print("Hello, World!")

NCSS Challenge - Beginners
Week 1 Part 2

What will we cover?

- ○ Variables;
- ○ Doing calculations;
- ○ Mixing numbers and strings;
- ○ Introducing Python Turtle!

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What does this cover?

- ○ Define simple problems, and describe and follow a **sequence of steps** and decisions (algorithms) needed to solve them (ACTDIP010)
- ○ Implement simple digital solutions as visual programs with algorithms involving branching (decisions) and **user input** (ACTDIP011)
- ○ Recognise **different types of data** and **explore how the same data can be represented in different ways** (ACTDIK008)

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1 More about Variables

Using Multiple Variables

- New variables can be created from other variables

```python
firstname = input('What is your first name? ')
lastname = input('What is your last name? ')
fullname = firstname + ' ' + lastname
print('Hello, ' + fullname)
```

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Test it out!

Try the first question now!

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2 Python the Calculator

Python is great at calculations

- We can use Python to do calculations for us.
- To calculate the number of seconds in a day
  (60 seconds per minute × 60 minutes per hour × 24 hours per day):

```python
print(60 * 60 * 24)
```

Python the Calculator

Name	Calculator	Python
addition	+	+
subtraction	-	-
multiplication	×	*
division	÷	/

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Numbers and Strings are different

- Variables help keep track of the calculations and avoid *"magic numbers"*.

```python
secs_min = 60
mins_hour = 60
hours_day = 24
secs_day = secs_min*mins_hour*hours_day
print(secs_day)
```

③ Numbers and Strings

Asking for numbers from the user

- ○ `input` reads in a string from the user, regardless of whether the user enters a digit or a letter.

```python
a = input('Enter a number: ')
b = input('Enter another number: ')
print(a + b)
```

This would be similar to:
```python
print('5' + '6')
```

Asking for numbers from the user (cont.)

- Instead of being added together as we might want, the strings are *concatenated*.
  ```
  print('5' + '6')
      → 56
  ```

- We need a way of converting the strings to numbers!

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Asking for numbers from the user

- input reads in a string from the user, regardless of whether the user enters a digit or a letter.

```python
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print(a + b)
```

This would be similar to:
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```

Using `int` to convert a string to an integer

- We can use the `int` function to convert strings to *integers* (whole numbers).

```python
a = int(input('Enter a number: '))
b = int(input('Enter another number: '))
print(a + b)
```

Teacher aside: introducing functions

- Now is quite a good time to have a discussion about functions. Students have already been using them, and now they can talk about how the work, consider:
  - the `int` function takes an **argument** of a string;
  - it **returns** an integer;
  - nesting function calls (`input` *inside* `int`)

Test it out!

Try the second question now!

3 Python Turtle

The Turtle Moves!

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The `turtle` Module

- A module is an additional library of code that can be imported for use in a program.
- It lets you use other variables and functions that are defined in that module without having to start from scratch.

The `turtle` Module

- In these questions, we'll use programming to control a virtual turtle to draw things on the screen!
- `turtle` is a Python *module*, so we need to import its functions by putting this statement at the top of each program:

```
from turtle import *
```

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Turtles are best when moving!
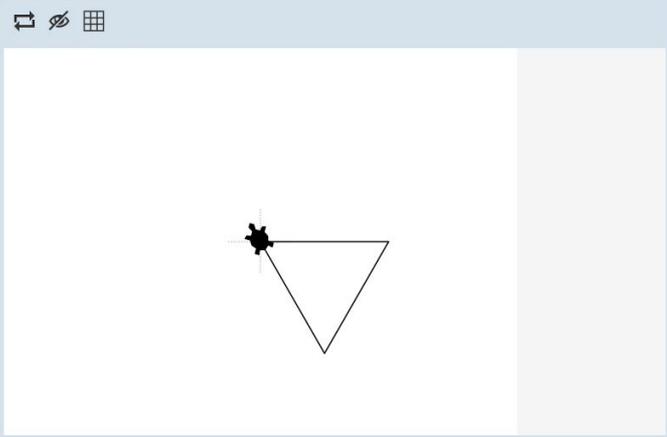
It's best to work through these notes directly.

Moving around

moves, it draws a line, so you can draw shapes (and *art*)!

```python
from turtle import *
forward(100)
right(120)
forward(100)
right(120)
forward(100)
```

Here we've drawn a triangle with 60° angles, and 100 turtle steps on each side. Since the sides are equal length, we've drawn an equilateral triangle.
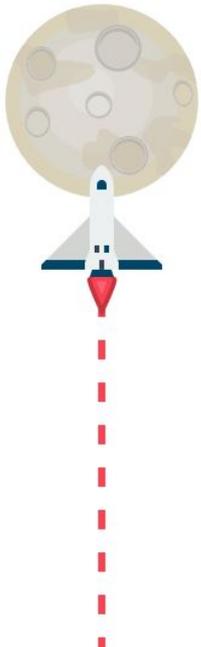
Get help on the forums

---

program.py

```python
1  from turtle import *
2
```

▶ Run   ▢ Terminal   💾 Save   ★ Mark Fair and square

Submissions

You don't have any submissions or saved code.

Any Questions?

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