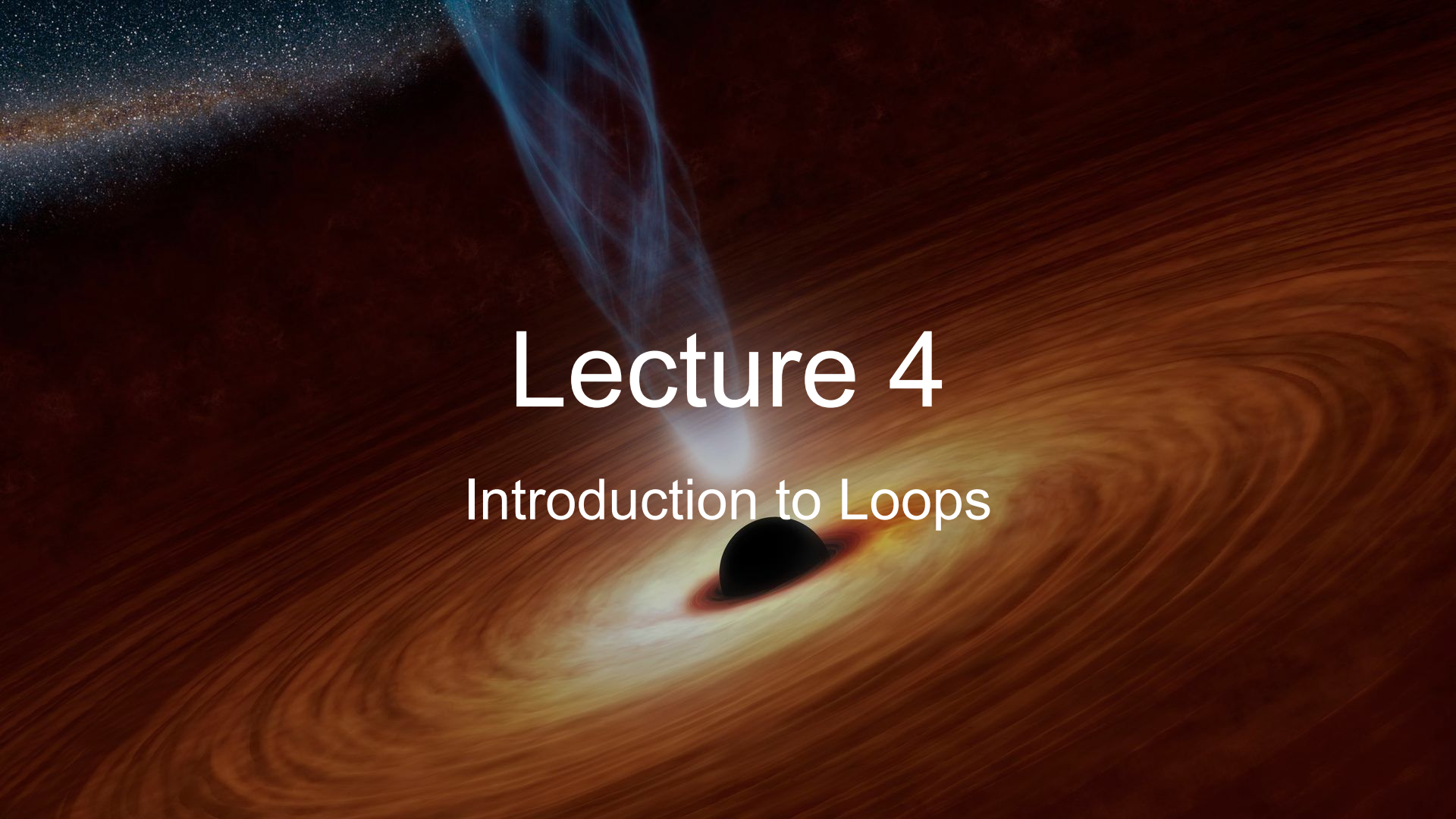


Lecture 4

Introduction to Loops

Exciting JWST News…

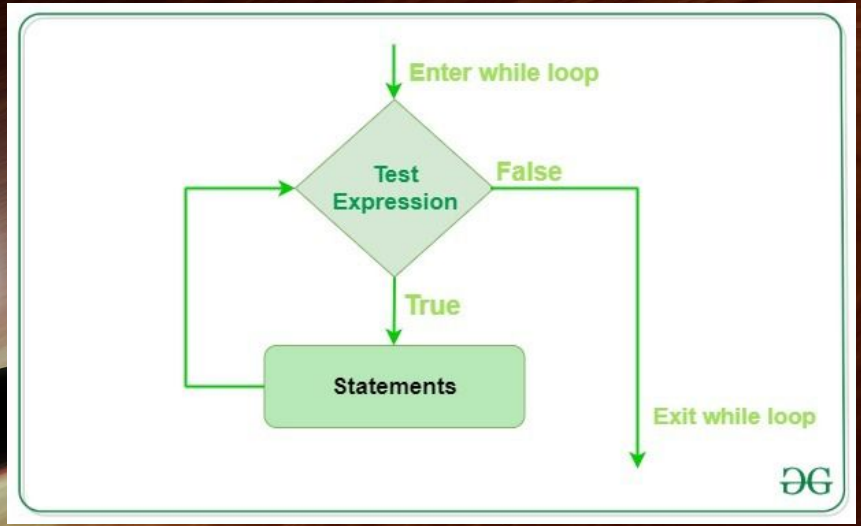
What is a loop?

- **A loop is a sequence of instructions that is repeated until a certain condition is reached**

- **2 Types of Loops**
  - **While Loops**
  - **For Loops**

“While” Loops

```
while value is True:
    do something
```



“While” Loops: How to write them…

- While loop: print numbers 1 to 5

```
i = 1
while i < 6:
