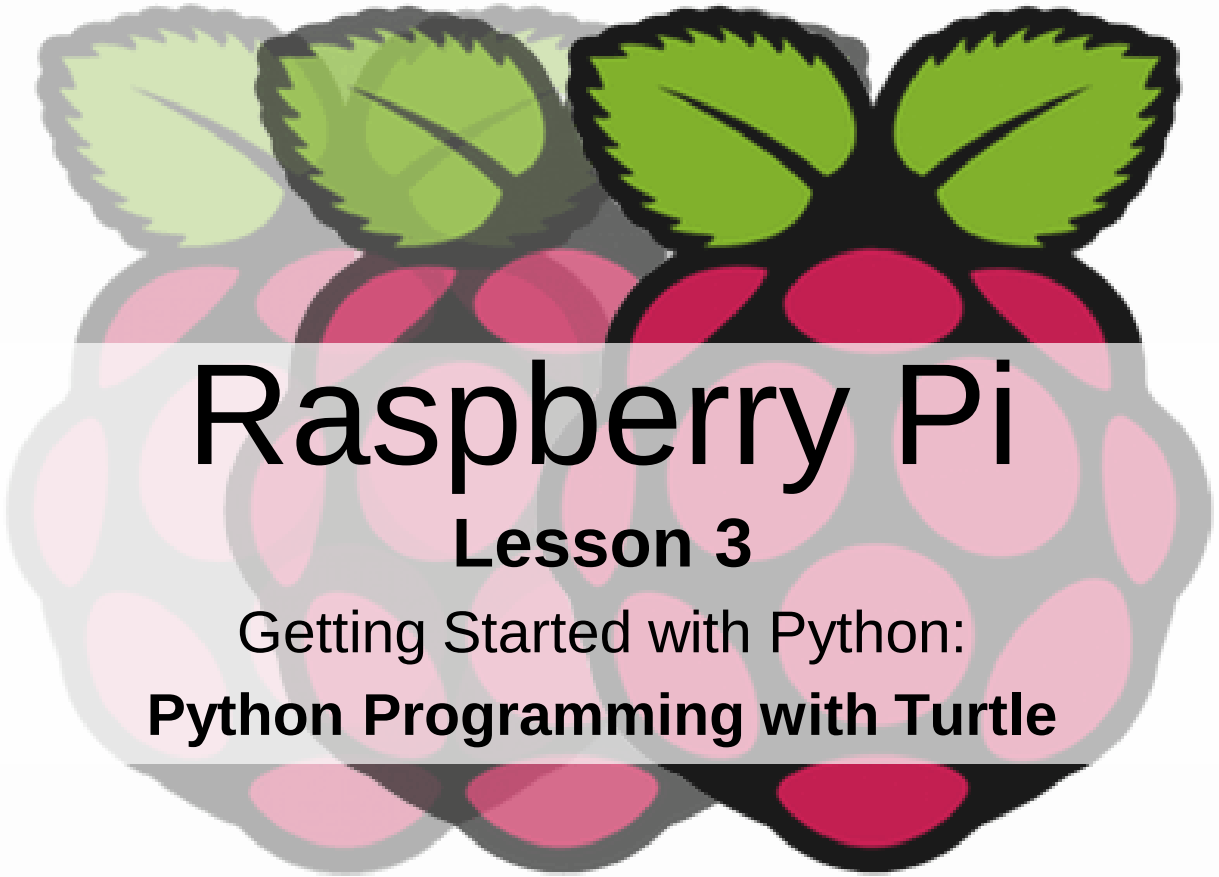


Raspberry Pi

Lesson 3

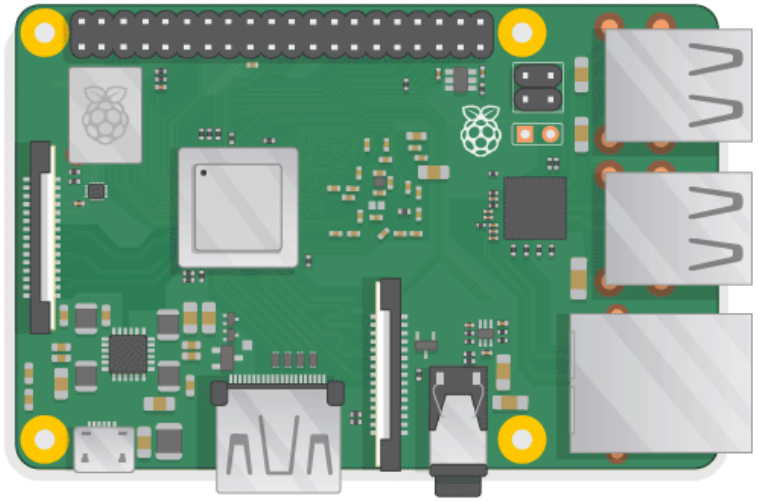
Getting Started with Python:

