1")
print("1 x 0 = 0")
print("1 x 1 = 1")
print("1 x 2 = 2")
print("1 x 3 = 3")
print("1 x 4 = 4")
print("1 x 5 = 5")
print("1 x 6 = 6")
print("1 x 7 = 7")
print("1 x 8 = 8")
print("1 x 9 = 9")
print("1 x 10 = 10")
```
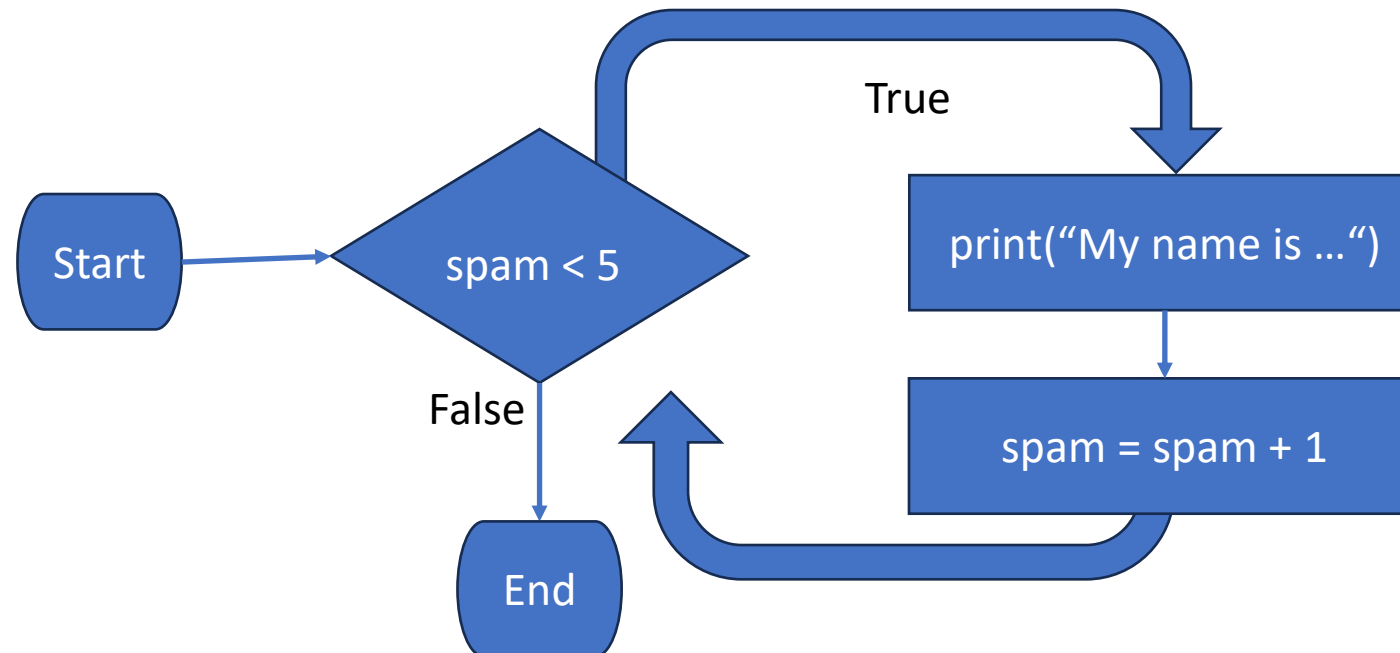
Type of Loops

- Example: How to write a multiply table for the number 1? And 2? And 3? And so on???

Now, try it using for statement

Type of Loops

- **WHILE** statement
  - It repeats based on a condition. Example: "Continue playing the game until dinner is ready."

Type of Loops

- Example: How to write a game to guess a number?

```python
import random


number_to_find = 56
number_guessed = None   # None represents nothing or an empty value
while number_to_find != number_guessed:
    number_guessed = random.randint(0, 101)
    print(f"The number guessed is: {number_guessed}")


print(f"Congrats, that's the correct number: {number_guessed}")
```

Type of Loops

- Now, let's improve this script to achieve the below example:

```
I am thinking of a number between 1 and 20.
Take a guess.
10
Your guess is too low.
Take a guess.
15
Your guess is too low.
Take a guess.
17
Your guess is too high.
Take a guess.
16
Good job! You guessed my number in 4 guesses!
```

Are you trapped in an infinite Loop?

- What happens below? How to fix?

```python
while True:
    name = input("Who are you?")
```

Trapped in an infinite Loop?

- What happens below? How to fix?

```python
while True:
    name = input('Who are you?')
    if name != 'Joe':
        continue
    password = input('Hello, Joe. What is the password? (It is a fish.)')
    if password == 'swordfish':
        break
print('Access granted.')
```

Save your local changes to your GitHub

```
$ git status
$ git add .
$ git commit -m "A nicely message here"
$ git push
```

Thank you!