    print(i)
    i += 1
```

- What will be the output now?

```
i = 1
while i < 6:
    i += 1
    print(i)
```

- What will be the output now?

```
i = 1
while i < 6:
    print(i)
```

Make sure to exit your while loop!!

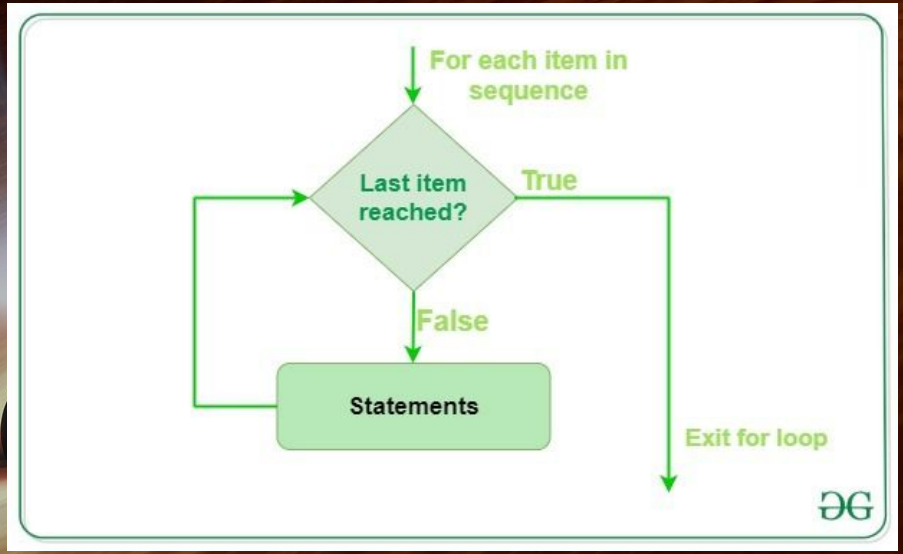
“While” Loops: When to use them…

- Quick way to repeat a set number of calculations
- Can be used to perform calculations dependent on Bool conditions
- Can be very useful when combined with “if” and “else” statements

