1. You are given a directory named `database`. This directory contains 12 subdirectories each corresponding to a particular department of this institute. Within each of these subdirectories there are several files. Each file corresponds to a specific course (named with course number) and associated list of registered students. **Important:** Every file is *sorted* according to roll number of the student and contain `roll number, full name` and `e-mail address` of the student in every line. `index.txt` file provides course number and course name mapping.

   Your task is to **read** every **directory, subdirectories** and associated **files** in the database directory and generate a department wise report as described in Table 1 (different *view* of the database as discussed in the class): You can get to know department of a student from the roll number as per the following mapping:

   (a) First two digits of roll number represent year.

   (b) Second two digits represent stream (B Tech/M Tech/PhD).

   (c) Third two digits represent department code.

   (d) Remaining digits represent the roll number of the student.

Code	01	02	03	04	05
Name	CSE	ECE	ME	CE	DD
Code	06	07	08	21	22
Name	BT	CL	EEE	EP	CT
Code	23	41			
Name	MC	HS			

Roll Number	Course Number	Course Name
140101001	BT101	Modern Biology
	MA102	Mathematics II
	ME101	Engineering Mechanics
	ME110	Workshop I
	PH102	Physics II
	CS101	Introduction to Computing
	CS110	Computing Lab
	EE102	Basic Electronics Laboratory
	SA102	Course Name/Course No Not Found
140101002	BT101	Modern Biology
	MA102	Mathematics II
	ME101	Engineering Mechanics
	ME110	Workshop I
	PH102	Physics II
	CS101	Introduction to Computing
	CS110	Computing Lab
	EE102	Basic Electronics Laboratory
	SA102	Course Name/Course No Not Found
⋮	⋮	⋮
140101080	BT101	Modern Biology
	MA102	Mathematics II
	ME101	Engineering Mechanics
	ME110	Workshop I
	PH102	Physics II
	CS101	Introduction to Computing
	CS110	Computing Lab
	EE102	Basic Electronics Laboratory
	SA102	Course Name/Course No Not Found

Table 1: File name: cse.txt. Note that this file should contain **all** years of CSE students and not only 2014 year student as shown in the table

Note: You should implement this program either in **C** or **C++** language only.

How to read a directory? Go through the material provided in Section 18.8.

How to retrieve file information? Go through the material provided in section 15.1. This is important because the while reading directories, contents of the directory are returned. You need to find out whether the content is a regular file or a directory. For this you need to understand the file information as well.

You need to recursively read subdirectories and files stored in the database directory.

Marking scheme is according to this following table:

Evaluation Point	Description	Marks
1	Reading directory contents	1
2	Fetching file attributes	1
3	Decoding departments	1
4	Scanning files	1
5	Using sorted file information	1
6	Output	1
7	Logic	4

Estimated time for performing each of the tasks in this assignment:

S. No.	Description	Estimated Time
1	Reading this problem statement	15 minutes
2	Reading Section 18.8	30 minutes
3	Reading Section 15.1	30 minutes
4	Sketching logic & implementation	120 minutes
5	Evaluation by TA	15 minutes