

# Starting Python and Turtle

Congratulations, you're a Scratch Hacker, but where do you go next?

## Meet Turtle and Python

You met Scratch the Cat. Now meet Turtle. You'll be making Turtle move , draw lines and run around in loops using a language called Python



Python is the stuff you'll be typing to tell Turtle what to do.

We're using Python here to move Turtle, but Python can do a lot more. It can write games, do your homework , make websites work, feed the dog...

Actually, Python can't feed your dog, but it can do all the other stuff

## Getting and installing

Download Python Turtle from this website <http://pythonturtle.org/> – there should also be a copy on the USB key that this guide came on. Follow the usual instructions to install it.

If everything has gone well, you should be able to run Python Turtle (double click on the icon on your desktop) and you should see something like the picture below.

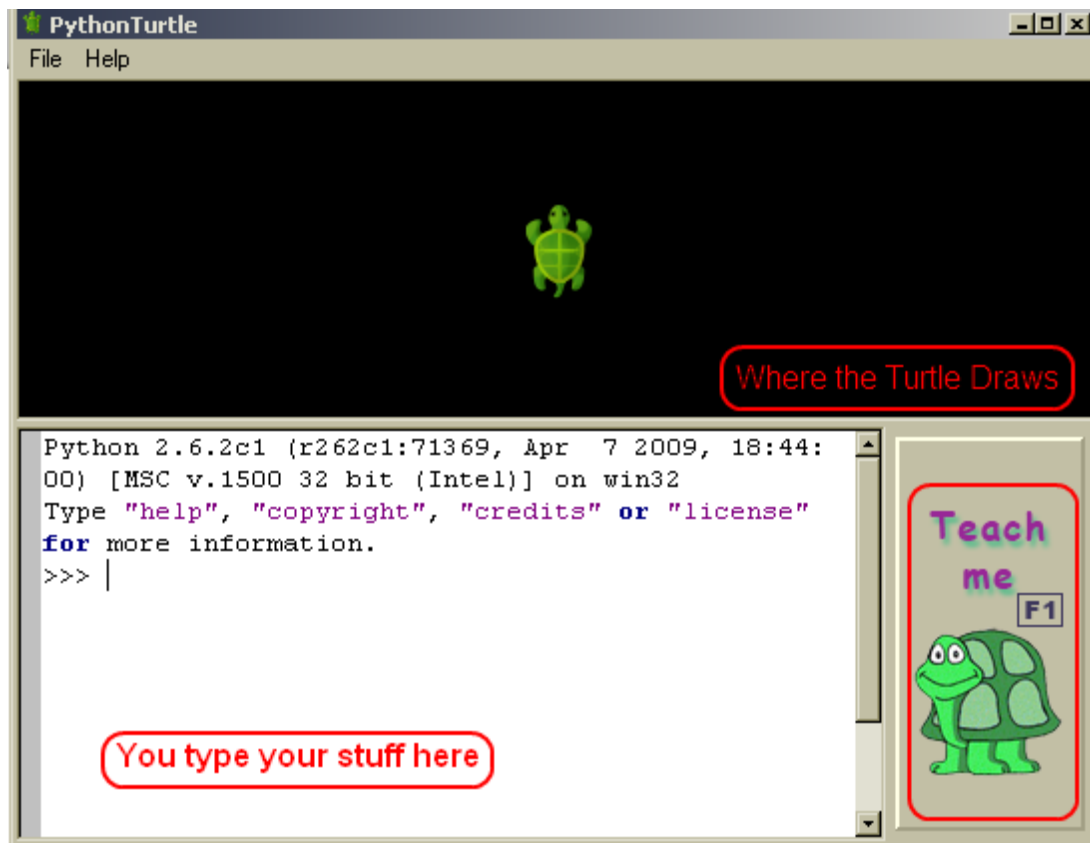
Are you using an Apple Mac instead of Windows? Here things get a little bit more tricky. For the moment ask one of your friends if you can sit beside them..