“For” Loops

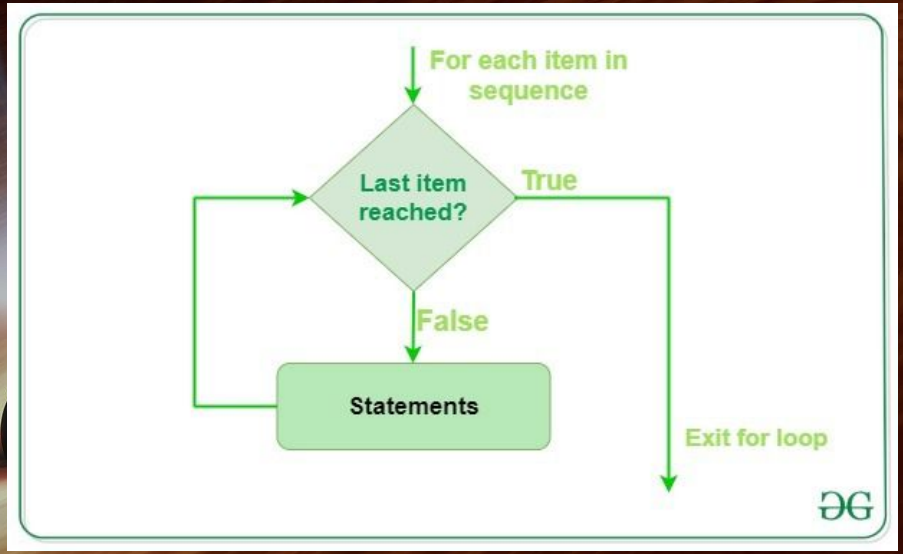
```
for item in list:
    do something
```

(Something I have used often throughout my experience with python)



“For” Loops

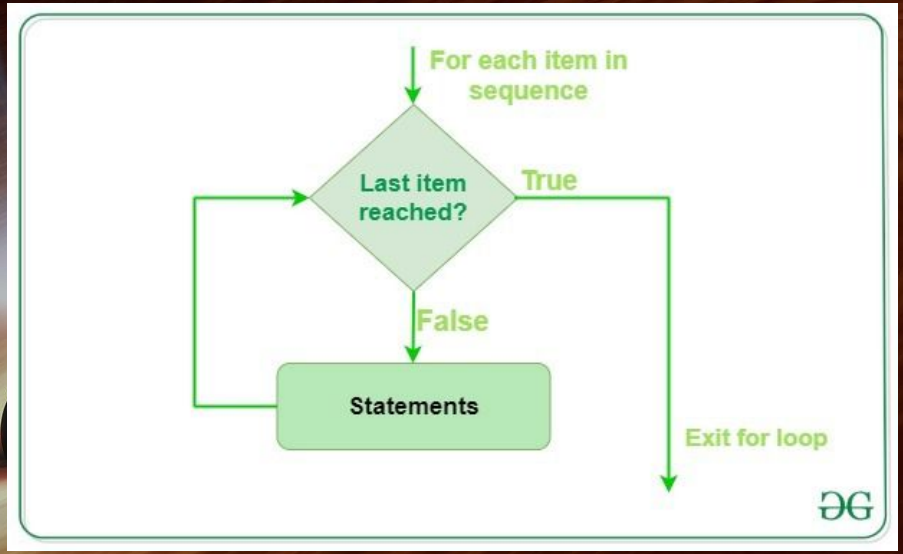
- For loop: iterate over items in a list
- Then we need either run commands on existing lists, or create new list for it to run over.
- For example, you want to print numbers from 0 to 100. It would be a long task for you if you wanted write them all out!



How to write a “For” Loop

- Print numbers from 1 to 100.

```
for i in range(1,101):
    print(i)
```



“For” Loops: When to use them…

- Work with large amounts of data at once
- Pick out and manipulate certain values in a dataset
- Build new arrays