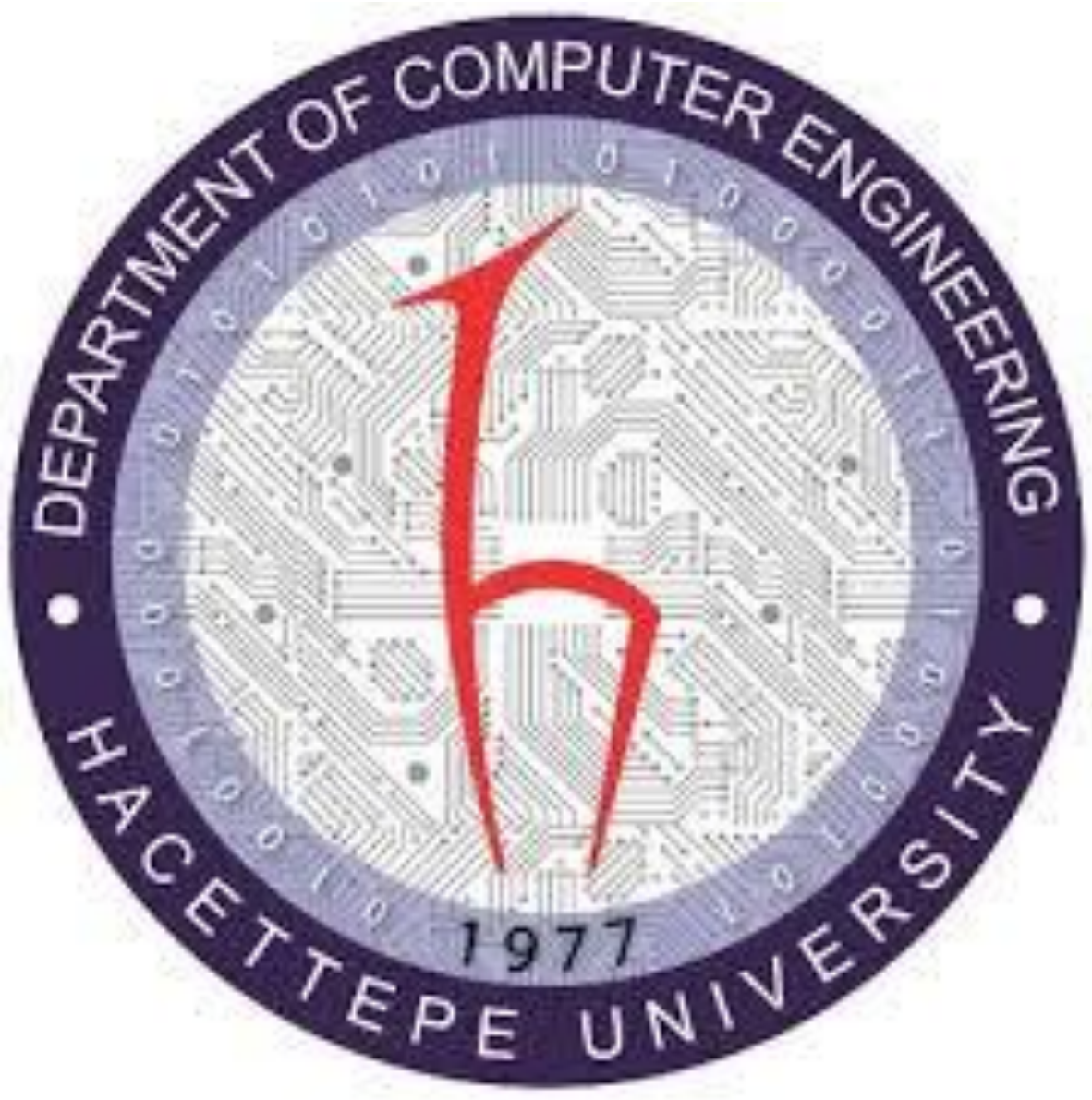

ASSIGNMENT 3

Subject : Linked Lists

TAs: Alaettin Uçan, Merve Ozdes, Pelin Canbay, Selma Dilek

Programming Lanuage: C++ Due Date: 16.12.2018 23:59:59

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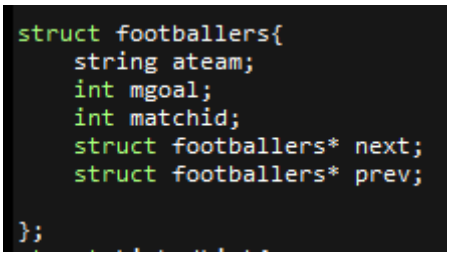
INTRODUCTION / AIM:

In this assignment, we are expected to use linked list which is one of the linear data structures.Basically linked list is a list that have nodes and nodes have a reference to the next and previous link. This is called double linked list.We will hold footballers as a linked list and footballers's matches as a another linked list.

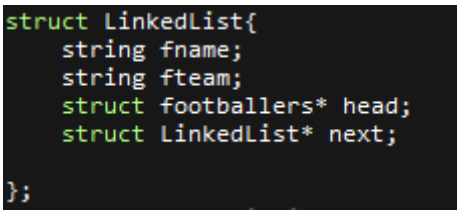
PROBLEM DEFINITION:

Our task is desinging a linked list which stores footbaleer's name, team of that footballers , and a pointer to another linked list which hold all matches of the footballer.

Structs That I Used



My footballers struct which have away team name, matchid , minute of goal, pointer to next node, pointer to prev node.



My LinkedList struct which have footballers name,team of that footballer, pointer to his matches ,and a pointer which points to the next node.

Functions That I Used

void fekle(string fname,string fteam,string ateam,int mgoal,int matchid)

My function which takes the name,team,away team, minute of goal, matchid of the given footballer and adds him into the linkedlist.If this footballer already exist it adds the given match into footballers second linked list ascending to their match id.

vector<string> split(string str, char delimiter)

My split function which takes given string, line and splits the given string from the delimiters and returns a array which holds the substrings of the given string.

int goalFinder()

My goal finde function which counts the goals in the first and second half then compares them and return 0 if first half goals is bigger than second half, returns 1 if second half goals is bigger than first goal.

string mostScorer()

My most scorer function which finds the footballers with the most number of goals and returns that string.

string hTricks()

