Function in Python

1. Write a function to print the fibanocci series
2. To print the sum of two numbers
3. Write a Python based program which acts as a calculator .(Menu based)
4. Write a program which acts as a calculator (function based)
5. Define a function max() that takes two numbers as arguments and returns the largest of them. Use the if-then-else construct available in Python. (It is true that Python has the max() function built in, but writing it yourself is nevertheless a good exercise.)
6. Define a function max\_of\_three() that takes three numbers as arguments and returns the largest of them.
7. Define a function that computes the length of a given list or string. (It is true that Python has the len() function built in, but writing it yourself is nevertheless a good exercise.)
8. Write a function that takes a character (i.e. a string of length 1) and returns True if it is a vowel, False otherwise.
9. Write a function translate() that will translate a text into "rövarspråket" (Swedish for "robber's language"). That is, double every consonant and place an occurrence of "o" in between. For example, translate("this is fun") should return the string "tothohisos isos fofunon".
10. Define a function sum() and a function multiply() that sums and multiplies (respectively) all the numbers in a list of numbers. For example, sum([1, 2, 3, 4]) should return 10, and multiply([1, 2, 3, 4]) should return 24.
11. Define a function reverse() that computes the reversal of a string. For example, reverse("I am testing") should return the string "gnitset ma I".
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. 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.)
14. 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.
15. Define a function generate\_n\_chars() that takes an integer n and a character c and returns a string, n characters long, consisting only of c:s. For example, generate\_n\_chars(5,"x") should return the string "xxxxx". (Python is unusual in that you can actually write an expression 5 \* "x" that will evaluate to "xxxxx". For the sake of the exercise you should ignore that the problem can be solved in this manner.)
16. Define a procedure histogram() that takes a list of integers and prints a histogram to the screen. For example, histogram([4, 9, 7]) should print the following:
17. \*\*\*\*
18. \*\*\*\*\*\*\*\*\*
19. \*\*\*\*\*\*\*
20. The function max() from exercise 1) and the function max\_of\_three() from exercise 2) will only work for two and three numbers, respectively. But suppose we have a much larger number of numbers, or suppose we cannot tell in advance how many they are? Write a function max\_in\_list() that takes a list of numbers and returns the largest one.
21. Write a program that maps a list of words into a list of integers representing the lengths of the correponding words.
22. Write a function find\_longest\_word() that takes a list of words and returns the length of the longest one.
23. Write a function filter\_long\_words() that takes a list of words and an integer n and returns the list of words that are longer than n.
24. 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", "I roamed under it as a tired nude Maori", "Rise to vote sir", or the exclamation "Dammit, I'm mad!". Note that punctuation, capitalization, and spacing are usually ignored.
25. A pangram is a sentence that contains all the letters of the English alphabet at least once, for example: The quick brown fox jumps over the lazy dog. Your task here is to write a function to check a sentence to see if it is a pangram or not.
26. "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:
27. 99 bottles of beer on the wall, 99 bottles of beer.  
    Take one down, pass it around, 98 bottles of beer on the wall.
28. The same verse is repeated, each time with one fewer bottle. The song is completed when the singer or singers reach zero.
29. Your task here is write a Python program capable of generating all the verses of the song.
30. Represent a small bilingual lexicon as a Python dictionary in the following fashion {"merry":"god", "christmas":"jul", "and":"och", "happy":gott", "new":"nytt", "year":"år"} and use it to translate your Christmas cards from English into Swedish. That is, write a function translate() that takes a list of English words and returns a list of Swedish words.
31. 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").
32. Write a program that maps a list of words into a list of integers representing the lengths of the correponding words. Write it in three different ways: 1) using a for-loop, 2) using the higher order function map(), and 3) using *list comprehensions*.
33. Write a function find\_longest\_word() that takes a list of words and returns the length of the longest one. Use only higher order functions.