

IoT - Python(Collection) Assignment - 04

1. Write functions to convert kilometers to meters, meters to centimeters, centimeters to millimeters, feet to inches, and inches to centimeter. Write a function `distance_converter()` that takes a distance, conversion type as a string (e.g. km to m, m to cm, etc.) and a conversion function as argument. This function does the converion using given function and print the result. Input a distance from user and print all conversions.
2. Write a lambda functions to convert kilometers to meters, meters to centimeters, centimeters to millimeters, feet to inches, and inches to centimeter. Write a function `distance_converter()` that takes a distance, conversion type as a string (e.g. km to m, m to cm, etc.) and a conversion function as argument. This function does the converion using given function and print the result. Input a distance from user and print all conversions.
3. Define a function `overlapping()` that takes two lists and returns True if they have at least one member in common, False otherwise.
4. 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:

```
4: ****
9: *****
7: *****
```

5. Create a list of lambda functions that converts from tonns to kilograms, kilograms to grams, grams to milligrams, and milligrams to pounds. Input a weight from user in tonns and print it in remaining all units. E.g. if user inputs 0.002 tonns, then output should be 2 kg, 2000gm, 2000000 mg, and 4.409245244 lbs.
6. Given stock prices over 7 days: `prices = [105, 110, 108, 112, 115, 116, 114]`.
 - Compute the 3-day rolling average using slicing.
 - Explanation:
 - $(105+110+108)/3 \approx 107.67$
 - $(110+108+112)/3 = 110.0$
 - ... and so on
7. Create matrix of dim 3x4 as list of list with few fixed values. Create another matrix of dim 3x4 as tuple of tuple with few fixed values. Create a function that takes these two matrices as params and calculate their addition & subtraction. The function should return both result matrices and they should be printed in main.
8. Write a Python program to calculate the average value of the numbers in a given tuple of tuples.
 - Input: `((10, 10, 10, 12), (30, 45, 56, 45), (81, 80, 39, 32), (1, 2, 3, 4))`
 - Output: `[30.5, 34.25, 27.0, 23.25]`