

# Lecture 6

Topics to be covered:

Chapter 5:

- A short review of what we learned so far
- Turtle

## short review

What function/method do I use to display something in the Python Shell?

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```
print(
```

# short review

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```
print(
```

Examples:

```
print("Hello, how are you?")
```

```
a = 8
```

```
b = 20
```

```
print(a, "*", b, "=", a*b)
```

## short review

What function/method do I use to get something (a *number*, or a *name*, or a *phrase*) from the user?

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```
input(
```

# short review

What function/method do I use to get something (a *number*, or a *name*, or a *phrase*) from the user?

```
input(
```

Examples:

```
input("Enter a name:")
```

```
int(input("Enter a positive integer:"))
```

```
float(input("Enter a decimal number:"))
```

## short review

What will the following statement display in Python Shell?

```
print("\t1. Milk\n\t2. Eggs\n\t3.Butter")
```

## short review

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```
print("\t1. Milk\n\t2. Eggs\n\t3.Butter")
```

Answer:

1. Milk
2. Eggs
- 3.Butter

## short review

How can I get two integer values from a user?

## short review

How can I get two integer values from a user?

Answer:

```
a = int(input("Enter an integer number:"))  
b = int(input("Enter an integer number:"))
```

## short review

How can I implement the following formula in my Python program?

$$\frac{\sqrt{npq}}{12}$$

## short review

How can I implement the following formula in my Python program?

$$\frac{\sqrt{npq}}{12}$$

Answer:

```
from math import sqrt  
z = sqrt(n*p*q)/12
```

or

```
from math import *  
z = sqrt(n*p*q)/12
```

## short review

What will the following three statement display in Python Shell?

```
print("Be or", end="\t")  
print("not", end="\t")  
print("to be")
```

## short review

What will the following three statements display in Python Shell?

```
print("Be or", end="\t")  
print("not", end="\t")  
print("to be")
```

**Answer:**

Be or      not      to be

## short review

Find five syntax errors in the following code written in Python?

```
n = input("what is your name?")
age = int(input("How old are you?"))
print("Hello"n)
print "you are", age, "years old."
```

## short review

Find five syntax errors in the following code written in Python?

```
n = input("what is your name?")
age = int(input("How old are you?"))
print("Hello", n)
print("you are", age, "years old.")
```

# Turtle graphics module

Let's spend some time playing with Turtle graphics library.

In order to use it, we will need to import it:

```
>>> from turtle import *
```

# Turtle graphics module

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```
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```

Then, let's create a graphics window!

```
>>> window = Screen()
```

The screen size will be approximately 800 pixels by 600 pixels

# Turtle graphics module

Now, lets create a drawing pen (a turtle)

```
>>> Tom = Turtle()
```

and draw a circle:

```
>>> Tom.circle(100)
```

The next few lines will move the turtle (drawing pen) to a new place without the trace:

```
>>> Tom.penup()  
>>> Tom.goto(-140, -100)  
>>> Tom.pendown()
```

# Turtle graphics module

Now, lets set the color of the line an fill-color

```
>>> Tom.pencolor("blue")
>>> Tom.fillcolor("green")
```

Move forward 40 pixels:

```
>>> Tom.forward(40)
```

and draw another circle filled with green color:

```
>>> Tom.begin_fill()
>>> Tom.circle(40)
>>> Tom.end_fill()
```

# Turtle graphics module

Finally, let's draw some lines:

```
>>> Tom.pencolor("orange")
>>> Tom.right(90)
>>> Tom.forward(40)
>>> Tom.left(90)
>>> Tom.forward(200)
>>> Tom.left(90)
>>> Tom.forward(300)
```

*change the pen color  
turn 90 degrees right  
move 40 pixels forward  
turn 90 degrees left  
move 200 pixels forward  
turn 90 degrees left*

# Discussion

What is a graphics window?

What is a pixel?

What is happening when we type

```
>>> Tom.forward(40)?
```

Can we open two graphics windows? Three graphics windows? How to differentiate between them?

# Turtle graphics module

Let's see four files that demonstrate us the use of some of the Turtle's drawing abilities:

`Turtle_fun1.py`

`Turtle_fun2.py`

`Turtle_fun3.py`

`Turtle_fun4shapes.py`

`Turtle_fun5fence.py`

`Turtle_backgroundPlay.py`

Link to the reference manual of Turtle graphics module:

<https://docs.python.org/3/library/turtle.html>