

# Loops

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# What is a loop?

- When you eat your cereal in the morning, how much milk do you add to the bowl?
- When you walk to class, how do you know how many steps to take?



# Loops

- Loops are control structures that allow us to repeat a portion of code a set amount of times
- It could be an exact number of times
- It could be until a condition is met (i.e., there is enough milk proportional to the cereal)



# For loops

- These are your best friend...they do extra work FOR you!!

```
for i in range(5):
```

```
    print(i)
```

- Let's test this out and see what it does?



# What did it do?

```
for i in range(5):
```

```
    print(i)
```

0

1

2

3

4



# range()

- range() is exclusive...it will start at zero and go to the number you provide minus one
- We can start at other numbers besides zero
- We can increment by other numbers besides one



# range()

Range	Generated sequence	Explanation
<code>range(5)</code>	<code>0 1 2 3 4</code>	Every integer from 0 to 4.
<code>range(0, 5)</code>	<code>0 1 2 3 4</code>	Every integer from 0 to 4.
<code>range(3, 7)</code>	<code>3 4 5 6</code>	Every integer from 3 to 6.
<code>range(10, 13)</code>	<code>10 11 12</code>	Every integer from 10 to 12.
<code>range(0, 5, 1)</code>	<code>0 1 2 3 4</code>	Every 1 integers from 0 to 4.
<code>range(0, 5, 2)</code>	<code>0 2 4</code>	Every 2 integers from 0 to 4.
<code>range(5, 0, -1)</code>	<code>5 4 3 2 1</code>	Every 1 integers from 5 down to 1
<code>range(5, 0, -2)</code>	<code>5 3 1</code>	Every 2 integers from 5 down to 1



# Examples

- Let's print out the numbers from 0 to 50 by fives
- Let's do a NYE countdown



# Your Turn

- Print all even numbers from 0-100
- Print all odd numbers from 100-0
- Read in ten numbers from the user and print the sum, product, and average of the numbers