DSA THEORY (3B) 2020.
ASSIGNMENT 02
ALGORITHM AND CODE OUTPUTS.

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Program is getting Students Names from the file and storing them in the link list. While initialing scores of students as NULL. Then user is prompt with the student Name for entering the scores for respective students. While taking input of scores into the link list the sum of scores and average of scores of respective student is calculated and stored in the node of link list.

A node is having seven (7) data variables.

- Student name (string)
- score1, score2 , score3 and score4 (int)
- scoreTotal (int)
- averageScore (int)

The program have three parts. Reading names from file and inserting in list, Taking input for scores and Printing the final list.

Condition: Students Name should be present in file.

Output: Printing and calculating the sum, average and all scores of students.

Program Algorithm:

//.... Main

START : int main()

{   Load File = "input.txt"

         Open File ="input.txt"

         Load string StudentName;

         Create list object = StudentName;

         START While (!File.eof())

         {   getline(File, StudentName , '\n');

         StudentList.addNodeLast(StudentName);

         }   END While (!File.eof())

                  StudentList.inputScores();

                  StudentList.printList();

} End int main()

```
// … inserting nodes in list (student names and else everthing to null)

START : Void AddNodeLast(string addDataLast)

{        node n = new node;

         n->studentName = addDataLast;

         n->score1 = null;

         n->score2 = null;

         n->score3 = null;

         n->score4 = null;

         n->scoreTotal=null;

         n->averageScore=null;

         n->next = NULL;

         temp = n;

         if :  head != NULL

                  tail->next = temp;

                  tail = temp;

                  counter++;

         end if

         else : head = temp;

                  tail = temp;

                  counter++;

         end else

} END: Void AddNodeLast(string addDataLast)
```

// .. taking input from user function. And calculating sum and average

START Void InputScores()

```
{

        temp = head;

        START : while (temp != NULL)

        {

                cin >> temp->score1;

                cin >> temp->score2;

                cin >> temp->score3;

                cin >> temp->score4;

                temp->scoreTotal = temp->score1 + temp->score2 + temp->score3 +

                temp->score4;

                temp->averageScore  = temp->scoreTotal/4;

                temp = temp->next;

        } END : while (temp != NULL)
```

} END : Void InputScores()

//… printing the final list.

START Void printList()

```
{       temp = head;

        START while : (temp!=NULL)

        print:   temp->studentName, temp->score1, temp->score2, temp->score3,

                temp->score4, temp->scoreTotal, temp->averageScore;

                END print

                temp=temp->next;

        END while : (temp!=NULL)
```

} END Void printList()

Code output Screenshot:

```
C:\Users\user\Desktop\semester 3\DSA Theory\Assignments\Assignment 02\cs182019\cs182019.exe
Enter Scores For : Albert Einstein
Score-1 :52
Score-2 :67
Score-3 :63
Score-4 :0

Enter Scores For : Steve Abrew
Score-1 :90
Score-2 :86
Score-3 :90
Score-4 :93

Enter Scores For : David Nagasake
Score-1 :100
Score-2 :85
Score-3 :93
Score-4 :89

Enter Scores For : Mike Black
Score-1 :81
Score-2 :87
Score-3 :81
Score-4 :85




Number of Students :4

STUDENT NAME      SCORE-1 SCORE-2 SCORE-3 SCORE-4 TOTAL-SCORE      AVERAGE-SCORE
------------------------------------------------------------------------------
Albert Einstein     52      67      63      0       182              45
Steve Abrew         90      86      90      93      359              89
David Nagasake      100     85      93      89      367              91
Mike Black          81      87      81      85      334              83


Press any key to exit.....
```

X --X

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