COURSE TITLE:

BEGINNER PYTHON PROGRAMING.

COURSE DURATION: 8 WEEKS

CLASS SCHEDULE: 2 HOURS

SESSIONS: 3 SESSIONS A WEEK

WHAT YOU WILL LEARN FROM THE COURSE

- Programming Concept
- Getting Started with Python
- Learning Python Data Types
- Understanding Python Operators
- The Concept of Variables
- Conditionals & Loops

PROGRAMMING CONCEPT

- DAY ONE:
  - Introduce the tutor and the course
  - Ask every student why they decided to join
  - Talk openly with the students on programming without necessarily attributing it to computers
- DAY TWO:
  - Continue open discussion on programming
  - Give simple examples
  - Ask the students to come up with some examples
- DAY THREE:
  - Give them exercises to do at home and in class
  - Ensure the concept of programming is well understood through the use of more simple examples

WHAT PROGRAMMING:

- Programming is the art of solving problems using computer.
- Programmers write programs that communicate with the computer.
- The computer does not understand your language.
- Thus the need for a programmer to write a program that is understood by a compiler.
- The compiler in turn changes the programmer's code into a readable binary code.
- Which is then executed by the computer.

SOME POPULAR SOFTWARE

- Web Apps:
  - Google
  - Youtube
- Desktop Apps:
  - Microsoft Office Word
  - iTunes
- Mobile Apps:
  - Snapchat
  - Instagram

BRIEF INTRODUCTION TO PYTHON

- Python is a high level programming language created by Guido Rossum In 1991.
- It is an interpreted language.
- It is object oriented.
- Indentation matters.
- It is highly readable.
- Very easy to learn.
- Has various available libraries to help you.
- And a large community of developers to guide you.

PYTHON IN THE REAL WORLD

- Python is used in various places.
- In web applications such as Google, Qoura and Instagram.
- In Artificial Intelligence and Machine Learning e.g. in building image verification and identification systems, robots; driverless cars for example.

GETTING STARTED WITH PYTHON

- DAY ONE:
  - Here the tutor makes sure every student know how to setup the python interpreter on their computer be it a Mac or a PC. This may take a whole day
- DAY TWO:
  - The students will then repeat the process the following day and ensure that they have mastered the process

GETTING STARTED WITH PYTHON

- To start using python, one needs to install it.
- MacBooks come along with python 2 preinstalled.
- Python 3 is the latest version
- Python can be downloaded from http://python.org
- Once installed, it can be started from the Terminal or Command Prompt
- Can be started by writing the ‘python’ command on the terminal console
- >>> should indicate the python prompt is ready

PYTHON DATA TYPES

- DAY THREE:
  - List out all the relevant data types in python and give an example of each
  - Introduce variables and explain them clearly
  - Valid and Invalid variable names
  - Work with the students to come up with examples
  - Give assignment on variable names

PYTHON DATA TYPES

- Integers
- Floats
- Boolean
- String
- List
- Tuple
- Dict

PYTHON DATA TYPES

- DAY ONE:
  - Strings
    - What makes a string
    - Examples and types
    - Uses
    - Work with students to understand the makeup of a string
    - Every student should write an example string on the shared screen
    - Give class work; students should write 10 string examples
    - Assignment: Students should come up with 10 more string examples

PYTHON DATA TYPES

- DAY TWO:
  - Strings
  - String and variables
  - String concatenation
  - Class exercise on string concatenation
  - Assignment on string concatenation

PYTHON DATA TYPES

- DAY THREE:
  - Strings
    - What are string methods
    - Get a glimpse of 10 string methods to be treated
    - Work the students through the 10 string methods and their uses
    - Show the class how they can get access to all available string methods
    - Show the class how google can be used to read more on string methods

PYTHON DATA TYPES

- DAY ONE:
  - Strings
  - Treat 4 string methods
  - Do class exercise for each
  - Give assignment on each

PYTHON DATA TYPES

- DAY TWO & THREE:
  - Strings
    - Treat 3 string methods for each day
    - Do class exercise for each string method
    - Give assignment on each string method

PYTHON DATA TYPES

- DAY ONE:
  - List
    - What makes a list
    - Examples and types
    - Uses
    - Work with students to understand the makeup of a list
    - Every student should write an example list on the shared screen
    - Give class work; students should write 10 list examples
    - Assignment: Students should come up with 10 more list examples

PYTHON DATA TYPES

- DAY TWO:
  - List
  - List and variables
  - List concatenation
  - Class exercise on list concatenation
  - Assignment on list concatenation

PYTHON DATA TYPES

- DAY THREE:
  - List
  - List Methods
    - Append
    - Insert
    - Pop

PYTHON DATA TYPES

- DAY ONE:
  - List
  - List Methods
    - Extend
    - Remove
    - Clear

PYTHON DATA TYPES

- DAY TWO & THREE:
  - List
  - Class Exercises on List Methods
  - Assignments on List Methods

PYTHON DATA TYPES

- DAY ONE:
  - List
  - Class Exercises on List Methods
  - Assignments on List Methods

ARITHMETIC OPERATORS

- Addition +
- Subtraction -
- Multiplication *
- Division /
- Modulus %
- Exponent **

COMPARISON OPERATORS

- == Equal
- != Not Equal
- > Greater than
- < Less than
- >= Greater or equal
- <= Less or equal

ASSIGNMENT OPERATORS

- =
- +=
- -=
- *=
- /=
- **=
- %=

LOGICAL OPERATORS

- And
- Or
- Not

MEMBERSHIP OPERATORS

- In
- Not in

VARIABLES

- Variables are objects that hold some value.
- They are case sensitive.
- Can be named anything so long it starts with an alphabet (A-Z, a-z) or an underscore (_).
- Some names are unfortunately already taken e.g. class, return, try, except.
- Their value can be changed; including their data types.

CONDITIONALS

- IF
- Else
- Else if

LOOPS

- For loop
- While loop

FUNCTIONS

- A function is a group of code that is defined to serve a certain purpose.
- Functions are defined and then called to be used.
- Once defined, a function can be used numerous times.

SOME BUILT-IN FUNCTIONS

- print()
- type()
- len()
- str()
- int()
- max()
- min()
- range()
- format()
- And many more

CLASSES

- A class is a group of functions that serve a certain purpose and are only accessible within the class.
- Functions within a class are accessed using dot notation
- A class needs a constructor.

MODULES

- A module is a python file that contains a piece of code; either functions, classes or both that are used to serve a certain purpose.

- Some useful built-in modules include:
  - csv
  - random

PACKAGE

- It is a group of modules in a directory
- Folder most contain __init__.py file
- Example of a package: Flask

A QUICK INTRODUCTION TO FLASK

- Flask is a web framework developed in python for python
- It helps easily build a web application
- You can get up and running in a few lines
- Sometimes it feels like magic ;)

THANK YOU FOR PARTICIPATING, WISH YOU THE BEST IN YOUR PROGRAMMING JOURNEY.

Nasir Mustapha