1) Write a function (*def is_valid_pin(pin_code)*) which should return whether a string represents a valid Indian pin code. Consider a valid pin code is any string consisting of exactly 6 digits.

2) Write a function is_member() that takes a value (i.e. a number, string, etc) x and a list of values a, and returns True if x is a member of a, False otherwise. (Note that this is exactly what the in operator does, but for the sake of the exercise you should pretend Python did not have this operator.)

3) Define a function overlapping() that takes two lists and returns True if they have at least one member in common, False otherwise. You may use your is_member() function, or the in operator, but for the sake of the exercise, you should (also) write it using two nested for-loops.

4) Write a program that maps a list of words into a list of integers representing the lengths of the corresponding words.

5) Write a function find_longest_word() that takes a list of words and returns the length of the longest one.

6) Write a version of a palindrome recognizer that also accepts phrase palindromes such as "Go hang a salami I'm a lasagna hog.", "Was it a rat I saw?", "Step on no pets", "Sit on a potato pan, Otis", "Lisa Bonet ate no basil", "Satan, oscillate my metallic sonatas", "Rise to vote sir", or the exclamation "Dammit, I'm mad!". Note that punctuation, capitalization, and spacing are usually ignored.

7) Write a function char_freq() that takes a string and builds a frequency listing of the characters contained in it. Represent the frequency listing as a Python dictionary. Try it with something like char_freq("abbabcbdbabdbdbabababcbcbab").

8) Write a python program that prints the frequency of all the unique words. You can have a list of words or you can take data from the user.

9) Write a python function to test, if a given number (passed as argument) is a perfect number (https://en.wikipedia.org/wiki/Perfect_number)

10) Define a function reverse() that computes the reversal of a string. For example, reverse("I am testing") should return the string "gnitset ma I".

11) Write a python function to find the digital root of a number.
(To find digital root, you need to add the digits of a number till you get a single digit number. That is say you have 56789. In the first iteration you add 5, 6, 7, 8 and 9. The result is 35. In the second iteration you add 3 and 5. You get 8. So 8 is the answer.)

12) Define a function is_palindrome() that recognizes palindromes (i.e. words that look the same written backwards). For example, is_palindrome("radar") should return True.

13) "99 Bottles of Beer" is a traditional song in the United States and Canada. It is popular to sing on long trips, as it has a very repetitive format which is easy to memorize, and can take a long time to sing. The song's simple lyrics are as follows:

> *99 bottles of beer on the wall, 99 bottles of beer.*
> *Take one down, pass it around, 98 bottles of beer on the wall.*

The same verse is repeated, each time with one fewer bottle. The song is completed when the singer or singers reach zero.

Your task here is write a Python program capable of generating all the verses of the song.

14) Write a function which accepts a string and returns a list of all possible permutations of the given string in python.

15) Define a simple "spelling correction" function correct() that takes a string and sees to it that 1) two or more occurrences of the space character is compressed into one, and 2) inserts an extra space after a period if the period is directly followed by a letter. E.g. correct("This   is very funny and   cool.Indeed!") should return "This is very funny and cool. Indeed!".