CSIT110 / CSIT810

Python

Lecture 7

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Objectives

Understanding of:

- Rounding off function
- Max and min functions
- Random function
- Write your own functions

Function

The `print` function

```
print("Hello World!")

a = 10
print(a)
```

print with a new line

```
print("one", end=", ")
print("two", end=", ")
print("three", end=", ")
print("four", end=", ")
print("five", end=".")
print()
```

print with no line break

The `input` function

```
user_input = input("Enter something: ")

print("You have entered: " + user_input)
```

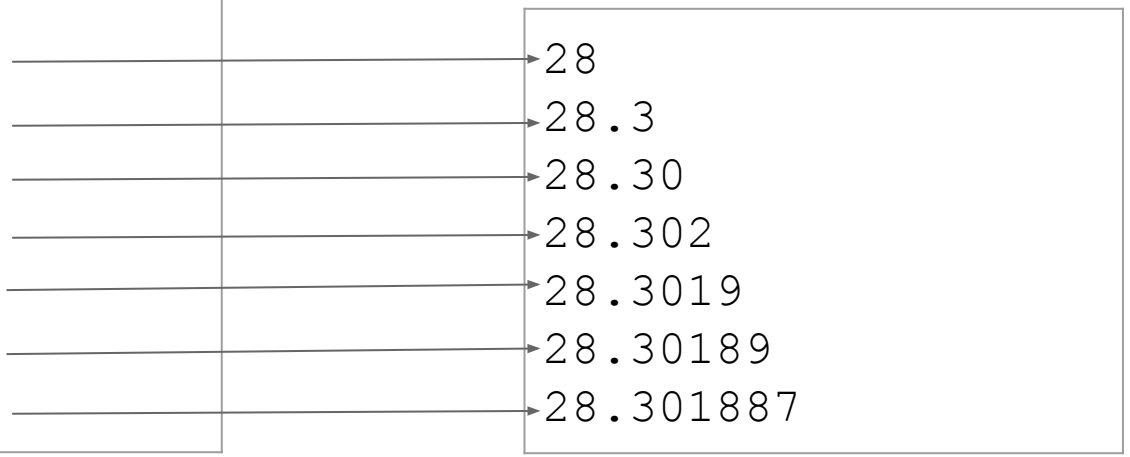
Note that `input` is a preserve keyword so we can't use it to name a variable

error →

```
input = input("Enter something: ")

print("You have entered: " + input)
```

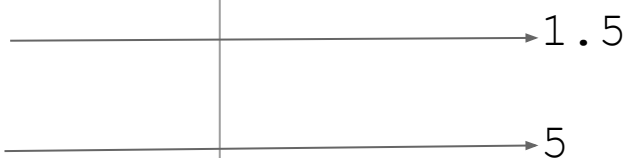
The `round` function

```
a = 28.30188679245283

b = round(a)
b = round(a, 1)
b = round(a, 2)
b = round(a, 3)
b = round(a, 4)
b = round(a, 5)
b = round(a, 6)
```



The `min` and `max` functions

```
a = 1.5
b = 5
c = 3

d = min(a, b, c)

e = max(a, b, c)
```



The `random.randint` function

A dice rolling program

```
import random

for i in range(0, 10):
  r = random.randint(1, 6)
  print("Dice result: {0}".format(r))
```

```
Dice result: 3
Dice result: 2
Dice result: 4
Dice result: 1
Dice result: 3
Dice result: 1
Dice result: 3
Dice result: 1
Dice result: 6
Dice result: 5
```

The `random.randint` function

import a python module called `random`

```
import random

for i in range(0, 10):
  r = random.randint(1, 6)
  print("Dice result: {0}".format(r))
```

generate a random integer between 1 and 6

```
Dice result: 3
Dice result: 2
Dice result: 4
Dice result: 1
Dice result: 3
Dice result: 1
Dice result: 3
Dice result: 1
Dice result: 6
Dice result: 5
```

