

OBJECTIVE : Structure and Pointer Operations

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Use **POINTER** notation instead of **SUBSCRIPT** notation!

Q1.

a) Create the structure **students** and **grades**:

```
typedef struct{
    int midterm, labexam, final;
} grades;

typedef struct{
    int id,
    grades gr;
    double overall;
} students152;
```

b) Write the functions:

- **input()** function; **gets** a set of student information from <**students.txt**> until the end of the file is reached. Also **finds** and **returns** the size of the structure array. (do not forget to **initialize** the overall grade to **0** for each student)
- **calculate()** function; **calculates** the class average and the overall grade of each student. (midterm 30%, labexam 30%, final 40%)
- **display()** function; **displays** the content of the structure array.
- **find_pass_fail()** function; **finds** and **displays** the number of the students who fail and pass the course. Also **displays** the class average. (student passes if student's overall >= average, **otherwise** student fails)

Write a C program that **reads** the entire student's information from <**student.txt**> in to an array of structure, and **displays** all the information on the screen.

student.txt

```
1222 45 67 98
1333 89 45 33
1444 67 76 99
```

Example Run:

```
student id      : 1222
student Midterm : 45
student Lab Exam: 67
student Final   : 98
student Overall : 72.8
```

```
student id      : 1333
student Midterm : 89
student Lab Exam: 45
student Final   : 33
student Overall : 53.4
```

```
student id      : 1444
student Midterm : 67
student Lab Exam: 76
student Final   : 99
student Overall : 82.5
```

Average is 69.6

Number of the students who pass is 2

Number of the students who fail is 1