# Programming 101
# with Python

# Python for Beginners Fun Night

First things First: "Computers need Programs"


Everything useful that a computer does requires software or programs.

Software or programs tell the computer what to do and how to do it.  Computers only understand one language at the core.  Electrical currents, voltage level and changes in current.

Python is an interpreted language.  It is built on top of layers, from C/C++ to the Firmware.
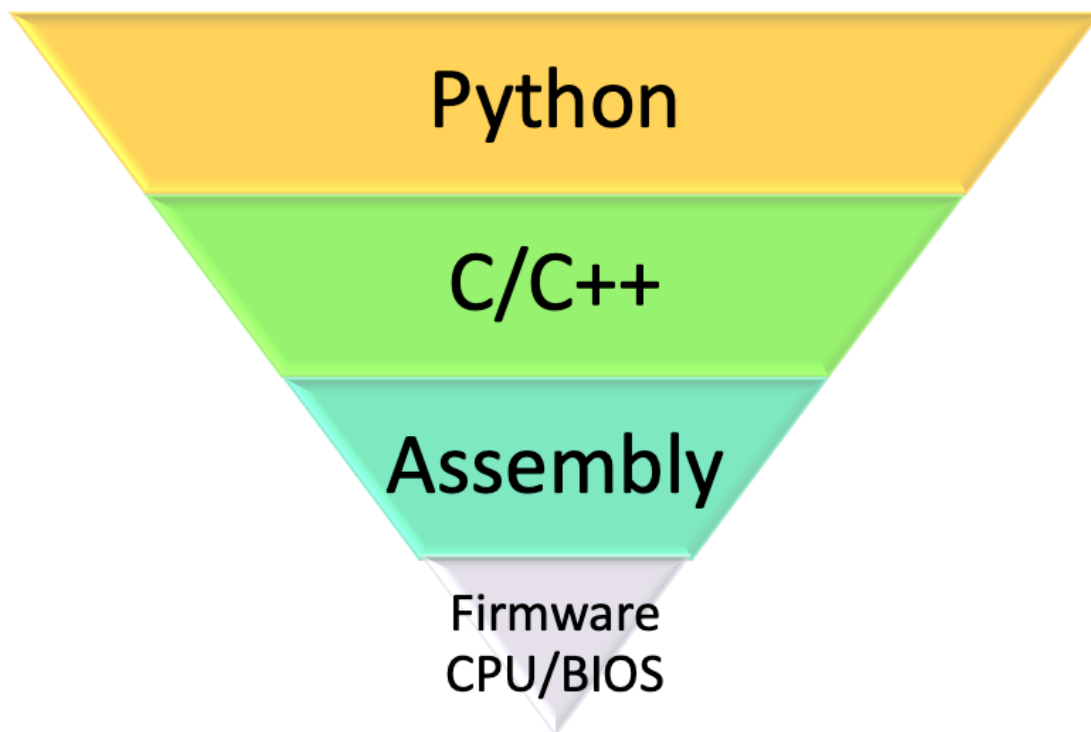
# Python for Beginners Fun Night

## Thinking like a computer programmer

Being able to create a detailed task workflow or decomposition is one of the key skills needed to be a programmer.

From Wikipedia contributors. (2019, March 29). Decomposition (computer science). In Wikipedia, The Free Encyclopedia. Retrieved 19:40, April 12, 2019, from https://en.wikipedia.org/w/index.php?title=Decomposition_(computer_science)&oldid=890003396

"Decomposition in computer science, also known as factoring, is breaking a complex problem or system into parts that are easier to conceive, understand, program and maintain.
...
There are different types of decomposition defined in computer sciences:

- In **structured programming**, algorithmic decomposition breaks a process down into well-defined steps.

- **Structured analysis** breaks down a software system from the system context level to system functions and data entities as described by Tom DeMarco.[1]

- **Object-oriented decomposition**, on the other hand, breaks a large system down into progressively smaller classes or objects that are responsible for some part of the problem domain."

## Simple Example:

How do you make a peanut and butter sandwich ?
1. Get the Bread
2. Get the Peanut Butter
3. Get the Jelly
4. Get a knife
5. Put two slices of bread on plate
6. Spead Jelly on One Side of Bread
7. Spead Peanut Butter on other side of Bread
8. Put bread together

NOTE: Think about this : How many more steps are needed if you had to tell a computer to do the same thing. Why.

Key point:  Computer are dumb and need someone to tell them exactly what to do with complete details down to the smallest thing.

# Python for Beginners Fun Night

The best way to learn a language is to use it in a real-world project.

Before We start review:

https://projects.raspberrypi.org/en/projects/magic-8-ball/2

## Fun night - Python Problem #1:

Goal:  Write a program that takes in any question and then responds with a random answer from the following a fixed list.

### Example question:

Program starts and displays:  "How may I help you today ?"

User enters this:   What is the time ?

Computer displays with one of the following:

1. Are you asking for the time ?
2. The time is <time>
3. Which timezone do you the time for ?
4. Do you mean the pop group call the Time ?
5. I don't understand what you are asking try again.

### Key Questions to answer with the Python Reference guide:

1. How do I display text on the screen ?
2. How do I read text from the keyboard, user typing  ?
3. How do I get the current time ?
4. How do I get a random value ?
5. How do I store a list of answers that have a unique number
6. How do I make sure my random number matches one of the answers unique numbers ?