## Look around

There are three main bits to the Python Turtle Screen

1. The black part, at the top, where you can get Turtle to Draw
2. The white part, at the bottom, where you type commands telling turtle what to do
3. The Help button at the bottom right (this is really important!)

Go on, push a few buttons, see what happens!



## Your first moves

In the white box, try typing the stuff below. Remember to hit <Enter> (the big key on the right of key board)

```
go(60)
turn(90)
go(60)
turn(-45)
go(30)
```

What happens?

### Watch out!

Python is cool, but he can be a bit silly sometimes. If you don't tell him exactly the right command he'll tell you a message like this one.

```
SyntaxError: invalid syntax
```

What Python means is; I don't understand, try again. Remember to check your spelling, check that you have brackets, and check that you have the " marks in the right place.

It's pretty simple; You type the commands using Python, Turtle does them. Unfortunately 'clean

my room' doesn't work, but a lot of other stuff does. As long as you remember to get the spelling right.

### **What do you think this stuff does?**

Try typing the following commands, see what they do. Don't forget the brackets!

```
color ("green")
go(100)
color ("red")
go(100)
```

Did you notice that color is spelt the American way? If you didn't, you probably got that 'Syntax' error again! Here are some more to try.

```
visible()
invisible()
pen_up ()
pen_down()
clear()
width (10)
```

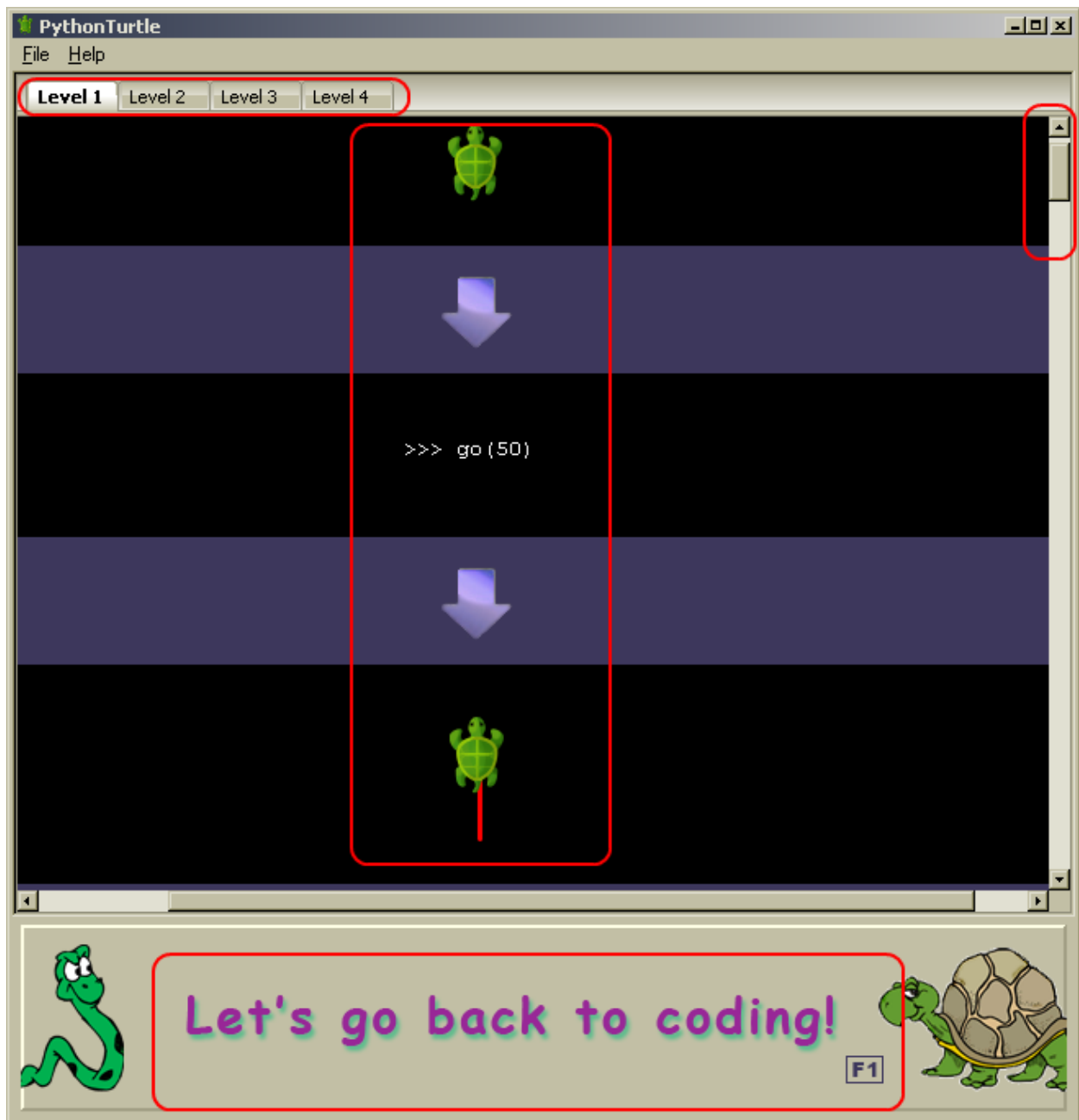
Cool! What sort of pictures can you draw?

