INTRODUCTION ABOUT PYTHON

What is Python?

Python is a popular programming language. It was created by Guido van Rossum, and released in 1991.

It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.

What can Python do?

- Python can be used on a server to create web applications.
- Python can be used alongside software to create workflows.
- Python can connect to database systems. It can also read and modify files.
- Python can be used to handle big data and perform complex mathematics.
- Python can be used for rapid prototyping, or for production-ready software development.

Why Python?

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
- Python has a simple syntax similar to the English language.
- Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
- Python can be treated in a procedural way, an object-oriented way or a functional way.

Good to know

- The most recent major version of Python is Python 3, which we shall be using in this tutorial. However, Python 2, although not being updated with anything other than security updates, is still quite popular.

- In this tutorial Python will be written in a text editor. It is possible to write Python in an Integrated Development Environment, such as Thonny, Pycharm, Netbeans or Eclipse which are particularly useful when managing larger collections of Python files.

Python Syntax compared to other programming languages

- Python was designed for readability, and has some similarities to the English language with influence from mathematics.
- Python uses new lines to complete a command, as opposed to other programming languages which often use semicolons or parentheses.
- Python relies on indentation, using whitespace, to define scope; such as the scope of loops, functions and classes. Other programming languages often use curly-brackets for this purpose.

INTRODUCTION ABOUT MYSQL

MySQL is an open-source, fast reliable, and flexible relational database management system, typically used with PHP.

- MySQL is a database system used for developing web-based software applications.
- MySQL used for both small and large applications.
- MySQL is a relational database management system *(RDBMS).*
- MySQL is fast, reliable, and flexible and easy to use.
- MySQL supports standard SQL *(Structured Query Language).*
- MySQL is free to download and use.
- MySQL was developed by Michael Widenius and David Axmark in 1994.
- MySQL is presently developed, distributed, and supported by Oracle Corporation.
- MySQL Written in C, C++.

Main Features of MySQL

- MySQL server design is multi-layered with independent modules.
- MySQL is fully multithreaded by using kernel threads. It can handle multiple CPUs if they are available.
- MySQL provides transactional and non-transactional storage engines.
- MySQL has a high-speed thread-based memory allocation system.
- MySQL supports in-memory heap table.
- MySQL Handles large databases.
- MySQL Server works in client/server or embedded systems.
- MySQL Works on many different platforms.

Who Uses MySQL

- Some of the most famous websites like Facebook, Wikipedia, Google (not for search), YouTube, Flickr.
- Content Management Systems (CMS) like WordPress, Drupal, Joomla, phpBB etc.
- A large number of web developers worldwide are using MySQL to develop web applications.

INTRODUCTION OF PROJECT

This project utilizes the turtle module to draw simple and complex patterns using user inputs from the keyboard!

➢ WHAT IS TURTLE MODULE ?

- Turtle graphics is a popular way for introducing programming to kids. It was part of the original Logo programming language developed by Wally Feurzeig, Seymour Papert and Cynthia Solomon in 1967. It tries to keep the merits of the old turtle module and to be (nearly) 100% compatible with it.
- The turtle module provides turtle graphics primitives, in both object-oriented and procedure-oriented ways. Because it uses tkinter for the underlying graphics, it needs a version of Python installed with Tk support.

➢ ABOUT THIS PROJECT

- This project has mostly been a fun learning process for myself. The actions you can do with the key presses makes it more fun and alive. I have many ideas for expanding it and even to make a minigame with it.

- I have included a user instruction manual in the program itself, so don't forget to look at the shell while running it.
  Have fun , and enjoy !!

SOURCE CODES

```
1. import turtle
2. import random
3. from turtle import *
4. t = turtle.Turtle()
5. turtle.bgcolor("black")
6. t.color("white")
7. print("INSTRUCTIONS FOR USING THIS PROGRAM")
8. print("This program REQUIRES USER INPUT, used for executing simpl
   e drawing and cool patterns!")
9. print("It uses the turtle module which is in built in the python library")
10.print("Here is the list of command which you can press on the keyboard ")
11.print("press 'w' 'a' 's' 'd' for moving upwards , leftwards , downwards and righ
   twards, respectively")
12.print("press 'r' or 'g' or 'b' to change the pen color to red , green , blue")
13.print("press 'c' for a random pen color \npress 'f' for random fill color")
14.print("press:- \n1 for penup\n2 for pendown\n3 for begin fill\n4 for end fill"
   )
15.print("5 for drawing a square\n6 for drawing a circle")
16.print("7 for drawing a squarespyrograph\n8 for drawing a circlespyrograph")

17.print("0 for resetting the screen to default\ne to exit the program")
18.def randcolor():
19.    colours=["red","yellow","blue","green","cyan","orange","magenta","purple","br
   own"]
20.    x=random.choice(colours)
21.    t.color(x)
22.
23.def randfill():
24.    colours=["red","yellow","blue","green","cyan","orange","magenta","purple","br
   own"]
25.    y=random.choice(colours)
26.    t.fillcolor(y)
27.
28.def up():
29.    t.setheading(90)
30.    t.forward(50)
31.
32.def down():
```

