Chapter 5

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Modules

- A module is a file containing Python definitions and statements intended for use in other Python programs.
- For example: turtle

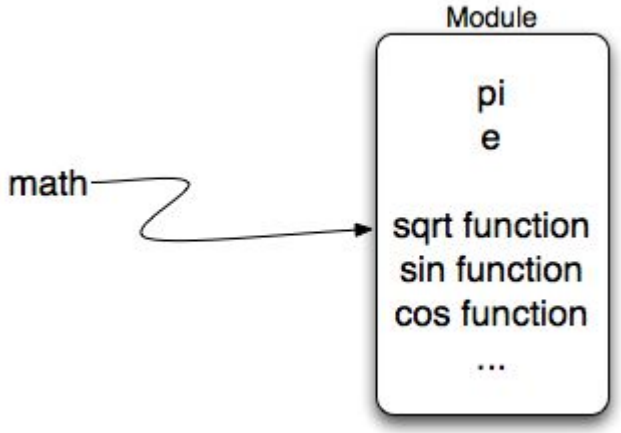
```
import turtle
wn = turtle.Screen()
wn.bgcolor("lightgreen")
tess = turtle.Turtle()
tess.color("blue")
```

Modules import

- The first thing we need to do when we wish to use a module is perform an **import.**
- In the example above, the statement **import turtle** creates a new name, **turtle**, and makes it refer to a module object.

Math modules

- The math module contains the kinds of mathematical functions you would typically find on your calculator and some mathematical constants like **pi** and **e**.
- As we noted above, when we import math, we create a reference to a module object that contains these elements



Few modules math functionality

```
import math

print(math.pi)

print(math.sqrt(2.0))

print(math.sin(math.radians(90)))   # sin of 90 degrees
```

The random modules

```
import random

prob = random.random()
print(prob)

diceThrow = random.randrange(1, 7)       # return an int, one of 1,2,3,4,5,6
print(diceThrow)
```

The random() function returns a floating point number in the range [0.0, 1.0)

More to do with random

```
import random

prob = random.random()
result = prob * 5
print(result)
```

Creating a module

```
"""
The coffee shop module contains functions and contains variables
important to implementing a coffee shop.
"""

# Set some variables
shop_name = "Runestone Brew House"
coffee_sizes = ["small", "medium", "large"]
coffee_roasts = ["hot chocolate", "light", "medium", "dark", "espresso"]
```

This is a Python script named coffee_shop.py that contains three variables: shop_name, coffee_sizes, and coffee_roasts. The shop_name is a string, coffee_sizes is a list containing strings, and coffee_roasts is also a list containing strings.

Calling modules

How can we use the coffee_shop module? We can import it and use it in other Python source code files. Let's consider the Python file shown below.

```
import coffee_shop

# Output the information we know from the module
print("Welcome to", coffee_shop.shop_name)
print("Available sizes:", coffee_shop.coffee_sizes)
print("Available roasts:", coffee_shop.coffee_roasts)
```

Very nice example of modules, let's start coding

https://shorturl.at/ftuwV