KEY_Practice11_Loops2

February 18, 2020

1 Practice with loops

In today's lesson, we learned about a few ways to change the way our for loops work. As a reminder:

- We can use `if/elif/else` statements in loops to specify what code runs for certain items in the list
- We can use `continue` to skip to the next item
- We can use `break` to stop iterating through items in our list

Today, we will be working with a 2D list called `college_info`, which has information about different colleges in the country. Each list in the 2D list has the name, city, and state of a certain college

```
[1]: # college info:
     college_info = [["University of Michigan", "Ann Arbor", "Michigan"],
                     ["New York University", "New York", "New York"],
                     ["Grand Valley State University", "Allendale", "Michigan"],
                     ["Western Michigan University","Kalamazoo", "Michigan"],
                     ["University of Alaska", "Fairbanks", "Alaska"],
                     ["University of Washington", "Seattle", "Washington"],
                     ["Stanford University", "Stanford", "California"]]
```

First, let's get familiar with our dataset. Write a for loop that iterates through the list of colleges and prints out all the info for each college

```
[3]: # iterate through the list of colleges and print out the info for each college
     for college in college_info:
         print(college)
```

```
['University of Michigan', 'Ann Arbor', 'Michigan']
['New York University', 'New York', 'New York']
['Grand Valley State University', 'Allendale', 'Michigan']
['Western Michigan University', 'Kalamazoo', 'Michigan']
['University of Alaska', 'Fairbanks', 'Alaska']
['University of Washington', 'Seattle', 'Washington']
['Stanford University', 'Stanford', 'California']
```

Next, let's print out just the names of each college. Remember, each item in our for loop is a list, and the name of the college is the first item in the list.

```
[11]:  # iterate through the list of colleges and print out each college's name
       for college in college_info:
           print(college[0])
```

```
University of Michigan
New York University
Grand Valley State University
Western Michigan University
University of Alaska
University of Washington
Stanford University
```

We can see that some of the schools in our list are in Michigan, and some are not. Let's write a loop that prints "X is an in-state school" if a college is in the state of Michigan, and "X is not an in-state school" if a college is not in the state of Michigan.

```
[6]:  # use if/else to do something different for schools in michigan vs. not in
      ↳michigan
      for college in college_info:
          if college[2] is 'Michigan':
              print(college[0] + " is an in-state school")
          else:
              print(college[0] + " is not an in-state school")
```

```
University of Michigan is an in-state school
New York University is not an in-state school
Grand Valley State University is an in-state school
Western Michigan University is an in-state school
University of Alaska is not an in-state school
University of Washington is not an in-state school
Stanford University is not an in-state school
```

Remember that we can use `continue` to skip over certain items in our list. Write a for loop that uses `continue` to only print info about schools that are in Michigan.

Note: this can also be done without using `continue`!

```
[7]:  # use continue to only print in-state schools
      for college in college_info:
          if college[2] is not 'Michigan':
              continue
          print(college)
```

```
['University of Michigan', 'Ann Arbor', 'Michigan']
['Grand Valley State University', 'Allendale', 'Michigan']
['Western Michigan University', 'Kalamazoo', 'Michigan']
```

The keyword `break` can be used to stop iterating through our list once a certain condition is met. Use `break` to only print out information about schools that are before University of Alaska in the list.

```
[14]: # use break to print info only about schools that are before U of A in the list
      for college in college_info:
          if college[0] == "University of Alaska":
              break
          print(college)
```

```
['University of Michigan', 'Ann Arbor', 'Michigan']
['New York University', 'New York', 'New York']
['Grand Valley State University', 'Allendale', 'Michigan']
['Western Michigan University', 'Kalamazoo', 'Michigan']
```