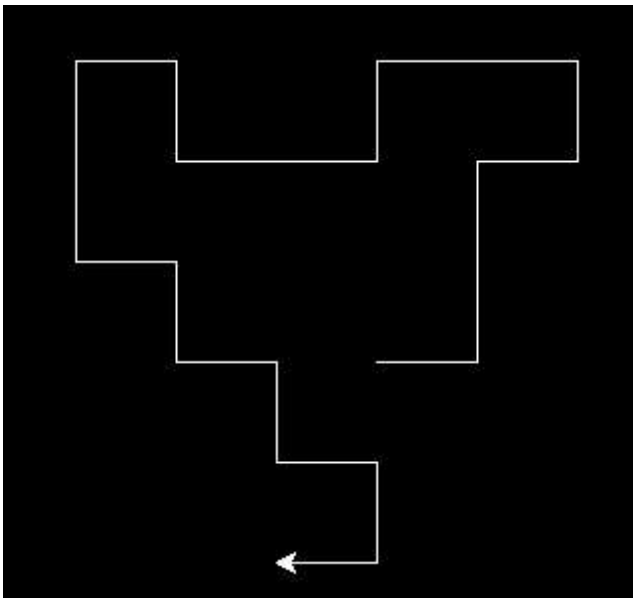
```
    t.setheading(270)
    t.forward(50)

def left():
    t.setheading(180)
    t.forward(50)

def right():
    t.setheading(0)
    t.forward(50)

def beginfill():
    t.begin_fill()

def endfill():
    t.end_fill()

def penup():
    t.penup()

def pendown():
    t.pendown()

def square():
    for i in range(0,4):
        t.forward(50)
        t.left(90)
def circle():
    t.circle(50)

def squarespyrograph():
    t.reset()
    turtle.bgcolor("black")
    t.speed(0)
    for i in range(0,3):
        for colors in ["red","yellow","blue","green","cyan","white","orange","purple
    ","magenta","brown"]:
            t.color(colors)
            t.left(12)
            t.forward(150)
            t.left(90)
            t.forward(150)
            t.left(90)
```

```
            t.forward(150)
            t.left(90)
            t.forward(150)
            t.left(90)

def circlespyrograph():
    t.reset()
    turtle.bgcolor("black")
    t.speed(0)
    for i in range(0,3):
        for colors in ["red","yellow","blue","green","cyan","white","orange","purple
    ","magenta","brown"]:
            t.color(colors)
            t.left(12)
            t.circle(100)

def colorR():
    t.color("red")
def colorB():
    t.color("blue")
def colorG():
    t.color("green")

def reset():
    t.reset()
    t.color("white")
        def endscreen():
            turtle.bye()

        turtle.onkey(up, "w")
        turtle.onkey(down, "s")
        turtle.onkey(left, "a")
        turtle.onkey(right, "d")
        turtle.onkey(square, "5")
        turtle.onkey(circle, "6")
        turtle.onkey(colorR, "r")
        turtle.onkey(colorG, "g")
        turtle.onkey(colorB, "b")
        turtle.onkey(randcolor, "c")
        turtle.onkey(randfill, "f")
        turtle.onkey(beginfill, "3")
        turtle.onkey(endfill, "4")
        turtle.onkey(penup, "1")
```

