

# Variables

A variable – a name for storing or referencing certain type of data

- Created when value is first assigned
- No type declaration associated with a variable
- Following assignment changes the already created named variable
- Variables must be assigned before used

# Variable Naming Rules

- A variable name must start with a letter or the underscore character
- A variable name cannot start with a number
- A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and \_ )
- Variable names are case-sensitive

# examples

```
# assignment  
# a is created and references an integer value of 10  
a = 10  
# b is created and references an integer value of 20  
b = 20  
print(a) # outputs 10  
print(b) # outputs 20
```

```
c = a + b # c is created and value is 30  
print(a, b, c) # outputs 10 20 30  
print('a + b = %d' % c)
```

```
# create variable d with None type  
# you cant just type d without assigning it with something.  
# if you don't know what to assign or not sure, explicitly let d reference nothing.  
d = None
```

```
a = 3.14 # a references a floating number now  
print(a) # outputs 3.14 not 10
```

# examples

*# two new variables begin to exist*

var1 = 10

var2 = 20

print(var1, var2) *# outputs 10, 20*

var1 = var2

print(var1, var2) *# outputs 20, 20*

var2 = 0

*# this does not change var1*

print(var2) *# outputs 0*

print(var1) *# outputs 20, yes, still 20*



# Examples

```
# reassign var1 and var2 to list  
var1 = [1, 2, 3]  
var2 = [1, 2, 3]  
a = var2.pop(0) # remove the first item from [1,2,3], and assign that item to a  
print(var2)    # var2 is [2, 3]  
print(var1)    # var1 is still [1,2,3] because nothing changes  
var2 = var1  
a = var2.pop(0) # remove the first item from [1,2,3], and assign that item to a  
print(var2)    # outputs [2, 3]  
print(var1)    # outputs [2, 3] because var1 and var2 reference the same list
```

# Take Home Exercise

*Practice using variables in python console use the examples provide in this handout. You can certainly test out other questions you may have in python console by yourself.*