The `random.randint` function

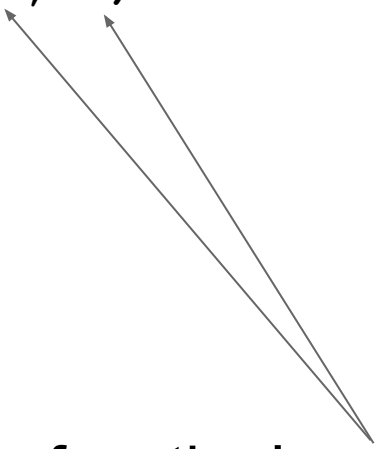
import a python module called `random`

```
import random


r = random.randint(a, b)
```

generate a random integer between **a** and **b**

Function

```
r = random.randint(1, 6)
```



these are function's **arguments**

a function may have 0, one, two, or more arguments

Function

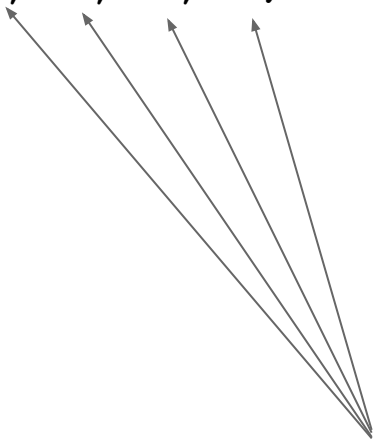
```
r = random.randint(1, 6)
```

a function can **return value**

a function may return 0, one, two, or more values

Function

```
m = min(4, 6, 3, 1)
```



in this example, the `min` function takes 4 **arguments**

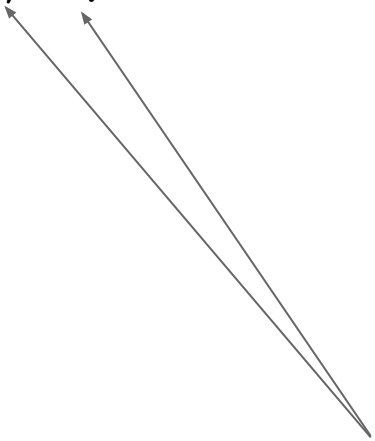
Function

```
m = min(4, 6, 3, 1)
```

and returns one value

Function

```
m = max(-1, 7)
```



in this example, the `max` function takes 2 **arguments**

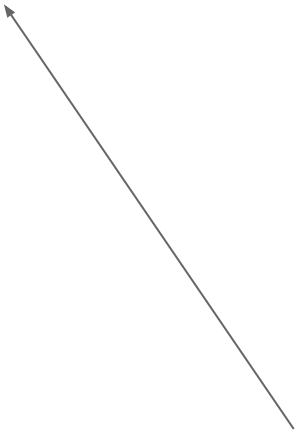
Function

```
m = max(-1, 7)
```

and returns one value

Function

```
user_input = input("Enter something: ")
```



in this example, the `input` function takes 1 **argument**

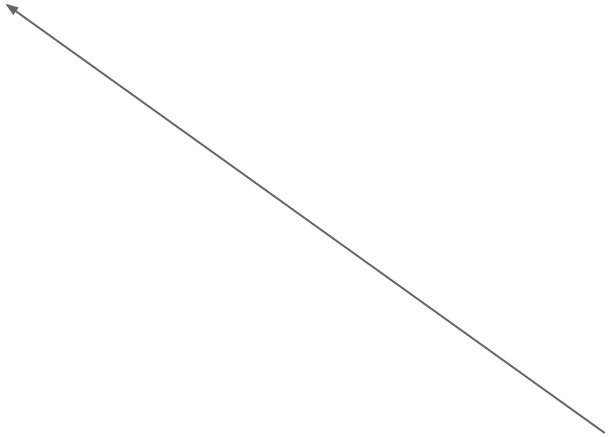
Function

```
user_input = input("Enter something: ")
```

and returns one value

Function

```
print("Hello World!")
```



in this example, the `print` function takes 1 **argument**

Function

```
print("Hello World!")
```

and returns zero value

writing your own functions

Sum of two numbers

```
def sum_of_two_numbers(n1, n2):
  s = n1 + n2
  return s

a = 2
b = 3
c = sum_of_two_numbers(a, b)
print(c)
```

What do you think this program will do?

