Python Assignments

1. **Write a Python program to convert miles into kilometres. (1 mile = 1.60934 kilometres)**
    a. Ask the user to input number of miles
    b. Print this input in miles in the following format: *5 miles equals 8.0467 kilometres*

2. **Create a Calculator Program (USER INPUT & SPLIT)**
    a. Take input from the user like: Enter Calculation: 2 + 3
    b. Output should be like "2 + 3 = 5"

3. **Calculate how much money one will be left with after investing for 10 years with compound interest (don't use compound interest formula, but use *for* loop and *range*) (FOR LOOP & FORMATING)**
    a. Take user input for initial investment and expected interest rate
    b. Output should be like: Rs 100 invested for 10 years at 10% interest rate will become Rs 259.37

4. **Print a Christmas tree of a given height. Take the height as user input. (LOOPS)**
    a. The output should be as follows for a height of 3:

```
  #
 ###
#####
  #
```

5. **Write a function to solve an equation such as "x + 1 = 2" for the value of x. Assume that the first variable will always be x and the operator is always a +. (FUNCTIONS)**
    a. print(solve_equation("x + 5 = 9")) should print "4"

6. **Write a function to print a list of all prime numbers up to a number given by the user. (LISTS)**
    a. Accept the input from the user

7. **Write a function to calculate the area of a rectangle or a circle. Accept appropriate use input. First accept the shape and based on shape accept further inputs (l & b for rectangle, r for circle) from the user. (FUNCTIONS & MAIN METHOD)**

8. **With 2 for loops fill the cells in a multidimensional list with a multiplication table using values 1 - 9. Produce the following: (LISTS)**

    1, 2, 3, 4, 5, 6, 7, 8, 9,

    2, 4, 6, 8, 10, 12, 14, 16, 18,

    3, 6, 9, 12, 15, 18, 21, 24, 27,

    4, 8, 12, 16, 20, 24, 28, 32, 36,

    5, 10, 15, 20, 25, 30, 35, 40, 45,

    6, 12, 18, 24, 30, 36, 42, 48, 54,

    7, 14, 21, 28, 35, 42, 49, 56, 63,

    8, 16, 24, 32, 40, 48, 56, 64, 72,

    9, 18, 27, 36, 45, 54, 63, 72, 81

9. Given two lists containing the names of states and their corresponding capitals, construct a dictionary which maps the states with their respective capitals using dictionary comprehension technique. **Hint**: Use **zip** method to map states to capitals. **(FOR COMPREHENSION)**

    state = ['Gujarat', 'Maharashtra', 'Rajasthan'] (sample inputs)

    capital = ['Gandhinagar', 'Mumbai', 'Jaipur']

10. **Create a list of customer dictionaries. Output should look like this : (DICTIONARY)**

    Enter Customer (Yes/No) : y

    Enter Customer Name : Jeff Bezos

    Enter Customer (Yes/No) : y

    Enter Customer Name : Elon Musk

    Enter Customer (Yes/No) : n

        Jeff Bezos

        Elon Musk

11. **Write a recursive function to print an arbitrary number of Fibonacci numbers. Accept how many numbers to print as user input. (RECURSIVE FUNCTIONS)**

12. **Read from an existing file and cycle through each line of text and output the number of words and the average word length (FILE HANDLING)**

    Line 1

    Number of Words : 3

    Avg Word Length : 4.7

    Line 2

    Number of Words : 3

    Avg Word Length : 4.7

13. **Implement a class called "Student" and maintain a student list within that class. Implement magic methods __str__, __add__ and __del__ to add and delete students to this list and finally print the list of students. Take roll_number, name and age as student fields.**