Python Programming with Turtle

MAKERHOUSE
EMPOWERING MAKERS

Contents

Required Parts

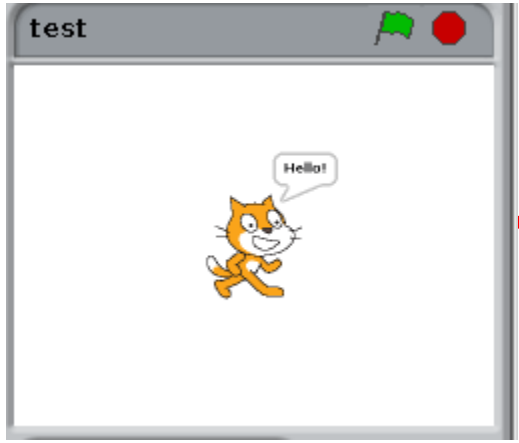


Raspberry Pi Computer

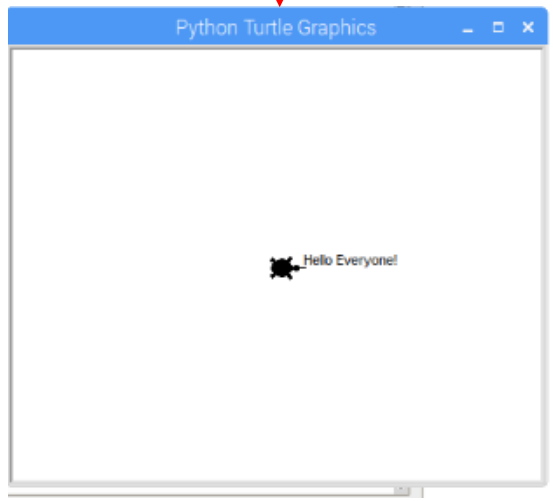
Others: Your Creativity

Introduction

Scratch → Python (Turtle module)




```
1  import turtle
2
3  tina = turtle.Turtle()
4
5  tina.write("Hello!")
```