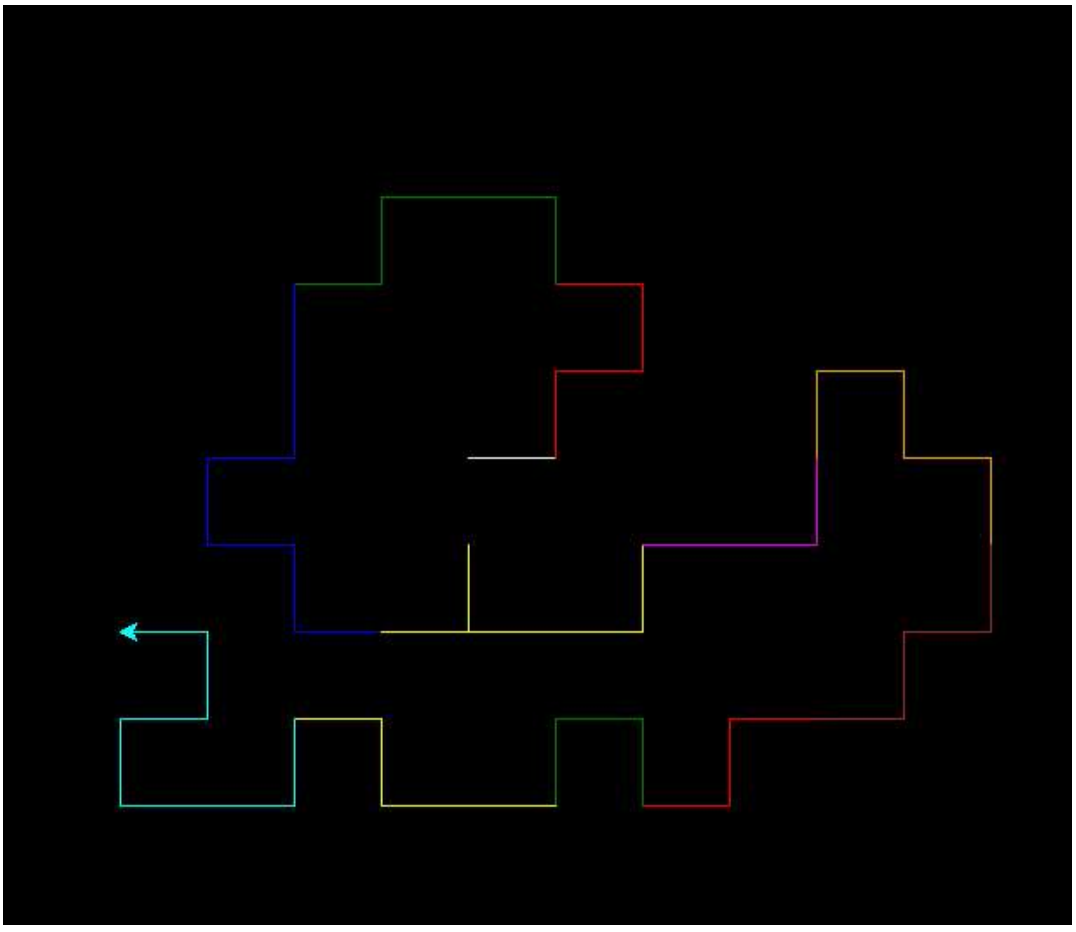
```
117.    turtle.onkey(pendown, "2")
118.    turtle.onkey(squarespyrograph, "7")
119.    turtle.onkey(circlespyrograph, "8")
120.    turtle.onkey(reset, "0")
121.    turtle.onkey(endscreen, "e")
122.    turtle.listen()
```

OUTPUTS

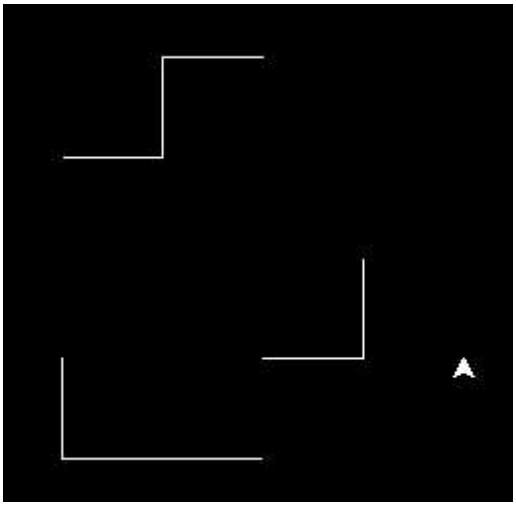
- Using W ,A ,S, D for basic movement



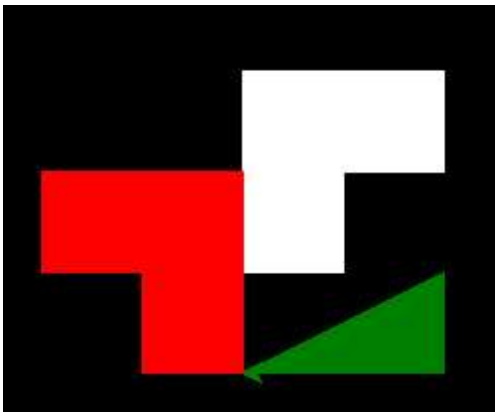
- Using R, G, B for red, blue, green and C for a random pen colour.



