Chapter 1

Function

1.1 Preface

VS Code is a special type of editor that is called a compiler. At the top, you'll notice a text exitor. At the bottom, you will see a terminal where you can execute commands.

In the terminal, you can execute `code hello.py` to start coding.

In the text editor above, you can type **print**(`"hello, world"`). This is a famous canonical program that nearly all coders write during their learning process.

In the terminal window, you can execute commands. To run this program, you are going to neesd to move your cursor to the bottom of the screen, clicking in the terminal window. You can now type a second command in the terminal window. Next to dollar ($) sign. Type `python hello.py` and press the enter key on your keyboard.

Recall that computers really only understand zeros and ones. Therefore, when you run `python hello.py`, python will interpret the text that you created in `hello.py` and translate it into the zeros and ones that the computer can understand

The result of runing the `python hello.py` program is `hello, world`,

Congrats! You just created your first program

1.2   Function

Function are verbs or actions that the computer or computer language will already know how to perfom.

In your `hello.py` program, the **print** function knows how to print to the terminal window.

The **print** function, takes arguments. In this case, `"hello, world"` are the arguments that the **print** function takes.

1.3   Bugs

Bugs are a natural part of coding. These are mistakes, problems for you to solve. Don't get discouraged! This is part of the process if becoming a great programmer.

Imagine in our `hello.py` program that accidentally typed **print**`("hello, world"` notice that we missed the final `)` required by the compiler. If I purposefully make this mistake, you'll see the compiler will ouy an error in the terminal window!

Often, the error messages will inform you of your mistakes and provide you clues on how to fix them. However, their will be many times when the compiler is not this kind.

"A programmer can code a flower and send it to his girl friend. But flower is filled with, you know, bugs."

1.4 Improving Your First Python Program

We can personalize your first Python program.

In our text editor in `hello.py` we can add another function. **input** is a function that takes a prompt as an arguments. We can edit our code to say

```python
input("What's your name? ")
print("Hello, world")
```

This edit alone, howerver, will not allow your program to output what user input. For that, we will need to introduce you to variables.

1.4.1 Variables

A variables is just a container for a value within your own program.

In your program, you can introduce your own variable in your by editting it to read.

```python
name = input("What's your name? ")
print("hello, world")
```

Notice that this = sign in the middle of `name = input("What's your name? ")` has a special role in programming. This equal sign literally assigns what is on the right to what is on the left. Therefore, the value returned by `input("What's your name? ")` is assigned to `name`
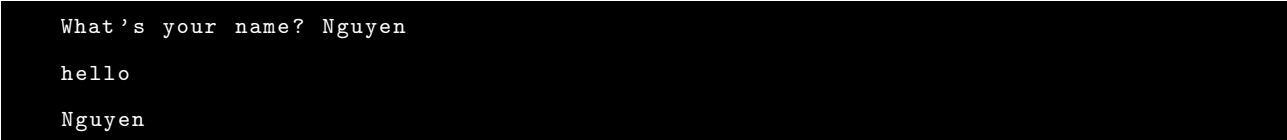
If you edit your code as follows, you will notice an error

```python
name = input("What's your name? ")
print("hello, name")
```

The program will return `hello, name` in the terminal window reagardless of what the user types.

Further editing our code, you could type

```python
name = input("What's your name? ")

print("hello")

print(name)
```

```
What's your name? Nguyen
hello
Nguyen
```

We are getting closer to the result we might intend! You can learn more in Python's documentation on data types

1.4.2 Comment

Comment are a way for programmers to track what they are doing in their programs and even informothers about their intentions fora lock of code. In short, they are notes for yourself and others who will see your code! You can add comments to your program to be able to see what ist is that your program is doing. You might edit your code as follows:

```python
#Ask the user for their name

name = input("What's your name? ")

print("hello,")

print(name)
```

Comments can also serve as a to-do list for you.

1.5 Further Improving Your First Python Program

We can further edit our code as follows:

```python
#Ask the use for their name
name = input("What's your name? ")


#Print hello and the inputted name
print("hello, " + name)
```

It turns out that some functions take many arguments.

We can use a comma "," to pass in multiple arguments by editing our code as follows:

```python
#Ask the use for their name
name = input("What's your name? ")


#Print hello and the inputted name
print("hello, " , name)
```

The output in the terminal, if we typed "Nguyen" we would be `hello, Nguyen`. Success