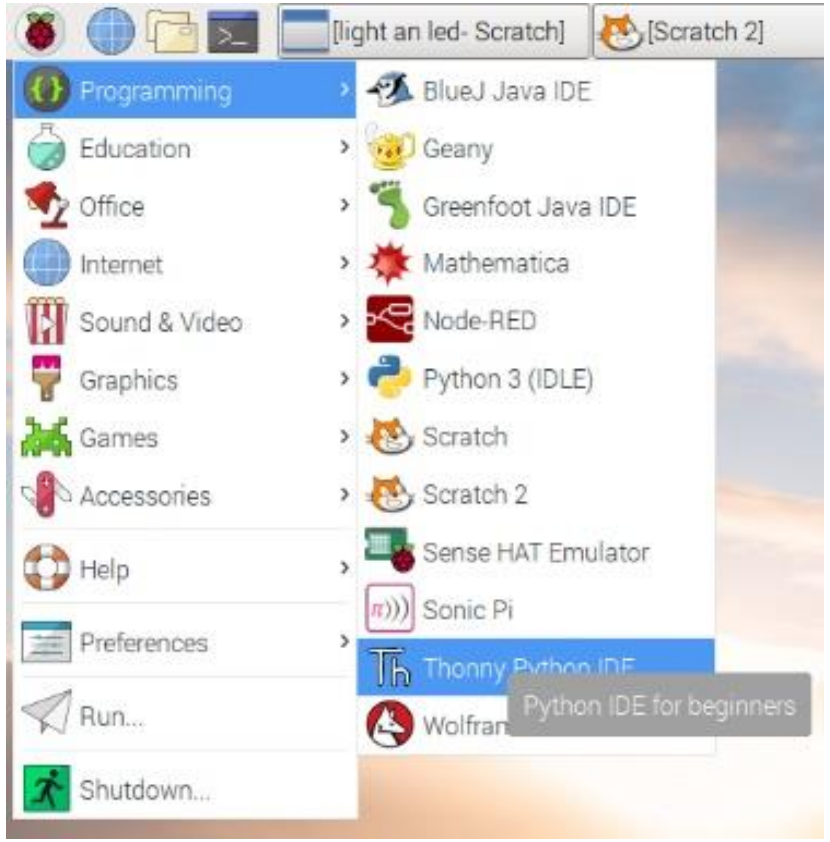


Getting Started

Thonny Python IDE

1

Raspberry Pi icon > **Programming > Thonny Python IDE**

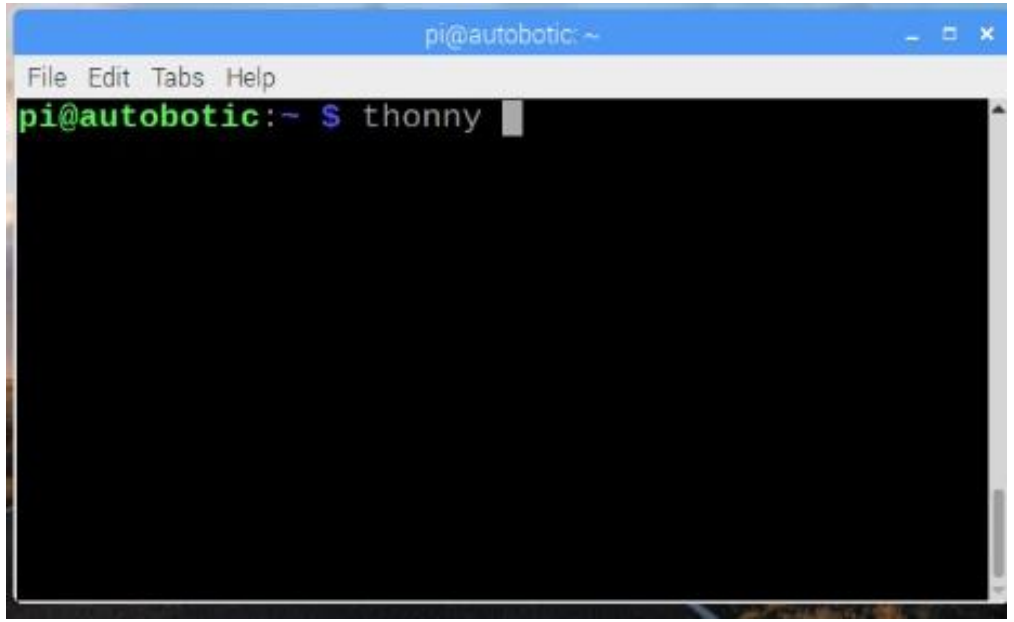


Getting Started

Thonny Python IDE

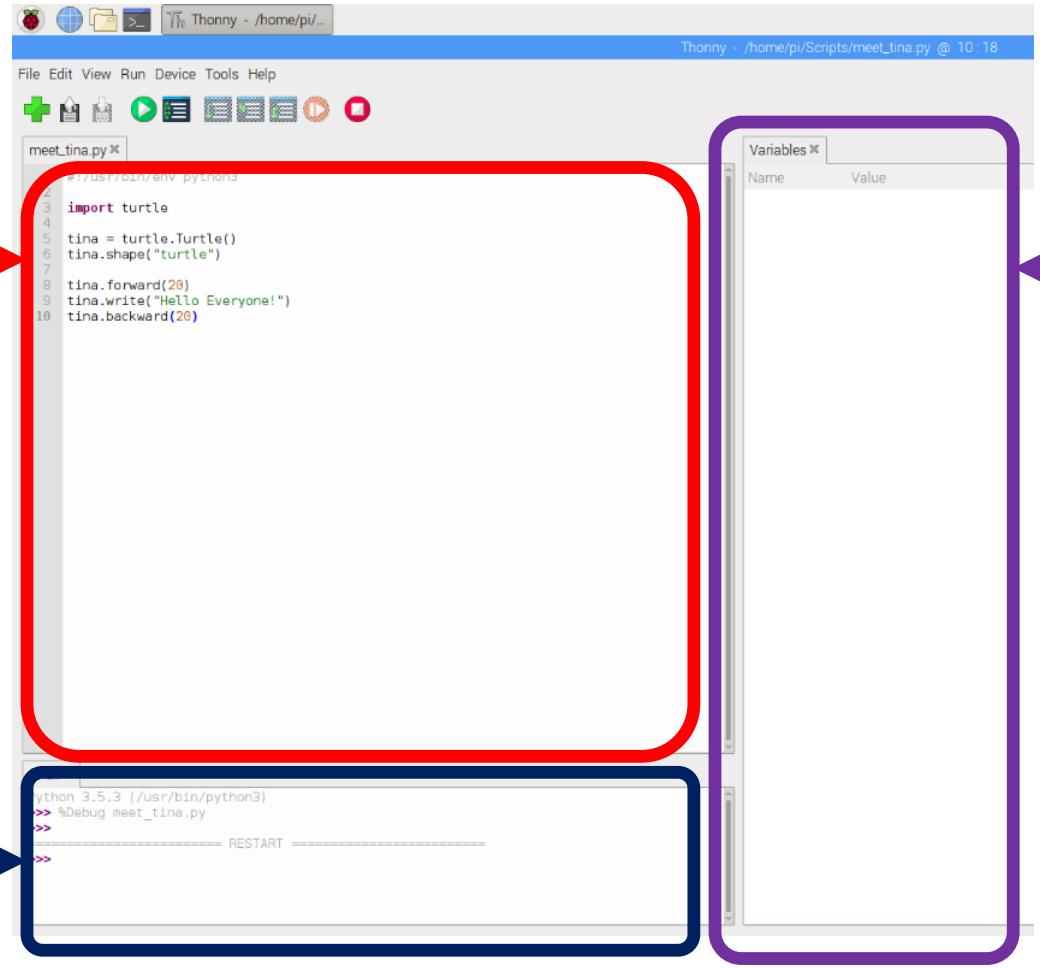
2

On Terminal, type**: thonny**



Getting Started

Thonny Python IDE



Script Area
Type your code here

Variable
