Values and Types

1. Following are several statements. Write the output of each statement.

   1. `print(type(64))`

   2. `print(type("Computational Thinking"))`

   3. `print(type("273.8"))`

   4. `print(type(5.6 + 8))`

Conversion

1. Sometimes we need to convert types. What are the outputs of the following?

   1. `print(type(int("23")))`

   2. `print(type(str(14)))`

   3. `print(int(67.984))`
COSC 101: Fall 2017
Lecture 02: Types, Variables and Assignment

Name:

Partners Name:

Values and Types

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7. `print(type("273.8"))`

8. `print(type(5.6 + 8))`

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Variables

1. Below is a program that prints out the number of copies of the book, The Sixth Extinction, that are available through the library. Written with python statements we’ve seen so far.

```python
print("Number of copies in CASE library:")
print(1)  # one copy at CASE
print("Number of copies in Cooley library:")
print(1)  # one copy at Cooley
print("Number of copies at Pace library:")
print(3)  # three copies at Pace
print("There are ", 1+1, " copies available at Colgate.")
print("There are", 1+1+3, " copies available in total.")
```

a) Describe how the code must be changed when CASE library buys three more copies to accommodate requests due to the book being the first in the Colgate 2017 Living Writers Series?
The code is rewritten as follows.

```python
# number of copies at libraries
copies_CASE = 1  # copies at CASE
copies_Cooley = 1  # copies at Cooley
copies_Pace = 3  # copies at Pace

print("Number of copies in CASE library:")
print(copies_CASE)
print("Number of copies in Cooley library:")
print(copies_Cooley)
print("Number of copies at Pace library:")
print(copies_Pace)

copies_Colgate = copies_CASE + copies_Cooley
total_copies = copies_Colgate + copies_Pace
print("There are ", copies_Colgate, "copies available at Colgate.")
print("There are", total_copies, "copies available in total.")
```

b) How must the code be changed if CASE buys three more copies now?
Reassigning and Updating Variables

2. How do variables work? Consider the following code:

age = 17
name = “Susan”
time = 23.1

The first statement established the value ‘17’, stored the value ‘17’ at a memory location and uses the name ‘age’ to reference that memory location. Let’s go through the other two together.

a) If the next three lines of code in the program above are:

    swimmer = name
    name = “Susanna”
    print(swimmer)

What is the output of the print statement? Why? Once your partner is done compare your answers.

b) Go back to the original code. If the next two lines of code were:

    age = age + 1;
    print(age)
What is the output of the print statement? Why? Once your partner is done compare your answers.

c) Go back to the original code. If the next lines of code were:

```python
best_time = time
time = 22.9
print(name, "age", age, "Best time today =", best_time)
```

What is the output of the print statement? Once you partner is done compare your answers.

Assuming that “Best Time” is intended to mean the fastest time. What type of error is occurring here? How can it be fixed?

3. Write a short program that starts by assigning the integer value 8 to the variable name ‘my_number’. The end result of the program should be a printed sentence that states: “8 squared is equal to 64” without directly typing any numbers in the print statement (ie. The
print statement should not read print("8 squared is equal to 64"). When you are done compare your code to your partner’s. Are there any differences? What are they?