

Homework Assignment 1

Submit the link to the GitHub repository where your code is located by 11:59PM, Tuesday, January 23.

Problem 1: Object Types (Weight 2). Consider the number 17. Construct multiple variables (`y1`, `y2`, `y3`, and `y4`) in Python that represent the number 17 in the various forms of objects (integer, float, string, and Boolean, respectively). *Hint:* For creation of the Boolean, set a value for 17 to be compared against another number.

1. Print the value of `y1`, `y2`, `y3`, and `y4` and their types (*Hint:* you can use function `type()` to get a type of an object or variable).
2. Use `y1`, `y2`, or `y3` to create a variable named `text` such that `print(text)` prints 'The value of x is 17.'

Problem 2: String Operations (Weight 1) Create a string that contains the following: "I", "love", "learning", "how", "to", "code", and "!". Use string operators to create a syntactically correct sentence (stored in variable `text`) that yields "I love learning how to code!" when printed to the user. Print the content of `text`.

Problem 3: Iterative and Recursive Operations (Weight 4). Write an *iterative* function and a *recursive* function that computes the sum of all numbers from 1 to `n`, where `n` is given as parameter. Test both functions for `n = 100`.

Problem 4: Lists and Mutability (Weight 2). Create a list, named `yours`, to store my favorite schools: 'Yale', 'MIT', and 'Berkeley'; and create a list, named `mine`, to store 3 of your favorite schools whatever they are. Use the `+` operator to create a new list, named `ours1`, to represent our favorite schools:

```
ours1 = mine + yours
```

Now, create another list, name `ours2`, to again represent our favorite schools but this time use:

```
ours2 = []
ours2.append(mine)
ours2.append(yours)
```

Answer these questions:

1. Print `ours1` and `ours2`. Describe how `ours1` and `ours2` differ from each other.
2. Change the second element of `yours` to something else and again print `ours1` and `ours2`. Explain why changing `yours` would changes `ours2` but not `ours1`.

Problem 5: Dictionaries (Weight 2). Create a dictionary for the months of the year that can be called by the number of months (i.e. 1, 2, ..., 12) or the name of months (i.e. January, February, ..., December). Write a statement that prints 'The sixth month is June.' and another statement that prints 'February is month 2.'