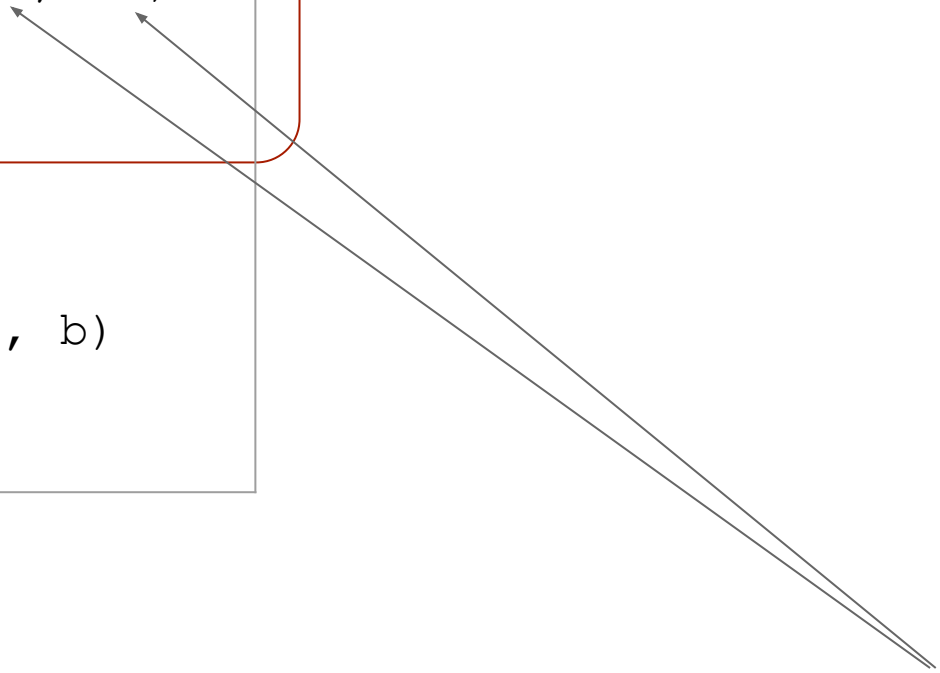
Sum of two numbers

```
def sum_of_two_numbers(n1, n2):
  s = n1 + n2
  return s

a = 2
b = 3
c = sum_of_two_numbers(a, b)
print(c)
```

we are writing a new function called **`sum_of_two_numbers`**

Sum of two numbers

```
def sum_of_two_numbers(n1, n2):
  s = n1 + n2
  return s

a = 2
b = 3
c = sum_of_two_numbers(a, b)
print(c)
```



this new function has 2 **arguments**

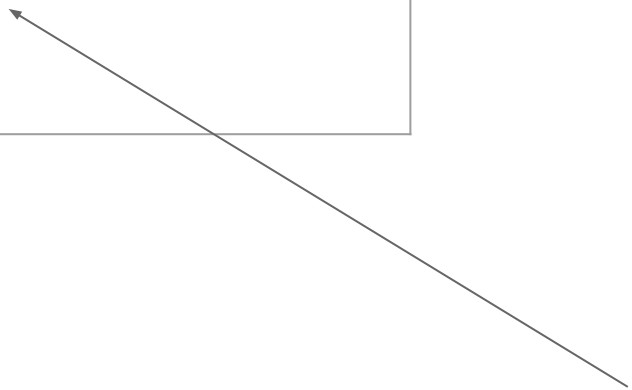
Sum of two numbers

```
def sum_of_two_numbers(n1, n2):
  s = n1 + n2
  return s

a = 2
b = 3
c = sum_of_two_numbers(a, b)
print(c)
```

and it returns 1 value

Sum of two numbers

```
def sum_of_two_numbers(n1, n2):
  s = n1 + n2
  return s

a = 2
b = 3
c = sum_of_two_numbers(a, b)
print(c)
```

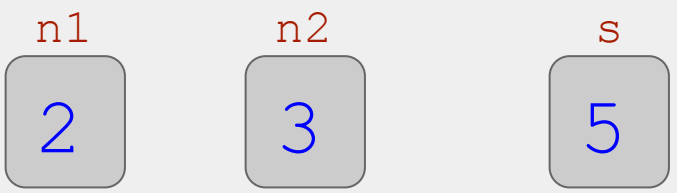


we have a new function
and we can use it!!!

