It is extremely important that you understand the programming assignments; please participate in the classroom discussion. You are expected to solve the programming assignments individually. You are encouraged to discuss with your friends. However, **<u>do not copy</u>**. Follow the submission and grading policies for full points.

File Operations and User Menu in C

The primary focus is to implementation *File* operations. Reuse HW-2 code to perform the following:

(1) Get the input values from a file named "HW3input.dat". Where,
The first line/field represents the number of students to consider.
The second line/field represents the due date (in YYYYMMDD).
The third line and beyond:
> The 1st field represents the course.
> The 2nd field represents the WSIUD.
> The 3rd field represents the submission date.
> The 4th field represents the original points before applying submission policy.

Sample (input):
10
20130829
cs460 a123b001 20130828 100.00
cs460 a123b002 20130831 100.00
cs460 a123b003 20130903   50.00
…
NOTE: "HW3input.dat" is in /usr/users/User11/drzaman/CS460/Samplecodes/

(2) After calculating the effective grades, store them in a file named "HW3output.dat".
Store only the calculated entries
The 5th field represents the calculated points after applying submission policy.

Sample (output):
3
20130829
cs460 a123b001 20130828 100.00 **100.00**
cs460 a123b002 20130831 100.00   **80.00**
cs460 a123b003 20130903   50.00   **0.00**

Design and develop an application in C to calculate the effective points depending on the submission date using the following data structures and description.

```
struct hwpoints {
    char    course[7]; /* always cs460 */
    char    wsuid[9]; /* user input: a123b456 */
    char    subdate[9]; /* user input: YYYYMMDD */
    double  points1; /* user input: 99.00 */
    double  points2; /* should be calculated */
    struct hwpoints *nextPtr; /* pointer to next (a similar struct) */
};
```

```
typedef struct hwpoints *cs460hwp; /* typedef */
int UserMenu(int *opt); /* function prototype */
void BuildList(cs460hwp hw); /* function prototype */
double CalculatePoints(char *duedt, char *subdt, double pts1); /* function prototype */
void PrintGrades(cs460hwp hw); /* function prototype */
void DisplayGrade(cs460hwp hw, char *id); /* display all values for the id */
void StoreGrades(cs460hwp hw); /* function prototype */
void ExitProg(cs460hwp hw); /* function prototype */
int LateByDays(char *duedt, char *subdt); /* function prototype */
```

Function "main"
    Driver program

Function "UserMenu"
    Display user friendly menu

    Sample (menu):
    Welcome to CS460 (Fall 2013) HW-3 Solution!
    Please select an option:
    1) Exit
    2) Print List
    3) Create List
    4) Store Grades
    5) Empty List
    Please enter a selection >

Function "BuildList"
    Create a list using the input file (see #1)

Function "CalculatePoints"
    Calculate for each and all entries
    If submitted on or before the due-date, no deduction
    Otherwise, 10% deduction per day for the first five days, after that no effective-points

Function "PrintGrades"
    Print all values for all students

Function "StoreGrades"
    Store all values in a file (see #2)

Function "DisplayGrade"
    Display all values for the given id.

Function "ExitProg"
    Terminate the program

Function "LateByDays"
    Calculate the number of late days
    This function is given and you need to use it. See below for more information.

25% Bonus Question

Implement the following functions:
void ChangeGrade(cs460hwp hw, char   *id, double new); /* store new value for the id */
void EmptyList(cs460hwp hw); /* delete all entries but do not remove the list */
char *FindMaxGradeID(cs460hwp hw); /* find the id who got the maximum grade */
Update the menu accordingly

Sample Codes:

drzaman@kirk:~/CS460/Samplecodes$ pwd
/usr/users/User11/drzaman/CS460/Samplecodes
drzaman@kirk:~/CS460/Samplecodes$ ls -ltr
-rw-r--r-- 1 drzaman drzaman 2644 Aug 23 10:59 LateByDays.c
-rw-r--r-- 1 drzaman drzaman 190 Aug 23 11:04 MyHeader.h
-rw-r--r-- 1 drzaman drzaman 378 Aug 23 11:26 Makefile
-rw-r--r-- 1 drzaman drzaman 892 Aug 27 17:50 Driver_LateByDays.c
-rwxr-xr-x 1 drzaman drzaman 6334 Aug 29 17:56 aa.exe
-rw-r--r-- 1 drzaman drzaman 862 Sep 3 10:31 HW3input.dat
drzaman@kirk:~/CS460/Samplecodes$