All declaration will be displayed here

Shell
Simple IDE for test instruction

Getting Started

Thonny Python IDE

New File
Start a new file program

Run
Execute code

Stop
Stop the code from execution

Save/Load
Save and Load the program

Debug
Multiple step debug – over, into, out

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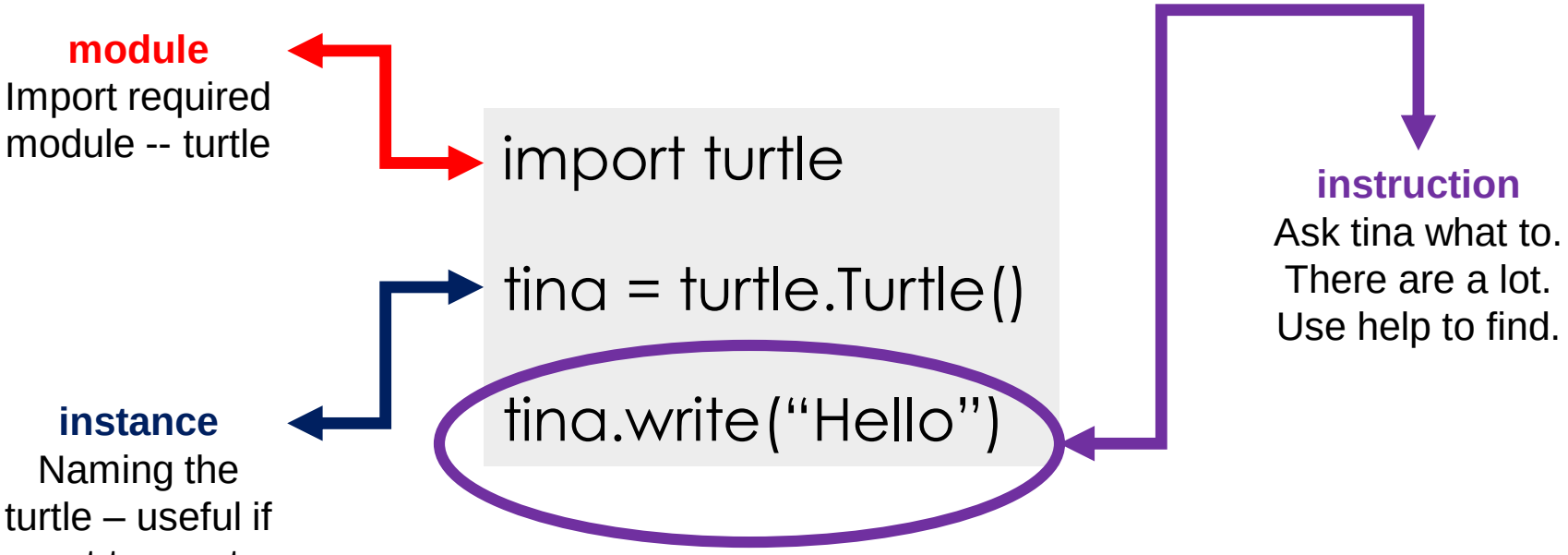
Getting Started