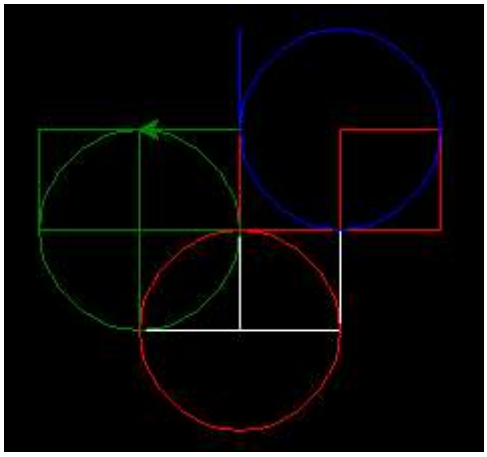
- Using 1 for pen up (i.e moving without drawing) and 2 for pen down .



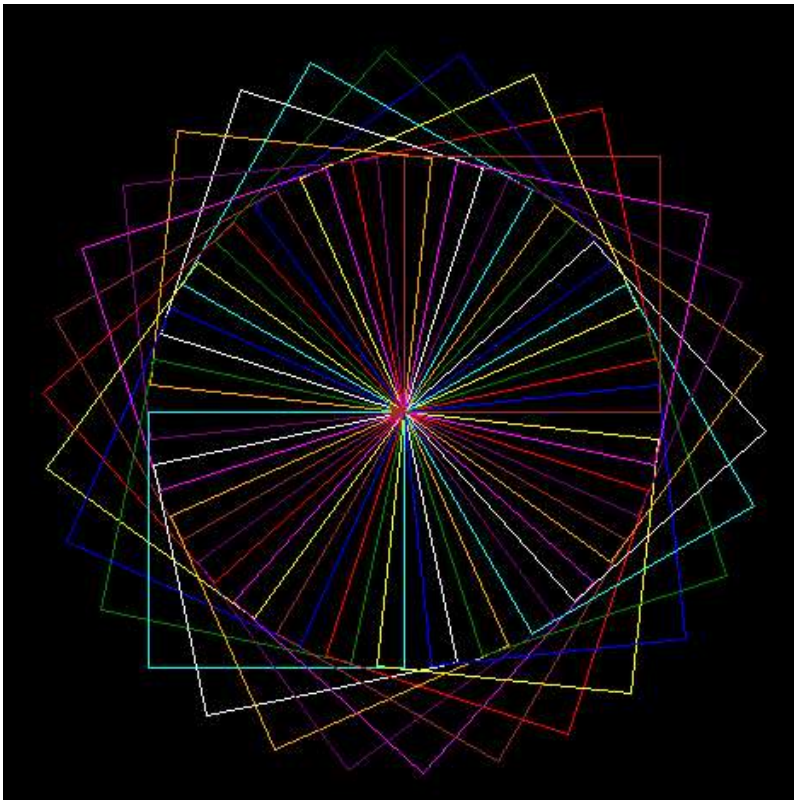
- Using colour fill with 3 and end fill with 4 .



