***Student Marks System Report Doc***

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***Data Structure used:***

*A linked list has been used to load the data from the file into the memory.*

*Each node of the linked list contains:*

*1.A character array to store the name of the student.*

*2.An integer array to store the marks.*

*Number of subjects is stored in an integer variable and the subject names are stored in a 2D character array which are passed as parameters to the necessary functions.*

***Reason for the choice of Data Structure:***

*Linked list is an efficient way of storing unsorted data and the best part is that nodes can be inserted and deleted with much less overhead when compared to other data structures like arrays.*

*The data from the input file is loaded into the memory as a linked list and any operations performed by user are performed on the list. The changes are reflected in the file before termination of application by flushing the list data into the file.*

***Top tasks:***

***Changing a student's name :*** *The name field of the corresponding node is modified and reflected in the file before termination of program.*

***Changing a student's marks:*** *The array containing the marks of the corresponding student is modified and reflected.*

***Adding/Deleting a student :*** *The operation is performed on the linked list by adding/deleting the corresponding node and reflected in file at termination.*

***Displaying list of students or a particular student:*** *The linked list or the corresponding node is displayed along with the subject names.*

***Displaying maximum marks of a student:*** *The maximum from the array of marks is displayed along with the corresponding subject name.*

***All tasks in level 1 and half of level 2 have been implemented.***

***Handling File Operations:***

*Data is modified in memory. This approach is better because data modification in file is a costly operation and causes an unnecessary overhead. Instead the data can be modified in memory and reflected in file before termination.*