Hello Turtle



Getting Started

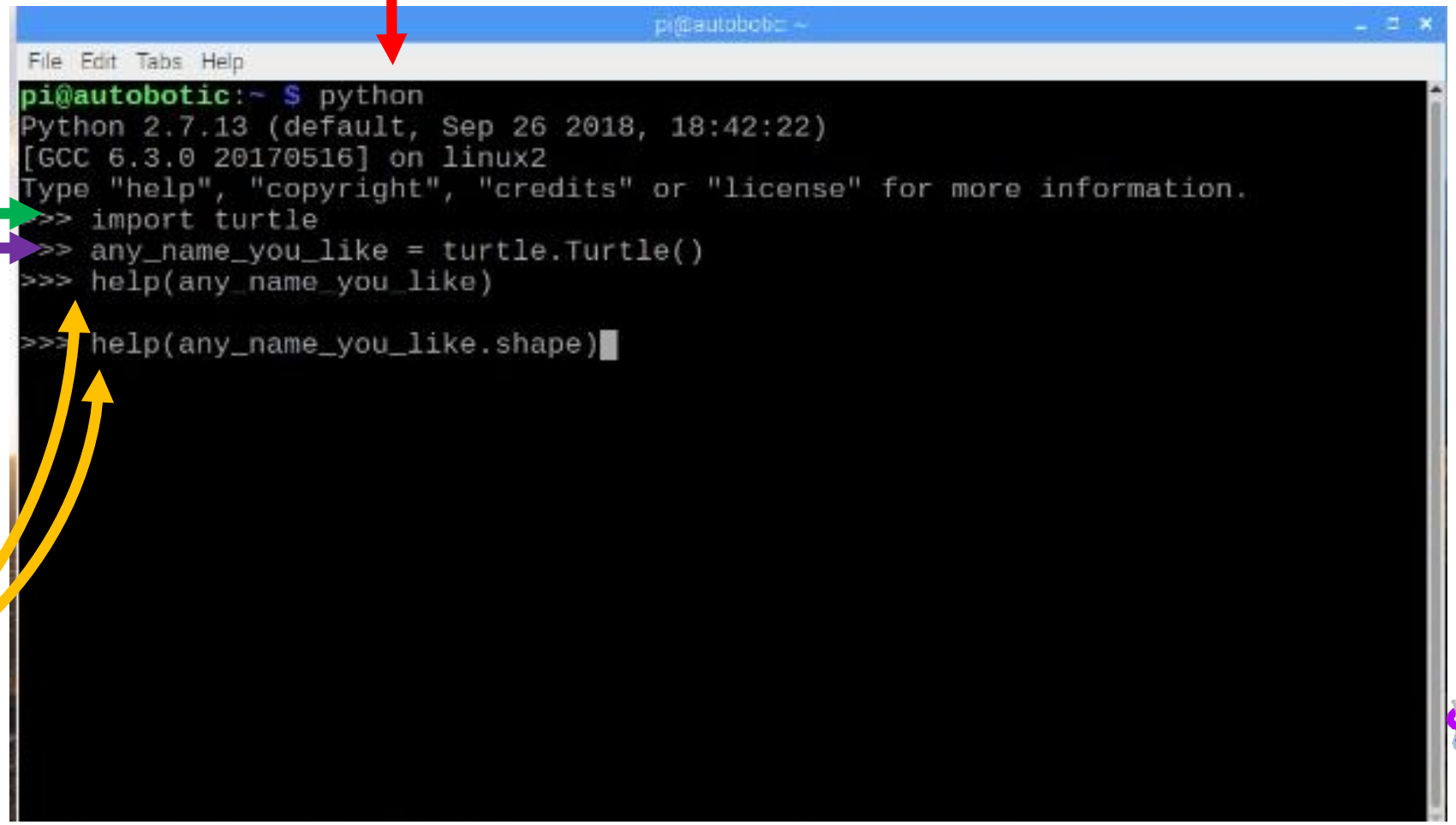
Hello Turtle

Python IDE
type: python

Module
Import the required module: turtle

Instance
Create an instance: any name

Help
1. Unspecific use of help
2. Specific use of help



Basic Instruction

Call Turtle

module
Import required module -- turtle

instance
Naming the turtle – useful if want to create multiple turtle

```
import turtle

tina = turtle.Turtle()
```

Multiple turtle?

Hint: Create new instance; different name

Basic Instruction

Draw a Line

```
import turtle

tina = turtle.Turtle()

tina.forward(100)
```

module
Import required module -- turtle

instance
Naming the turtle – useful if want to create multiple turtle

```
import turtle

tina = turtle.Turtle()

tina.penup()

tina.forward(100)
```

Try both code. What will you observe?

Hint: Focus on the different – try replace tina.penup() with tina.pendown()

Basic Instruction

Turning

```
import turtle

tina = turtle.Turtle()

tina.forward(100)

tina.right(90)

tina.forward(100)
```

Draw a simple pattern – rectangle, square, triangle, circle?

Hint: Simple mathematics and imagination required here

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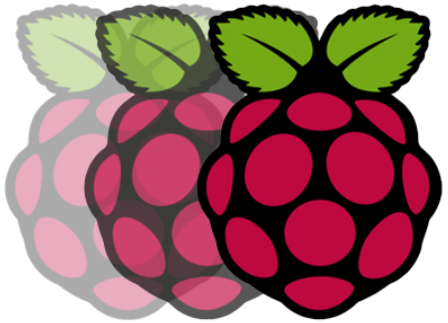

Basic Instruction

Changing Colors

```
import turtle

tina = turtle.Turtle()

bg = turtle.Screen()

bg.colormode(255)

