**[Help] Section**

* File: [Help]\_CaculateAmount.cpp: This file contains functions to calculate the amount of number of elements in the linked list or calculate the GPA of
  + The “CaculateGPA\_1\_Student” function calculates the total score of all students, then divides it by the number of subjects studied by the student and returns the result.
  + The “amountClass” function to calculate the number of classes in the listed Class.
  + The “amountCourseOfStudent” function to calculate the number of courses of a student or an all-student in class.
  + The “amountStudentOfCourse” function calculates the number of course students.
  + The “amountStudentOfClass” function calculates the number of class students.
* File: [Help]\_Check.cpp: This file contains the function to check the existence of a file or an element in a linked list and to check whether the value is valid or not.
  + The “checkFile” function checks if the file exists or not, if yes, return true, return false.
  + The “isDouble” function checks if the number is of type double.
  + The “checkExistence\_OfCourse” function checks if the course in the list course of students exists or not, if yes, return Cours, return nullptr.
* File: [Help]\_Choose.cpp: This file contains a function that displays choices and the user selects by pressing enter and returns the selected choices. The x and y variables are the coordinates to start showing this selection in all functions below.
  + The “chooseYearbyOption\_XY”: shows the years and the end of the selection list is a BACK selection. If the user selects a year, that year is returned, and if Back is selected, nullptr is returned.
  + The “chooseClassrbyOption\_XY”: function shows the class in the year and the end of the selection list is a back selection. If the user selects a class, that class is returned, and if Back is selected, nullptr is returned.
  + The “chooseClass\_inAllYear\_byOption\_XY” function same as the “chooseClassrbyOption\_XY” function but it shows all classes in the information system.
  + The “chooseSemesterbyOption\_XY”: function shows the Semesters in the year and the end of the selection list is a Back selection. If the user selects any Semester, that Semester is returned, and if Back is selected, nullptr is returned.
  + The “chooseCoursebyOption\_XY”: function shows the Courses and the end of the selection list is a Back selection. If the user selects any Course, that Course is returned, and if Back is selected, nullptr is returned.
  + The “ChooseStudentOfClass” function displays a table containing three columns: No, ID, and Name. if the user selects a cell then the student of that row will be selected and if the user press ESC then return.
* File:[Help]\_Create.cpp: This file contains the function to create a name, a linked list, or a table as a two-dimensional array. Moreover, this file also includes a function to get the first character in a string or format a Mark.
  + The "FormatMark" function converts scores from numbers to strings. if the score is valid, then switch, if not, then change to X.
  + The "getFirstChar" function takes the first character of each word in a string and concatenates it into a string and returns that string.
  + The “createNameFile” function "generates a path to a given file by directory name, subdirectory, filename, and file type.
  + The “CreateSB\_ofStudent\_inClass” function imports the final marks of a student's course into the transcript
  + The “createSBC\_ofClass” function imports the final marks of all students’ courses into the transcript and calculates the GPA of all students.
* File: [Help]\_Find.cpp: This file contains functions to search for an element on request, if not found returns nullptr.
  + The “findStudentbyID” function will find the student in the system, if found then return the student, and if not found then return nullptr.
  + The “find\_StudentOfCOurse” function will find the Course’s Student with Student’s ID, if yes, return that student, otherwise return nullptr.

