

01 LAB - Variables, Statements, Expressions

1. In Python, must a variable be declared before it is assigned a value?

Variables do not need to be declared or defined in advance in Python. To create a variable, you just assign it a value.

2. Which of the following statements assigns the value 100 to the variable x in Python:

- a. `int x = 100`
- b. `x == 100`
- c. `x = 100`
- d. `x << 100`
- e. `x ← 100`

c. `x = 100`

3. In Python, a variable may be assigned a value of one type, and then later assigned a value of a different type. Explain

Yes. Variables are not statically typed in Python, as they are in some other programming languages.

4. Consider the following sequence of statements:

```
n = 300  
m = n
```

Following the execution of these statements, Python has created how many objects and how many references? Explain.

- a. Two objects, two references
- b. One object, one reference
- c. Two objects, one reference
- d. One object, two references

d. One object, two references

The first statement creates an integer object with value 300, and is a reference to it. The second statement creates a second reference to the already existing object.

5. Which of the following are valid Python variable names? Explain why the other ones are invalid.

- a. home_address
- b. ver1.3
- c. route66
- d. 4square
- e. Age
- f. return

Valid:

- a. home_address
- c. route66
- e. Age

Invalid:

- b. version1.3 is not valid because it contains a character which is not a letter, digit or underscore.
- d. 4square is not valid because it begins with a digit.
- f. return is not valid because it is a Python reserved word (keyword).

6. You are reading Python code, and these statements appear scattered in different locations throughout the code:

```
employeenumber = 4398
...
EmployeeNumber = 4398
...
employeeNumber = 4398
```

Do these statements refer to the same or different variables? Explain.

These statements refer to different variables.

Case is significant in Python variable names, so these are all different variables.

7. Which of the following styles is recommended for multi-word variable names:

- a. distance_to_nearest_town (Snake Case)
- b. distanceToNearestTown (Camel Case)
- c. DistanceToNearestTown (Pascal Case)

a. distance_to_nearest_town (Snake Case)

NOTE: For the next questions write your Python code on Replit and then copy/paste your code here:

8. Store your own version of the message "Hello World!" in a variable, and print it.

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

9. Store the message "My favorite color is: " in a variable. Store your favorite color in another variable. Then, concatenate the variables to print the message "My favorite color is ____" (fill the blank with your color).

```
message = "My favorite color is: "  
color = "pink"  
  
print(message + color)
```

10. Store your first name and last name in separate variables, and then combine them to print out your full name. Use concatenation to make a sentence about you, store that sentence in a variable, then print it.

```
first_name = "Sophie"  
last_name = "Smith"  
sentence = "Hi! My name is " + first_name + " " + last_name  
  
print(sentence)
```