BİL 102 – Computer Programming
HW 07

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In this homework, you will write a program which takes some name and address information from a text file, **input.txt,** and makes some operations on the data.
Each record in the file corresponds to a person's information in the following format:

<name> <2nd name [optional]> <sir name>; <address, email, phone number><newline character>

Inside the address section, town and city is specified using '/' sign as Tuzla/Istanbul and the sign '/' is not used in anywhere else.
Content of a sample input file may be as follows:

Evren Cifci; Istasyon M. Tuzla/Istanbul ecifci@bilmuh.gyte.edu.tr 54587 2165778899
Ali Veli Elli; 5551234567 Istanbul M. Hatay S. 20-2 Karsiyaka/Izmir ave@yahoo.com
Akif Erdemli; Gokalp C. Alibeykoy/Istanbul alierdemli1977@gmail.com 2124564567
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Implement / use the following functions:

IO Functions

int readRecords(char filename[], char records[][100], int* numOfRecords, int rowCap, ,int colCap): takes the number of the records in the input text file, opens the file and saves its content in the given 2D array so that each record is hold in a separate row. Returns the number of rows in the array as an output argument and an error indicator as the return value, in which 0 indicates no error, -1 indicates that the file not found, -2 indicates row capacity of the array is not enough (nothing should be recorded beyond the array in this case).

```
/*Writes the content of a string array having any number of        */
/*columns into a stream                                            */
/*Note that using stdout as the out stream, this function can be   */
/*used to write into the console                                   */
/*outFile: output stream to be written                             */
/*strArr: pointer showing the element (0, 0)                       */
/*rowC: number of rows in the string array                         */
/*colC: nmber of columns in the string array                       */
int writeStrArr(FILE* outFile, const char* strArr, int rowC, int colC){
        int i;
        char* row=strArr; /*starting address of the row to be printed*/
        for(i=0; i<rowC; ++i){
                /*write a row to the stream*/
                fprintf(outFile,"%s\n", row);
                /*update the address of the row*/
                row += colC;
        }
```

}
int writePtrArr(FILE* outFile, char* ptrArr[], int size): Writes the content of a pointer array into a stream

Basic Operations)
char* getName(char records[][100], int rowC, const char name[], const char sirName[]): returns the starting address of the record belonging to the person with the given name if the person is found and a null pointer o/w.
int changeEmailAddress(char records[][100], int rowC, const char name[], const char sirName[], const char newEmail[]) :changes the email address of the person having the given name and sir name with the given address and return 0 if the person is known, returns -1 o/w.
int getNamesInCity(char strArr[][100], int rowC, const char city[], char names[][15]): returns the name and the sir name of the people living in the given city as an output argument and the number of names as the return value.
void getPtrArray(char* ptrArr[], char strArr[][100], int rowC): takes a string array and returns a pointer array as the output argument such that each element of the array shows a different row of the string array.
int getAddressInTown(char strArr[][100], int rowC, const char town[], char* addresses[]): returns an array of pointers such that each element of the array shows the starting position of the address information of a record belonging to a different person from the given town as an output argument and the size as the return value.

Sorting Operations
int isGreaterByName(const char record1[], const char record2[]): returns 1 if the name in record1 is lexicographically earlier than the name in record2.
int isGreaterByEmail(const char record1[], const char record2[]): returns 1 if the email address in record1 is lexicographically earlier than the email address in record2.
int isGreaterByCity(const char record1[], const char record2[]): returns 1 if the name of the city in record1 is lexicographically earlier than the name of the city in record2.
void sortRecords(char* records[], int size, isGreater(const char rec1[], const char rec2[])): sorts the given records using the given function to decide whether the first given record is greater than the second one
void sortByEmail(char* records[], int rowC): sort the given records with respect to the email addresses in the lexicographical order by calling sortRecords() with the function parameter isGreaterByEmail().

General:

1. Obey honor code principles.
2. Obey coding convention.
3. Do not forget to put the required tags in the main function.
4. Your submission should include the following file only
5. HW07_<student_name>_<studentSirname>_<student number>.c
6. Deliver the printout of your code **until the last submission date**.
7. Do not use non-English characters in any part of your homework (in body, **file name**, etc.).