**Description of functions:**

1. **bool BuildStuList(char \*filename, List \*list)** to read student information from a file and store in a linked list. Ensure there is no duplicate record of student stored in the list. The function will return true if successfully read and false otherwise. A sample of the textfile is in “student.txt”.
2. **bool DeleteRecord(List \*list, char \*id)** to delete a student from the linked list based on student id. The function will return true if successfully delete and false if student cannot be found in the list.
3. **bool Display(List list, int source)** that will display information to the screen. Function return false if list is empty and true otherwise. The source variable will indicate whether to display to screen (source = 1) or file (source = 2). If write to file, use the filename “student\_result.txt” to write. A sample of each of the output option is given in text file in folder sample output. If the student’s exam\_cnt = 0, then print **“THIS STUDENT HAVEN’T TAKEN ANY EXAM YET”**.
4. **bool InsertResult(char \*filename, List \*list)** to insert student exam result to the linked list. Open the file with filename and read every record and find the student to insert the exam based on their id. A sample of the text file is in “exam.txt”. Read every record in the file and put the exam info in an exam struct variable. Then find the correct student based on id to insert the exam struct variable.
5. **bool printStatistic(List list)** that will find and print the statistics for the student list as below. Average subject taken per semester is based on how many subjects are taken averagely for one student in one semester. Similar for average credit hours earned per semester. The function will return false for empty list and true otherwise.

**Sample Output:**

**Total Students: 20**

**CS Students – 6**

**IA Students – 5**

**IB Students – 3**

**CN Students – 3**

**CT Students – 3**

**Average CGPA: 3.15670**

**Average Subjects Taken Per Semester: 3.23**

**Average Credits Earned Per Semester: 10.57**

1. **bool findEligibleFYPStudent(List list1, List \*FYPlist)** that will identify student that can register for FYP (Final Year Project). A student is eligible to register for FYP if he/she has earned at least 30 credits hours and the student has taken and passed (must obtain at least grade C) UCCD2502 Introduction to Inventive Problem Solving and UCCD2513 Mini Project. Call **Display(FYPlist, 1)** in main() after function call to display FYPlist. If FYPlist is empty print message **“There is no student that is eligible to take FYP”**. Assume that list FYPlist is empty when pass to function and list will not be changed after function call. The function will return false for empty list1 and true otherwise.
2. **bool identifyGoodPoorStudent(List list1, List \*goodList, List \*poorList)** that will identify student with good result and poor result in list1. A student is considered to have good result if he/she can get gpa >= 3.50000 for at least 3 trimesters in all the exams and CGPA >= 3.50000 and no fail subject. A poor student is a student that get gpa <= 2.0000 for at least 3 trimester and CGPA <= 2.0000. Copy all the good result students to list goodList and all the poor students to list poorList. Call function Display(goodList, 1) and Display(poorList, 1) in main() to print goodList and poorList in the screen after calling the function. Assume goodList and poorList are empty when pass to function and list1 content will not be changed after function call. If either the goodList or the poorList is empty after function all, then print message **“There is no student in good list”** or **“There is no student in poor list”**. The function will return false for empty list1 and true otherwise. (Note: If a student has taken < 3 exams then no need to check if the student belongs to good or poor list.)
3. **int menu()** function that contain menu with choice from 1 to 8 above to let user choose that task. Function will return the choice chosen. Make sure user can continuously choose for the menu until exit choice is chosen. Sample menu is displayed below:

**1. Read file.**

**2. Delete record.**

**3. Insert past exam result.**

**4. Display Output**

**5. Print Statistic**

**6. Find Eligible FYP Student**

**7. Identify Good and Poor Result Student**

**8. Exit.**