Sum of two numbers

```
def sum_of_two_numbers(n1, n2):
  s = n1 + n2
  return s

a = 2
b = 3
c = sum_of_two_numbers(a, b)
print(c)
```

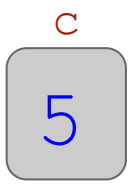
```
def sum_of_two_numbers(n1, n2):
  s = n1 + n2
  return s
```

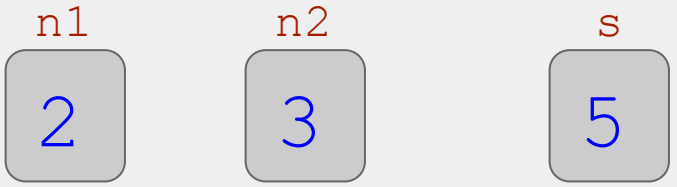


Sum of two numbers

```
def sum_of_two_numbers(n1, n2):
    s = n1 + n2
    return s

a = 2
b = 3
c = sum_of_two_numbers(a, b)
print(c)
```

```
def sum_of_two_numbers(n1, n2):
    s = n1 + n2
    return s
```





writing your own functions

- **functions that do not return value**

Say hi

```
def say_hi(name):
  print("Hi {0}!".format(name))

j = "John"
say_hi(j)

say_hi("Bob")
say_hi("Alicia")
```

What do you think this program will do?

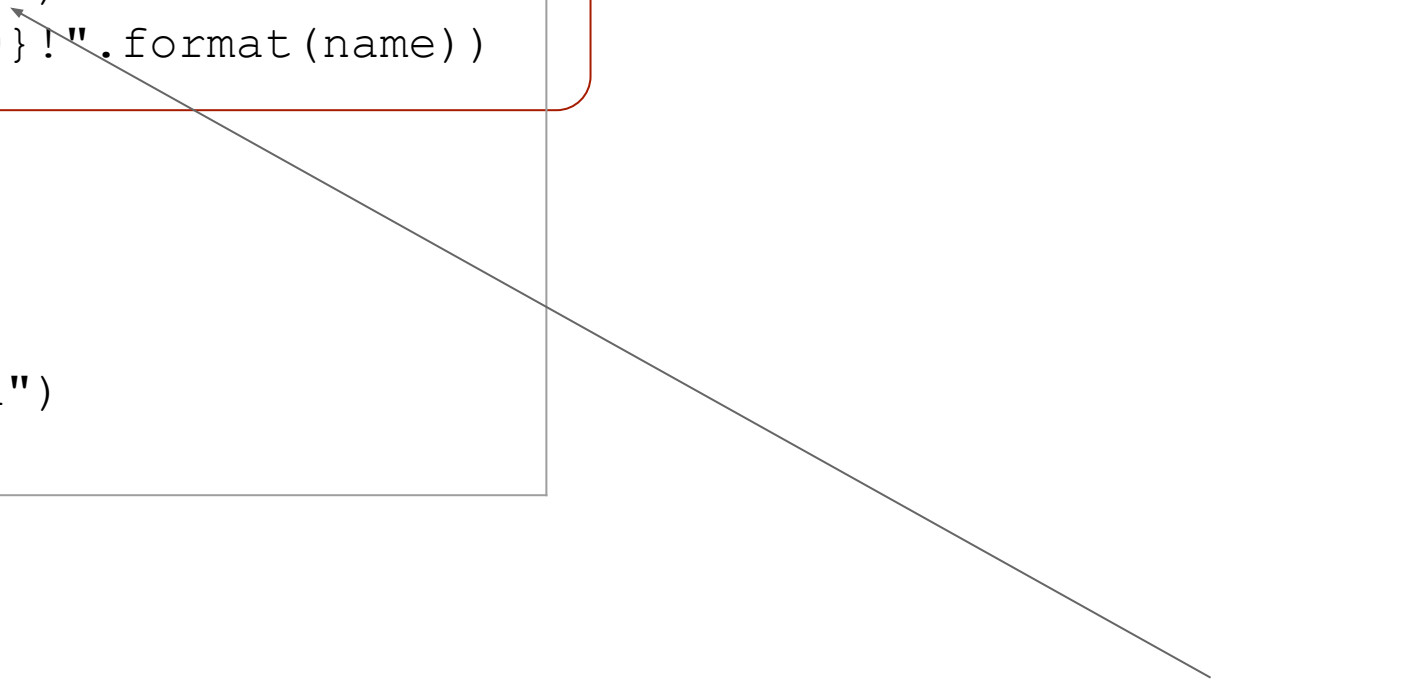
Say hi

```
def say_hi(name):
  print("Hi {0}!".format(name))

j = "John"
say_hi(j)

say_hi("Bob")
say_hi("Alicia")
```

we are writing a new function called **say_hi**

Say hi

```
def say_hi(name):
  print("Hi {0}!".format(name))

j = "John"
say_hi(j)

say_hi("Bob")
say_hi("Alicia")
```



Say hi

```
def say_hi(name):
  print("Hi {0}!".format(name))

j = "John"
say_hi(j)

say_hi("Bob")
say_hi("Alicia")
```

this function does NOT return values

Say hi

```
def say_hi(name):
  print("Hi {0}!".format(name))

j = "John"
say_hi(j)

say_hi("Bob")
say_hi("Alicia")
```

we have a new function
and we can use it!!!