My hat tricks finder function which finds the footballers who scored hattrick.If they have 3+ goal on the same match it means it is a hat trick.

set<string> Teams()

My teams function which gets the all teams in the league and holds them into set.

void footballerfinder(string fname,ofstream& outputfile)

My footballer function which finds the footballer with the given name and prints that footballers matches and details.

set<int> matchfinder(string fname)

My match finder function which gets the matches of given footballer.

My Detailed Algorithm

My program starts with taking input files and opening them.And then gets the lines in these inputs and loads them into my linkedlist. There before adding new node to linkedlist it checks the index that the node is going to be placed.Before doing that it also checks if this footballer is on the linked or not.If yes it adds the new match to the footballers double linked list ascending to his match id.If it is his first match, it finds the correct index using his name and finds the correct index , and than replaces that node.If it is going to be replaced between 2 nodes , now first node points to our new node, our new node points to next node.If the name of the footballer is the biggets, it goes to end of the list and makes the previous node points to himself.If it is the lowest sequence name, our global linked list pointer points to our new node and new node points to previous new node.After placing footballers and their matches, now we get operations line by line.At first we print matches of given footballer in operations file.Program finds given footballers, and prints their match ids, away teams name,goals scored in that match and goal's minutes ascending to their match id.And then our program gets the second line which prints the match id's of matches that footballer played on season using next pointer.Only indivicual id's will be printed in this state.And at last our program prints the wanted footballers's matches descending to their match id using previous pointer which points to previous match.After performing all of these program ends.