

Part 4

August 2017

1. Write a program that initializes a list `L` with integer entries (make it as long as you like and the entries can be arbitrary). Ask the user for input. If the user inputs something that is an element of the list, remove it from the list and print out the edited list. If the user inputs something that is not an element of the list, print out the list without editing it.
2. Given the list `['John Smith', 'Michael Anderson', 'Archibald Farnsworth the Fourth']` add another name in between the second and third entries.
3. Given the list `['s', 'h', 'j', 'k', 'd', 'q']`, rearrange it in reverse alphabetical letter.
4. Given the list `['s', 'h', 'j', 'k', 'd', 'q']`, write a program that will return every other letter in the list starting with the second. Do not use the length of the list in your code.
5. Use `range` to create the list `[2,4,6,8,10,12,14,16,18,20,22]`.
6. What is the result of `list(range(13,40,5))`.
7. Given the list `['John Smith', 'Michael Anderson', 'Archibald Farnsworth the Fourth']`, use one line of code replaces the middle entry with some other name.
8. Write a program that prints out the squares of all the positive integers from 1 to 10.
9.
 - a. Write a program that sums the first 100 positive integers and prints the sum.
 - b. Now write a program that sums the first `n` integers and prints the sum. `n` should be read from user input.
10. Ask the user to input a positive integer `n` and print out its factorial $n! = 1 \times 2 \times 3 \times \dots \times n$.
11. What is wrong with the following code?

```
for i in range(0, 10, 0.1):
    print(i)
```
12. Ask the user for a positive integer. Print out all the integer divisors of this number, including 1 and itself.
13.
 - a. Write a program that accepts input entered by the user and stores each entry in a list. The program should stop when the user enters 'end'.
 - b. Add code to the program that will print out all the data entered by the user (print each element on a separate line).
 - c. Add code to the program that will print out only those entries that are numbers (hint: you will need the `isalpha()` method; type `help(str)` in the Python shell)
14. Write a program that prints out the first 100 prime numbers. A number is prime if it is a positive integer such that its only integer divisors are 1 and itself. By convention, 1 is not considered a prime number.
15. Write a program that accepts two integers as user input and prints their greatest common divisor.
16. You have already written a program that calculates all prime numbers less than 100. Write a function `primes` that takes one integer parameter and returns the number of primes less than that integer.