Problem A. File of Names [50 points]

Problem

The file `Names.txt` contains a list of first names in alphabetical order. Write a program that requests a name from the user and inserts the name into the file in its proper location. If the name is already in the file, it should not be inserted.

Functions

- `readSetFromFile()`: read set from `Names.txt`.
- `inputName()`: input the name from the terminal.
- `insertSet(mySet, name)`: insert the name into set.
- `writeToFile(modifiedSet)`: write set to `Names.txt`.

Restrictions

- You should use `set` operations in your program.

Skeleton Code

```
def readSetFromFile():                # implement functions
def inputName():
def insertSet(mySet, name):
def writeToFile(modifiedSet):

def main():
    mySet = readSetFromFile()
    name = inputName()
    modifiedSet = insertSet(mySet, name)
    writeToFile(modifiedSet)

main()
```

Example I/O

- You should write `Names.txt` in your own to execute the example.

Terminal	Names.txt (Before)	Names.txt (After)
Enter a first name to be included: Mango Mango is added in Names.txt	Apple Orange Watermelon	Apple Mango Orange Watermelon

Submit format

- HW03_A_(NAME).py

Problem B. Unit Conversions [50 points]

Problem

The following table contains some lengths in terms of feet. Write a program that requests the unit to convert from, the unit to convert to, and the quantity to be converted; and then displays the converted quantity. Use the file `Units.txt` to create a dictionary that provides the number of feet for a given unit of length. The first two lines of the file are `inch,.083333;yard,3.`

Equivalent lengths.

1 inch = .083333 foot	1 rod = 16.5 feet
1 yard = 3 feet	1 furlong = 660 feet
1 meter = 3.28155 feet	1 kilometer = 3281.5 feet
1 fathom = 6 feet	1 mile = 5280 feet

Functions

- `populateDictionary()`: create dictionary from `Units.txt` to convert units.
- `getInput()`: input units and length from the terminal.

Restrictions

- You should use `dictionary` operations in your program.

Skeleton Code

```
def populateDictionary():           # implement functions
def getInput():

def main():
    feet = populateDictionary()
    orig, dest, length = getInput()
    ans = length * feet[orig] / feet[dest]
    print("Length in {0}: {1:,.4f}".format(dest, ans))

main()
```

Example I/O

```
Unit to convert from: yard
Unit to convert to: mile
Enter length in yards: 555
Length in miles: 0.3153
```

Submit format

- HW03_B_(NAME).py