# **Part 1. Answer only 3 Questions** (If you solve more the top 3 marks will be awarded)

# **Question 1**

Write a function called underline that takes a file name as a parameter and that prints the words one per line with certain words underlined. The words to be underlined all begin with a period. The period should not be printed. You should print the text that follows the period on a line by itself followed by a line of alternating dashes and commas equal in length to the text that follows the period.

|  |  |
| --- | --- |
| **Input stored in input.txt:** | **Output from the call underline(input)** |
| Banana .avocado .peach PineApple-pumpkin pie.  .Nectarines  GRAPES pomegranateS | Banana  avocado  -,-,-,-  peach  -,-,-  PineApple-pumpkin  pie.  Nectarines  -,-,-,-,-,  GRAPES  pomegranateS |

Notice that input lines can be blank lines.

# **Question 2 (uses the attached steps.txt file)**

A Personal Fitness Tracker is a wearable device that tracks your physical activity, calories burned, heart rate, and so on. One common physical activity that most of these devices track is the number of steps you take each day.

The steps.txt file contains the number of steps a person has taken each day for a year. There are 365 lines in the file, and each line contains the number of steps taken during a day. (The first line is the number of steps taken on January 1st, the second line is the number of steps taken on January 2nd, and so forth.) Write a program that:

* **Reads the file, then displays the average number of steps taken for each month.**
* **(The data is from a year that was not a leap year, so February has 28 days.)**

# **Question 3**

A painting company has determined that for every 112 square feet of wall space, one gallon of paint and eight hours of labor will be required. The company charges $35.00 per hour for labor.

Write a program that asks the user to **enter the square feet of wall space** to be painted and **the price of the paint per gallon**. The program should display the following data:

* The number of gallons of paint required
* The hours of labor required
* The cost of the paint
* The labor charges
* The total cost of the paint job

# **Question 4**

Write a program that predicts the approximate size of a population of organisms. The application should use text boxes to allow the user to enter the starting number of organ- isms, the average daily population increase (as a percentage), and the number of days the organisms will be left to multiply. For example, assume the user enters the following values:

Starting number of organisms: 2 Average daily increase: 30% Number of days to multiply: 10

The program should write the data into a csv file and display the following table of data:

Day Approximate Population

1 2

2. 2 2.6

3. 3 3.38

4. 4 4.394

5. 5 5.7122

6. 6 7.42586

7. 7 9.653619

8. 8 12.5497

9. 9 16.31462

10. 10 21.209

# **Question 5**

* Write a code that generate 200 random numbers between -510 and 275 then adds those numbers to a text file. Repeat that step 4 time (you end up with a file that have 4 lines each has 200 numbers separated by spaces)
* Read the data from the file line by line. Each integer value must be: -500 <= value <= 270
* If a value was entered outside that range raise an exception, print error message to the output then continue processing the rest of the numbers.
* Find the value that repeated the most number of times in each line.
  + If there are many solutions: find the **smallest** value.
* Find the maximum number in all lines
* Find the minimum number in all lines

# **Question 6**

* Implement function: def sort\_different\_types(lst):
* It takes a list of different data types (int, float, string, list, tuple)
  + Return a list:
  + For every data type, group, and sort from small to large
  + Within data types: Order them based on the order of the list (int comes first? Be first)
  + Assumption: provided lists or tuples will be comparable.



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