Say hi

```
def say_hi(name):
  print("Hi {0}!".format(name))

j = "John"
say_hi(j)

say_hi("Bob")
say_hi("Alicia")
```

```
def say_hi(name):
  print("Hi {0}!".format(name))
```

name

John

```
def say_hi(name):
  print("Hi {0}!".format(name))
```

name

Alicia

Function's return

when function does NOT return values
we just call it

```
say_hi("Bob")
say_hi("Alicia")
```

```
print("Hello world")
print("Python")
```

when function returns a value
we can **assign** that
returned value to a **variable**

```
a = 2
b = 3
c = sum_of_two_numbers(a, b)
```

```
a = 2
b = 3
c = max(a, b)
```

```
number_input = input("Enter an integer: ")
n = int(number_input)
```

a function can return more than one value

Ask user details

```
def ask_info():
  first_name = input("Enter your first name: ")
  last_name = input("Enter your last name: ")
  return first_name, last_name

u1_fname, u1_lname = ask_info()
print("User 1: {0} {1}".format(u1_fname, u1_lname))

u2_fname, u2_lname = ask_info()
print("User 2: {0} {1}".format(u2_fname, u2_lname))
```

```
Enter your first name: John
Enter your last name: Smith
User 1: John Smith
Enter your first name: Bob
Enter your last name: Lee
User 2: Bob Lee
```

Ask user details

```
def ask_info():
  first_name = input("Enter your first name: ")
  last_name = input("Enter your last name: ")
  return first_name, last_name

u1_fname, u1_lname = ask_info()
print("User 1: {0} {1}".format(u1_fname, u1_lname))

u2_fname, u2_lname = ask_info()
print("User 2: {0} {1}".format(u2_fname, u2_lname))
```

we are writing a new function called **`ask_info`**

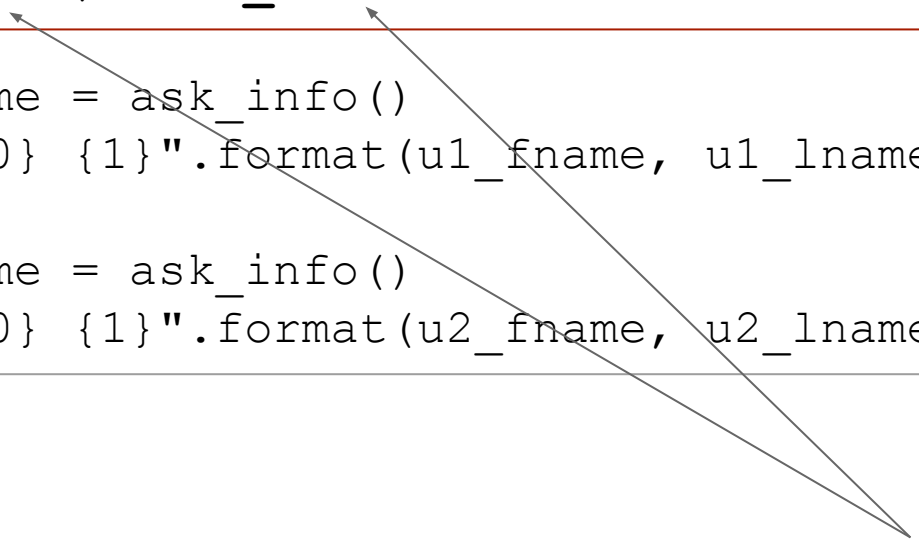
Ask user details

```
def ask_info():
  first_name = input("Enter your first name: ")
  last_name = input("Enter your last name: ")
  return first_name, last_name

u1_fname, u1_lname = ask_info()
print("User 1: {0} {1}".format(u1_fname, u1_lname))

u2_fname, u2_lname = ask_info()
print("User 2: {0} {1}".format(u2_fname, u2_lname))
```

this new function has 0 **arguments**

Ask user details

```
def ask_info():
  first_name = input("Enter your first name: ")
  last_name = input("Enter your last name: ")
  return first_name, last_name

u1_fname, u1_lname = ask_info()
print("User 1: {0} {1}".format(u1_fname, u1_lname))

u2_fname, u2_lname = ask_info()
print("User 2: {0} {1}".format(u2_fname, u2_lname))
```



