SURVIVAL OF THE FITTEST

OVERVIEW

This C program reads a series of integers from a text file and inserts them into a singly linked list. After each insertion, the program sorts the linked list in ascending order using the insertion sort algorithm and calculates the median of the sorted list. The program demonstrates the following functionality:

1. LINKED LIST STRUCTURE (STRUCT NODE):

- The program defines a structure called **Node** to represent a node in the linked list. Each node contains an integer data value and a pointer to the next node

2. INSERTION AT THE BEGINNING (INSERT FUNCTION):

- The **insert** function inserts a new node with a given data value at the beginning of the linked list.
- It dynamically allocates memory for the new node using **malloc**, initializes its data and next pointer, and updates the head pointer to point to the new node.

3. SORTING THE LINKED LIST (SORTLINKEDLIST FUNCTION):

- The **sortLinkedList** function sorts the linked list in ascending order using the insertion sort algorithm.
- It creates a new linked list (**sortedList**) to store the sorted nodes.
- It iterates through the original list, removing nodes one by one and inserting them into the **sortedList** at the appropriate position to maintain the sorted order.
- Finally, it updates the head pointer to point to the sorted list.

4. CALCULATING THE MEDIAN (CALCULATEMEDIAN FUNCTION):

- The **calculateMedian** function calculates the median of the linked list.
- It counts the number of nodes in the list to determine if the count is even or odd.
- If the count is odd, it returns the middle value directly.
- If the count is even, it returns the average of the two middle values.

5. PRINTING THE LINKED LIST (PRINTLIST FUNCTION):

- The **printList** function prints the data values of the linked list in their current order.

6. MAIN FUNCTION (MAIN):

- The **main** function is the entry point of the program.
- It opens the file "Test03.txt" in read mode to read a series of integers.
- It inserts each integer into the linked list and sorts the list using the **sortLinkedList** function.
- After each insertion and sorting, it calculates and prints the median using the **calculateMedian** function.
- Finally, it closes the file and returns.