OBJECTIVE : Practice on Recursive functions, Binary Files

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1.

Create an employee structure consisting of ID, name, surname and salary.

- Write a **<u>recursive</u>** function **bubble** that sorts the employees' data according to their IDs in ascending order using the bubble sort algorithm.

- Write a **<u>recursive</u>** function **binarySearch** that searches an employee with a given **ID** using the binary search algorithm.

- Write a main program that will read employee information from a text file whose name is given by the user**,** and store the data in a structure array. The program will also sort the data by using the **bubble** function.

- After sorting by using the **binarySearch** function, the program will find and display information about the employees according to the IDs gathered from the user as input until -1 is entered. If an ID could not be found in the list, display an appropriate message*.*

Project_name: LabGuide5_Q1
File_name: Q1.cpp

Example Run:
```
Enter the file name: emp.txt
File not found Enter again: employee.txt
Enter an employee id (-1 to stop): 6598

Search Result
*************
6598 ALI          KURT        1380.0

Enter an employee id (-1 to stop): 1122
ID not found!!!

Enter an employee id (-1 to stop): 4312

Search Result
*************
4312 MEHMET       DOGRU        990.0

Enter an employee id (-1 to stop): -1
```

Employee.txt
```
1254 AHMET TUTUNCU 1500
1232 ALPER KAYI 1350
3425 GAMZE ALTAN 1000
6235 EMRAH KORAY 1255
8456 HUSEYIN BURAK 1450
1354 ONUR YILMAZ 1380
2344 EDA KAYA 1550
2312 GULCIN SEVER 2600
3412 FURKAN ALP 1000
4312 MEHMET DOGRU 990
4454 ERSIN KARGIN 975
6578 ALP DOGA 650
7645 HATICE TASTAN 1450
6598 ALI KURT 1380
9845 BURCU DOGAN 870
7546 MERAL KURAL 1475
3499 BERK SAVAS 890
6583 DEFNE VURMAZ 1100
5349 TAMER COSKUN 1250
7087 VURAL KINAY 2480
```

2.

Write a program that will read sorted and structured city listings (**city name**, **where the city stays on**, **population**) from a text file named as **cities.txt**, and store it into a binary file. Use below functions:

Write a function **readAndWrite** that reads all the city data from a text file, latter, writes the city data to a binary file. This function returns the count of the cities.

Write a **recursive** *BinarySearch* function that searches a given **city name** into the binary file by using the recursive binary search algorithm.

By using the above functions, the program will find and display specific city information according to the city name gathered from the user as input by using the function that you are going to write *BinarySearch*. If the city could not be found in the list, display an appropriate message*.

cities.txt

```
Ahmedabad India 2954526          Istanbul Turkey 10260438
Alexandria Egypt 3339076         Jakarta Indonesia 9373900
Ankara Turkey 4984099            Karachi Pakistan 9339023
Baghdad Iraq 3841268             Lahore Pakistan 5143495
Bandung Indonesia 5919400        Lima Peru 6414500
Bangalore India 3302296          Madras India 3841396
Bangkok Thailand 7506700         Madrid Spain 2823667
Beijing China 7362426            Melbourne Australia 3413894
Berlin Germany 3388000           MexicoCity Mexico 8235744
Bogor Indonesia 5000100          Moscow Russia 8297056
Bogota Colombia 6422198          Santiago Chile 4788543
Bombay India 15925891            Shanghai China 8214384
Cairo Egypt 6800992              Shenyang China 4669737
Calcutta India 4399819           Singapore Singapore 3894000
Chengdu China 2954872            Sydney Australia 4031944
Chicago UnitedStates 2896016     Teheran Iran 6758845
Chongqing China 3122704          Tianjin China 5855044
Delhi India 7206704              Tokyo Japan 8130408
Guangzhou China 3935193          Wuhan China 4040113
Harbin China 2990921             Xian China 2872539
Hyderabad India 3145939          Yokohama Japan 3426506
```

Example Run#1:
Enter a city name: Bombay
Bombay India 9925891

Example Run#2:
Enter a city name: Ankara
Ankara Turkey 2984099

Example Run#3:
Enter a city name: Konya
"Konya" could not be found!!!

Project_name: LabGuide5_Q2
File_name: Q2.cpp