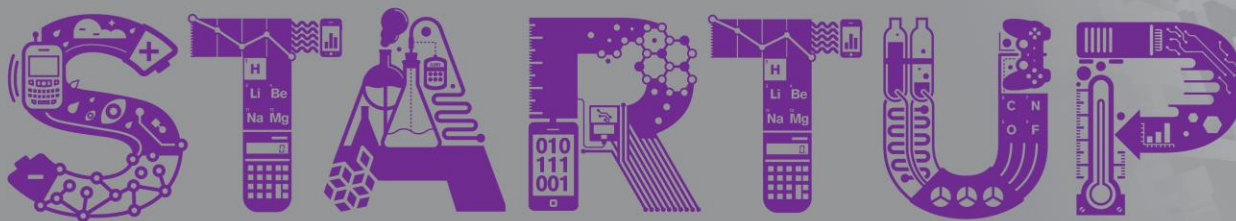


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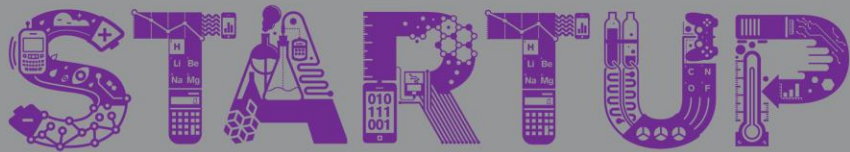
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Python Lesson 4

Loops



Loops: Introduction

- Suppose we want to write code to print the numbers from 1 to 100:

```
print(1)
```

```
print(2)
```

```
print(3)
```

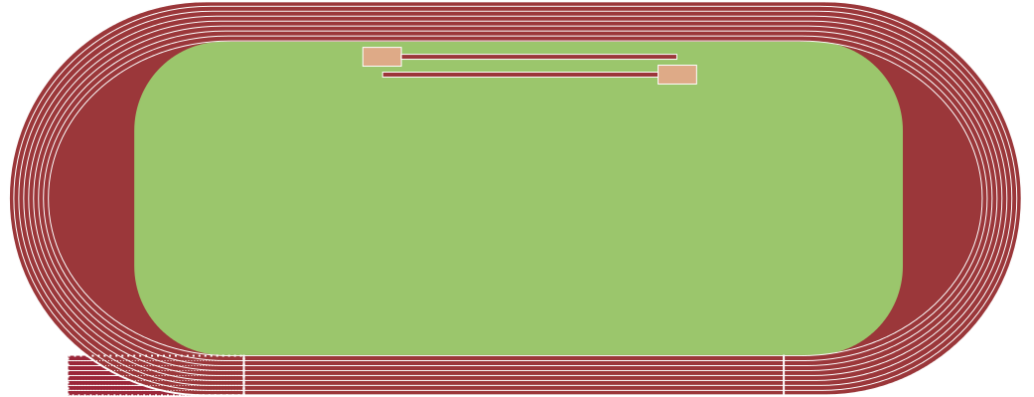
```
...
```

- This doesn't seem fun 😞
- Loops are a way of repeating code over and over again until a specific condition has been met (or forever!)



Loops: Introduction

What is a loop?





Writing a Loop – Questions to Ask:

- Where do you want to start?
 - Number starts at 1
- How long do you want to do it for?
 - While it is less than or equal to 100:
- What do you want to do each time?
 - Print the number:
- What do you want to change each time?
 - Increase number by 1:

```
number = 1
```

```
while number <= 100
```

```
print(number)
```

```
number = number + 1
```



Writing a Loop – Putting it Together:

We can combine our answers into a working piece of code:

```
number = 1
while number <= 100:
    print(number)
    number = number + 1
```



Anatomy of a While Loop

while indicates that the block will repeat while the condition is true

The condition works just like in an **if** statement

The **:** tells the program you are starting the code for the while loop.

```
number = 1
while number <= 100:
    print(number)
    number = number + 1
```

The loop code goes here. It must all be indented the same amount.

Incrementing the number is very important!



Example 1

Write a while loop to print the numbers from 1 to 100 in descending order (100, 99, 98, ...)

```
number = 100
while number > 0:
    print(number)
    number = number - 1
```



Infinite loops

What will happen if we run this code?

```
counter = 1
while counter < 10:
    print("I love python!")
```

How can we fix it?



While loops: Beyond Counting

Loops are not limited to counting things!

```
user_reply = input("Want to keep going? ")  
while user_reply != "no":  
    user_reply = input("Want to keep going? ")
```



Recap

- A while loop helps you avoid repeating code
- While loops are similar to if-statements, but the code block is run over and over until the condition is false.
- Make sure that any loop you write will end!