this function returns 2 values

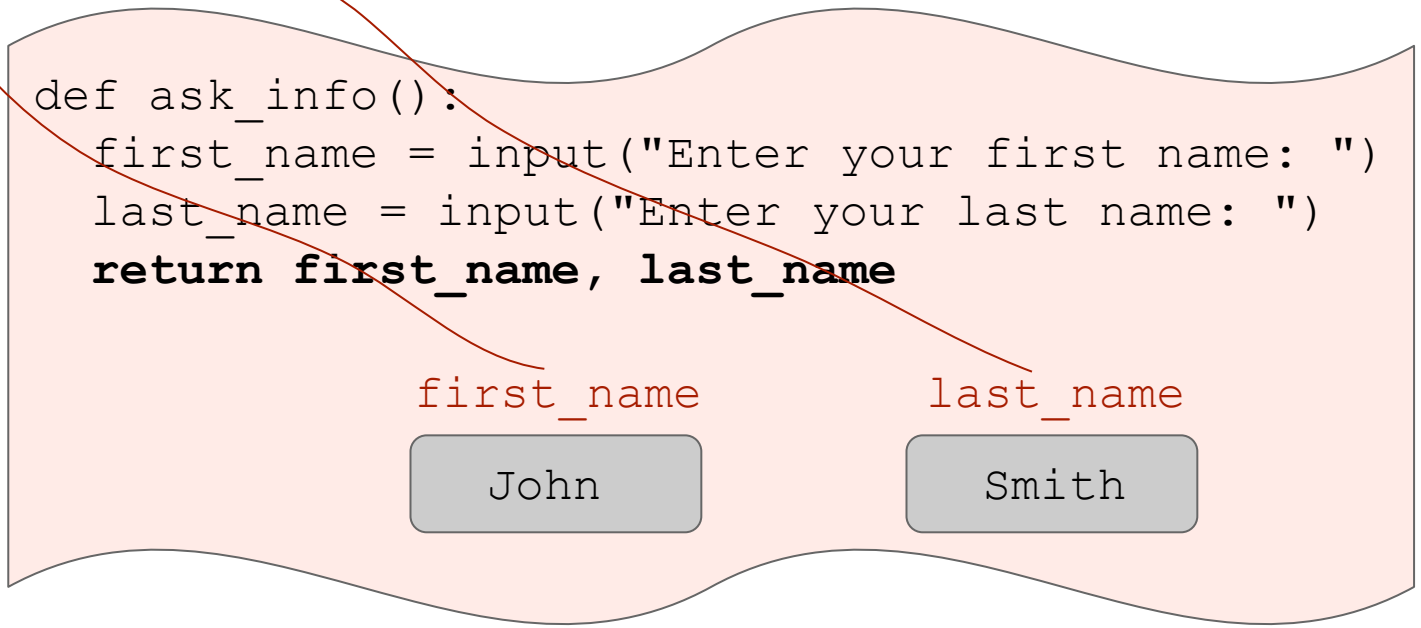
Ask user details

```
def ask_info():
  first_name = input("Enter your first name: ")
  last_name = input("Enter your last name: ")
  return first_name, last_name

u1_fname, u1_lname = ask_info()
print("User 1: {0} {1}".format(u1_fname, u1_lname))

u2_fname, u2_lname = ask_info()
print("User 2: {0} {1}".format(u2_fname, u2_lname))
```

Since this function returns 2 values,
we can assign the 2 returned values to **2 variables**

Ask user details

```
def ask_info():
  first_name = input("Enter your first name: ")
  last_name = input("Enter your last name: ")
  return first_name, last_name

u1_fname, u1_lname = ask_info()
print("User 1: {0} {1}".format(u1_fname, u1_lname))

u2_fname, u2_lname = ask_info()
print("User 2: {0} {1}".format(u2_fname, u2_lname))
```



Ask user details

```
def ask_info():
  first_name = input("Enter your first name: ")
  last_name = input("Enter your last name: ")
  return first_name, last_name

u1_fname, u1_lname = ask_info()
print("User 1: {0} {1}".format(u1_fname, u1_lname))

u2_fname, u2_lname = ask_info()
print("User 2: {0} {1}".format(u2_fname, u2_lname))
```