tina.color((0, 0, 255))

bg.bgcolor((255, 0, 0))
```

Changing the colors?

Hint: ***For color picker:*** https://www.w3schools.com/colors/colors_rgb.asp

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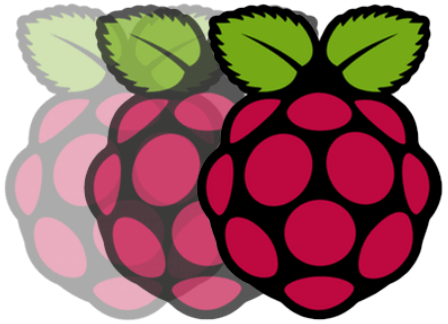
Basic Instruction

Repetition

```
import turtle

tina = turtle.Turtle()

for i in range(4):

        tina.forward(100)

        tina.right(90)
```

Observe anything – different with the method you draw a pattern; square, etc?

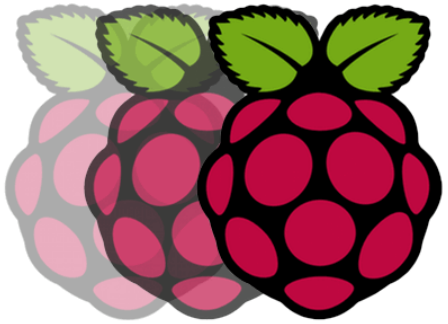
Hint: ***For color picker:*** https://www.w3schools.com/colors/colors_rgb.asp



Basic Instruction

Loopy Colors

```
import turtle

import random

tina = turtle.Turtle()

bg = turtle.Screen()

bg.colormode(255)

for i in range(2000):

        tina.color((random.randint(0, 255), random.randint(0, 255), random.randint(0, 255)))

        tina.forward(i)

        tina.right(90)
```



Having Fun

Arts Attack

```
import turtle
import random

tina = turtle.Turtle()
bg = turtle.Screen()

bg.colormode(255)

for i in range(10):
        tina.pendown()
        for I in range(200):
                tina.color((random.randint(0, 255), random.randint(0, 255), random.randint(0, 255)))
                tina.forward(i)
                tina.right(i)
        tina.penup()
        tina.goto((random.randint(0, 255), random.randint(0, 255), random.randint(0, 255)))
```