### **Getting help**

Turtle has pretty good help with loads of examples. To take a look, press the F1 key, or click on the turtle button on the bottom right of the screen.

You should see a help screen like the picture below. Try following the instructions, see where you get to (press F1, or the bottom of the screen to go back to your Turtle)

Make sure you try all the levels, and scroll down to see all the instructions.



## More stuff - Loops

What happened when you tried this example from level 4 of the Turtle help?

```
for i in range (36):  
    go (10)  
    turn(10)
```

Turtle repeated the same thing 36 times – in this case he ended up drawing a circle. That's a loop – just like when you got Scratch the Cat to do something again and again and again.

## Tired of typing the same stuff again and again?

Did you try this example from level 4 of the Turtle help?

```
def polygon (n):  
    for i in range (n):  
        go (50)  
        turn (360/n)
```

And then nothing happened? Or nothing happened until you typed the following line;

```
polygon(5)
```

What happened? You just saved yourself a bunch of typing , that's what. Try typing

```
clear()  
polygon(3)
```

Turtle remembers that you had already told it to draw a shape with n number of sides (1 side, 2 sides etc). The *def polygon (n):* tells Python to remember to next couple of lines because you'll be using it again and again. Another name for this is called a function.

## Meet Python IDLE – Python Turtles big brother

There's a load of stuff that you did with Scratch the cat, that you haven't yet met in Turtle. How do you save and open files? How do you use pictures? How do you play sounds? That's where you need Python IDLE – Python Turtles big brother.

Are you using an Apple Mac instead of Windows? Well you're back in business. All the Python stuff from here will work for you.

