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# Name:      Higher 2019 Assignment
# Purpose:   Working Example - Array of Records
#
# Author:    Mr Simpson
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Trinket link:

<https://trinket.io/python3/1365d0b47c>

#1. Read members data from walkers file.

```
def readFileDate(members):
```

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    counter = 0
    with open("members.txt") as readFile:
        line = readFile.readline().rstrip("\n")
        while line:
            items = line.split(",")
            members[counter].forename = items[0]
            members[counter].surname = items[1]
            members[counter].distance = float(items[2])

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

            counter +=1

    return members

```

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#-----
# 2. Find the furthest distance walked.
def findLongestDistance(members):

```

```

    furthest = members[0].distance
    for loop in range(1,len(members)):
        if members[loop].distance > furthest:
            furthest = members[loop].distance
    return furthest

```

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The design for the walking club program is shown below.

Program top-level design (pseudocode)

- | | |
|---|---|
| 1. Read members' data from file into array of records | (OUT: members(forename,surname,distance)) |
| 2. Find the furthest distance walked | (IN: members(forename,surname,distance)
OUT: furthest) |
| 3. Display the furthest distance walked | (IN: furthest) |
| 4. Write club prize winners to file | (IN: members(forename,surname,distance), furthest) |

Running: Walkers Program Solution (parallel arrays version).py

```

The furthest distance walked was 505.2
>>>

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# 3. Display the longest distance walked.
def displayLongest(furthest):
    print ("The furthest distance walked was",furthest)
#-----

# 4. Write the longest walkers to a new file.
def writeToFile(members,furthest):

    with open('results.txt','w') as file:

        file.write("The prize winning members are:\n")

        for loop in range(len(members)):
            if members[loop].distance > furthest * 0.7:
                file.write(members[loop].forename+" "+members[loop].surname+"\n")

        # A mark task 2cii
        marathons = 0
        file.write("The number of whole marathons walked by each member is "+"\\n")
        for loop in range(len(members)):
            marathons = math.floor(members[loop].distance/26.22)
            file.write(members[loop].forename+" " + members[loop].surname+", "+str(marathons)+"\\n")

#-----
# Main Program

from dataclasses import dataclass
import math

# Use dataclass to create a record-like structure
@dataclass
class Walker:
    forename: str = ""
    surname: str = ""

```



The screenshot shows a code editor with three tabs: 'main.py', 'members.txt', and 'results.txt'. The 'results.txt' tab is active, showing the output of the program. The output is as follows:

```

The prize winning members are:
Teresa Jones
Ross Durrant
Ian Hunter
James Kerr
Tisa Sullivan
Albert Nvodo
The number of whole marathons walked by each member is
Nikolai Bryant,5
Susan Brown,1
Teresa Jones,15
Martin Daly,9
Ross Durrant,15
Greg Watson,3
Wendy Russell,3
Pamela Adkins,2
Ian Hunter,14
James Kerr,19
Lesley Wallace,2
Kim Pettigrew,9
Steven Johnstone,0
Ali Hussain,0
Hasan Abbas,11
Jacek Nowak,7
Mirka Kowalski,6
Rudo Hyper,4
Tisa Sullivan,18
Albert Nvodo,14

```

```
distance: float = 0.0

members = [Walker() for index in range(20)]

furthest = 0

# 1. Call procedure to read the data from the text file
members = readFromDate(members)

# 2. Call find max function to return the furthest distance walked
furthest = findLongestDistance(members)

# 3. Call procedure to display the longest distance walked
displayLongest(furthest)

# 4. Call procedure to write the names of the longest walkers to a new file
writeToFile(members, furthest)

#-----
```