**[Course] Section**

* File: [Course]\_Interface.cpp This file includes functions that display choices so the user can choose the functionality they want, such as viewing the list course in class.
  + The “Interface\_ViewScoreBoardCourse” function will let the user choose the year, then select the semester in that year, and finally select the subject in that semester to display the scoreboard.
  + The “Interface\_ViewStudentCourse” function allows users to choose like the function above, but after selecting, it will display a list of students in the course.
  + The “Interface\_ViewCourseOfAStudent” function will let the user choose a class in the list of classes, then select a student in that class to display the list course of that student.
* File: [Course]\_Menu: This file includes functions that display menus so the user can choose the functionality they want, such as updating or viewing the list course in class.
  + The “Menu\_Staff\_View” function display choices that staff can view and select, including a list scoreboard, a list student, a list class, and a list course.
  + The “Menu\_ScoreBoard\_View” function allows the user to choose one of three choices, including viewing the scoreboard of all class students, viewing the scoreboard of all course students, or back to Menu Staff View.
  + The “Menu\_ListStudent\_View” function allows the user to choose one of three choices, including viewing all class students, viewing all course students, or back to Menu Staff View.
  + The “Menu\_Listcourse\_View” function also has three options, viewing courses of each year's school, viewing all courses in a semester, or back to Menu Staff View
  + The “Menu\_Import\_Export” function also has three options, import the scoreboard of a course, export the list of students in a course, or back to Menu Staff View.
* File [Course]\_Update.cpp: This file contains functions to modify the scoreboard of a student if it has any mistakes or enter the score into the scoreboard.
  + The “updateSBC” function will display the scoreboard of a course, then it allows the user to choose the cell which wants to update by pressing enter and entering a new score. Also, if the user press ESC, then finish the function.
  + The “UpdateStudentResult” function allows the user to choose the course, that the user wants to update in the current semester. Then, it will call the updateSBC function.
* File: [Course]\_View.cpp: This file contains functions that allow the user to choose a choice in the list of the choice and then display it on screen.
  + The “ViewStudentCourse” displays a table containing the list of students in a course with three columns: No, ID, and Student’s Name.
  + The “ViewScoreBoardCourse” function displays a table containing the list of students’ information and student scoreboard in a course with seven columns: No, ID, Student’s Name, MidMark, FinalMark, OtherMark, and TotalMark.
  + The “ViewCourseOfAStudent” function displays a table containing the list of courses’ information in a semester with columns: No, ID, Course’s Name, Credits, Day, Session, Room, and Teacher Name.

**[Class] Section**

* File: [Class]\_Interface.cpp
  + The “Interface\_ViewScoreBoardClass” function will let the user choose a class in the system, then select the year, and finally select the semester in that year to display all students’ scoreboards of each course.
  + The “Interface\_ViewStudentClass” function allows users to choose a class in the system, and then it will display a list of students in the class.
* File: [Class]\_View.cpp: This file contains functions that allow the user to choose a choice in the list of the choice and then display it on screen.
  + The “ViewStudentClass” displays a table containing the list of students in a class with three columns: No, ID, and Student’s Name.
  + The “ViewScoreBoardClass” function displays a table containing the list of students’ information and student scoreboard in a class with eight columns: No, ID, Cousre’s Name, MidMark, FinalMark, OtherMark, TotalMark, and GPA.
  + The “ViewClass” function displays a table containing the list of class information in a year, that uses selected with two columns: No, Class Name.

**[Student] Section**

* File [Student]\_Interface.cpp: This file contains student functions that allow the student to choose a choice in the list of the choice and then display it on screen.
  + The “Interface\_ViewCoursesOfUser” function will allow the user to choose a year school or back to the student main menu, then select a semester in that year, and finish it will display all the courses in the semester.
  + The “Interface\_ViewScoreBoardOfUser” function will allow the user to choose a year school or back to the student main menu, then select a semester in that year, and finish it will display the scoreboard of that student in all the courses of the semester.
* File: [Students]\_View.cpp: This file contains view functions that allow the user to choose a choice in the list of the choice and then display it on screen.
  + The “ViewCourseOfUser” function displays a table containing the list of courses’ information in a semester with columns: No, ID, Course’s Name, Credits, Day, Session, Room, and Teacher Name.
  + The “ViewScoreBoard” function displays a table containing the list of students’ information and student scoreboard in a course with seven columns: No, ID, Course’s Name, MidMark, FinalMark, OtherMark, and TotalMark.