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# Name:      Higher 2022 Assignment Program
# Purpose:   Working Example (Array of Records)
#
# Author:    Mr Simpson
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Trinket link:

<https://trinket.io/python3/9b9064e1bb>

```
# 1. Read from text file into sightings array of records
def readFile(sightings):
```

```
    counter = 0
    with open("mammals.txt") as readFile:
        line = readFile.readline().rstrip("\n")
        while line:
            items = line.split(",")
            sightings[counter].place = items[0]
            sightings[counter].mammal = items[1]
            sightings[counter].date = items[2]
            sightings[counter].age = int(items[3])

            line = readFile.readline().rstrip("\n")

            counter +=1

        return sightings
```

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#-----
```

```
# 2. Find and display the age of the oldest walker in the sightings data
def findMax(sightings):
```

```
    oldest = sightings[0].age
    for index in range(1,len(sightings)):
        if sightings[index].age > oldest:
            oldest = sightings[index].age
```

Program top-level design (pseudocode)

- | | | |
|---|---|--------------------------------------|
| 1 | Read from text file into sightings array of records | OUT: sightings(town,mammal,date,age) |
| 2 | Find and display the age of the oldest walker in the sightings data | IN: sightings(town,mammal,date,age) |
| 3 | Find and display the dates of sightings of a chosen mammal in a particular town | IN: sightings(town,mammal,date,age) |
| 4 | Count and display the number of sightings for each date in the text file | IN: sightings(town,mammal,date,age) |

Running: 2022 Higher - Fife Mammals Solution (dataclass).py

```
The oldest person in the survey was 94
*****
Please state where you live Saline
Please enter the name of a mammal Rabbit
*****
Date mammal spotted in chosen town 01/09/21
Date mammal spotted in chosen town 04/09/21
Date mammal spotted in chosen town 08/09/21
Date mammal spotted in chosen town 13/09/21
*****
The number of sightings on 01/09/21 = 6
The number of sightings on 03/09/21 = 5
The number of sightings on 04/09/21 = 12
The number of sightings on 05/09/21 = 11
The number of sightings on 06/09/21 = 4
The number of sightings on 07/09/21 = 5
The number of sightings on 08/09/21 = 11
The number of sightings on 09/09/21 = 11
The number of sightings on 10/09/21 = 4
The number of sightings on 11/09/21 = 11
The number of sightings on 12/09/21 = 4
The number of sightings on 13/09/21 = 9
The number of sightings on 14/09/21 = 6
The number of sightings on 15/09/21 = 8
The number of sightings on 17/09/21 = 10
The number of sightings on 18/09/21 = 8
The number of sightings on 19/09/21 = 11
The number of sightings on 20/09/21 = 8
The number of sightings on 21/09/21 = 7
The number of sightings on 22/09/21 = 6
The number of sightings on 23/09/21 = 4
The number of sightings on 25/09/21 = 3
The number of sightings on 26/09/21 = 4
The number of sightings on 27/09/21 = 12
The number of sightings on 28/09/21 = 6
The number of sightings on 29/09/21 = 6
The number of sightings on 30/09/21 = 8|
>>>
```

```

print("The oldest person in the survey was",oldest)
print("*****")
#-----

# Function to change first letter of a string to a capital letter if required
def returnCapital(word):
    firstValue = ord(word[0:1])
    if firstValue >= 97 and firstValue <= 122:
        firstValue = firstValue - 32
        word = chr(firstValue) + word[1:]
    return word
#-----

# Find and display the dates of sightings of a chosen mammal in a particular town
def datesSpotted(sightings):

    town = str(input("Please state where you live "))
    #Call function that ensures town starts with a capital letter - return town
    town = returnCapital(town)

    mammal = str(input("Please enter the name of a mammal "))
    # Call function that ensures mammal starts with a capital letter - return mammal
    mammal = returnCapital(mammal)

    print("*****")

    for index in range(len(sightings)):
        if sightings[index].mammal == mammal and sightings[index].place == town:
            print("Date mammal spotted in chosen town",sightings[index].date)

    print("*****")
#-----

```

#4. Count and display the number of sightings for each date in the text file

```
def sightingsPerDay(sightings):
    dateToCount = sightings[0].date
    count = 1

    for index in range(1,len(sightings)):
        if sightings[index].date == dateToCount:
            count += 1
        else:
            print("The number of sightings on",dateToCount,"=",count)
            count = 1
            dateToCount = sightings[index].date

    print("The number of sightings on",dateToCount,"=",count)

#-----
```

MAIN PROGRAM

```
from dataclasses import dataclass
```

```
@dataclass
```

```
class sightRecord:
    place: str = ""
    mammal: str = ""
    date: str = ""
    age:int = 0
```

```
sightings = [sightRecord() for index in range(200)]
```

1. Call Fetch data from file

```
sightings = readFile(sightings)
```

2. Call Display oldest by calling find max function

```
findMax(sightings)
```

```
# 3. Call Display selected sightings by town and mammal  
datesSpotted(sightings)
```

```
# 4. Call Display the number of sightings for each day of the month  
sightingsPerDay(sightings)
```