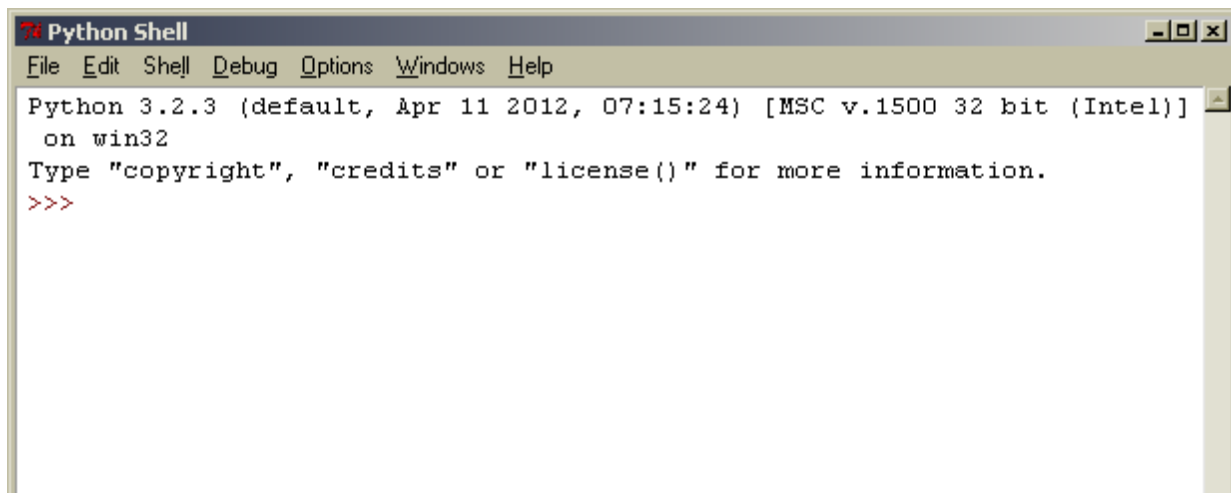
## Getting Python and Python IDLE

Download Python (which includes Idle) from this website <http://www.python.org/download/> – there should also be a copy on the USB key that this guide came on. Follow the usual instructions to install it.

If everything has gone well, you should be able to run Python IDLE from either the desktop shortcut or from the windows / mac / linux menu. If everything has gone well it you should see something like the picture below.

## What's up? The screen looks kind of bare. Where is everything?

Now that you mention it, it is kind of empty. Think of it as the bottom (white) part of Python Turtle - the bit where you type - and you'll get the idea.  
Don't worry, we'll fill up the screen soon enough.



Have a look at the top of the screen. Some important Menu items are

- File – to open, close and save programs that you write
- Edit – help you write those programs quicker. Use it to copy/ paste/ change code you've already written – no more typing again and again.
- Help – can you guess what that does? See if you find the guide to Turtle in here (hint – look under 'Global Module Index' then search for Turtle

### Hello World

It's traditional for computer hackers to write a Hello World program when they're getting started. Type the following , then press enter. What happens?

```
print "Hello World"
```

### Lets Try Turtle in Python IDLE

Do you miss Turtle? Lets get him back

Try typing these commands. The first tells Python IDLE that you want to use Turtle. What happens?

```
from turtle import *  
forward (100)
```

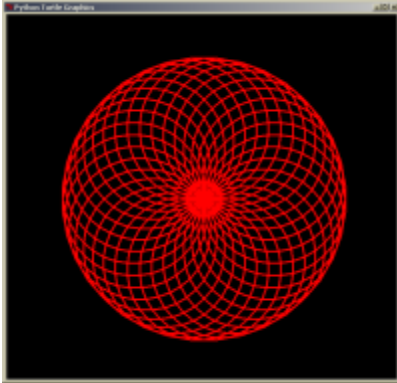
Now that you've got Turtle back, what other commands work? What new commands (from the Turtle Help file) can you try out?

### Now lets try some really advanced stuff.

Want to see some really cool turtle graphics? Here's some that we did earlier.

From the 'File Menu' click open. Look for the "*tdemo\_wikipedia1.py*" file. It should be in the Folder *TurtleDemo-Python3.x* , then in the folder *tdemo\_wikipedia\_example*

- The Program should open in a new screen. What do you think it does?
- Hit F5 to (or from the menus run ... run module) to run the program. What happens?
- What happens if you edit the program, then run it again?



### What next?

On the USB Key there should be another file called (*IYOCGwP\_book1.pdf*) – Invent your own computer games with Python. If you don't have it, Google for it (its free to share with your friends).

Have a look at chapter 1-4 and try the stuff out – you already have Python installed, so you're good to go!

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