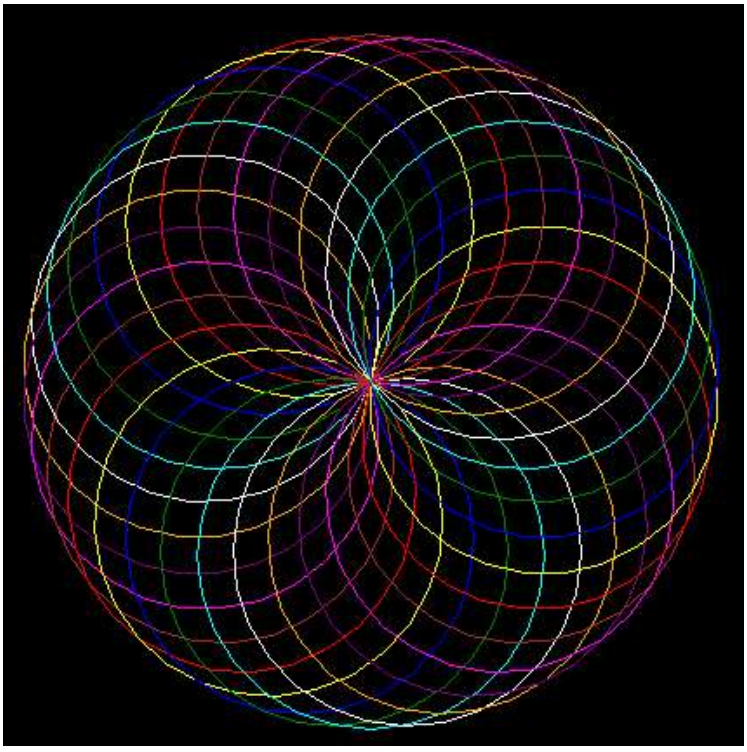
- Using 5 to instantly draw a square and 6 to instantly draw a circle.



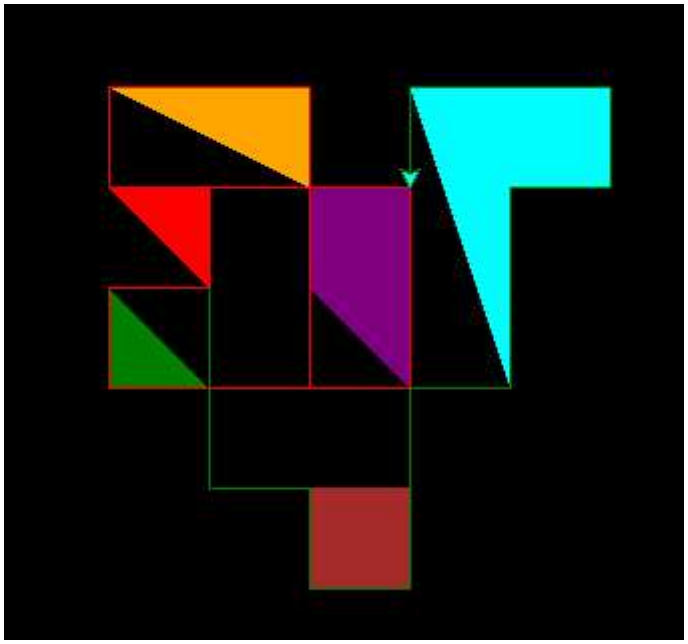
- Using 7 to draw a squarespyrograph.



- Using 8 to draw a circlespyrograph



- Rest functions available are:-
    i. To clear and reset screen press 0.
    ii. To apply a random fill colour press F.
    iii. To EXIT the program press E



(RANDOM FILL)

FUTURE ASPECTS

➢ Some of the future aspects are :-

- Many different functions can be added with more key binds , and more intricate designs can be achieved.

- We can use turtle to create a mini video game.

- We can also bind actions to mouse clicks.

INSTALLATIONS REQUIRED

YOU CAN INSTALL PYTHON WITH THIS LINK:-

- https://www.python.org/downloads/

BIBLIOGRAPHY AND WEBLOGRAPHY

BIBLIOGRAPHY:-

- COMPUTER SCIENCE WITH PYTHON BY SUMITA ARORA

WEBLOGRAPHY:-

- https://youtu.be/hPnZqWSRNZI
- https://www.w3schools.com/python/python_intro.asp
- https://www.w3schools.in/mysql/intro/
- https://docs.python.org/3/library/turtle.html
- http://www.planetb.ca/syntax-highlight-word

TRY IT YOURSELF!

To enjoy and feel this cool program, here are some ways for you to try on your computer (The program requires keyboard usage , so please don't open on a mobile phone).

I. The simplest way is that you can open this link https://drive.google.com/drive/folders/1DA_7s2R165MDBjQknpcZkkHtB1SRJg-_?usp=sharing , and just copy past the whole code on your preferred IDE.

II. Another is to use this link :- https://repl.it/@MrMeows1/computer-project#main.py , It uses "repl.it" , it's an web browser based IDE. (Although this sounds cool to use , keep in mind that the quality of the display on a browser based ide heavily depends on your internet connection, so I would recommend to just copy past the code)