**שפת סי – מועד ב'**

**מגיש דוד מוסייב 319455119**

#define \_CRT\_SECURE\_NO\_WARNINGS

#define TRUE 1

#define FALSE 0

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#include <time.h>

typedef struct date

{

int day;

int month;

int year;

}date;

typedef struct player

{

int id;

char\* name;

int shirtDigit;

date birthDate;

}player;

typedef struct team

{

char\* teamUniqueName;

int maxPlayers;

int playerCounter;

player\* playerList;

int winCounter;

}team;

void readPlayer(player\* newPlayer);//initialize a new player stats into Data Base

void initTeam(team \*newTeam);//initialize a new team stats into Data Base

void addPlayer(team \*editTeam);//add a new player to a team

team\* maxSuccees(team \*teamList, int teamCount);//return the team with the highiest number of wins

player\* nameLikeA(team \*checkThisTeam, int \*arrANameSize);//return an array of players in with first letter A in thier names,the players in the same team

int isBirthday(date d);//check if this date equilant to this day

void printPlayer(player checkThisPlayer);//check this player and print his details

void printTeam(team checkThisTeam);//check this team and print it details

void main()

{

//arg initialization

int i=0,j=0,numOfteams = 0;

team \*teamList;

//team list initializtion

printf("\nHello,\nEnter number of teams you want to enter:");

scanf("%d", &numOfteams);//input:number of teams

teamList = (team\*)calloc(numOfteams, sizeof(team));//memory allocation for team list

//initialzie every team with 2 players and show team info

for (i = 0; i < numOfteams; i++)

{

initTeam(teamList + i);//create a new team

for (j = 0; j < 2; j++)

{

addPlayer(teamList + i);//add new player to the team -Twice

}

printTeam(\*(teamList + i));//print the details about the team

}

printf("\nThe team with highest Win rait is:%s",(maxSuccees(teamList, numOfteams)->teamUniqueName));//which team has the most wins

//free mem teams

free(teamList);

}

//initialize a new player stats into Data Base

void readPlayer(player\* newPlayer)

{

//input the Name of the new player

printf("\nEnter the Name of the player:");

newPlayer->name = (char\*)calloc(1,sizeof(char));

scanf("%s", newPlayer->name);

//input of ID of the new player

printf("\nEnter the ID of the player:");

scanf("%d", &newPlayer->id);

//input the digit of the new player

printf("\nEnter the T-shirt Digit of the player:");

scanf("%d", &newPlayer->shirtDigit);

//input Date of birth of the new player

printf("\nEnter the Birth Date of the player:(dd mm yy)");

scanf("%d %d %d", &newPlayer->birthDate.day, &newPlayer->birthDate.month, &newPlayer->birthDate.year);

}

//initialize a new team stats into Data Base

void initTeam(team \*newTeam)

{

//input Name of the team

printf("\nEnter the Name of the Team:");

newTeam->teamUniqueName = (char\*)calloc(1, sizeof(char));

scanf("%s", newTeam->teamUniqueName);

//input Max number of players

printf("\nEnter the Max count of the number of players in this team:");

scanf("%d", &newTeam->maxPlayers);

//memory allocation for the Max number of players

newTeam->playerList = (player\*)calloc(newTeam->maxPlayers, sizeof(player));

}

//add a new player to a team

void addPlayer(team \*editTeam)

{

if (editTeam->playerCounter == editTeam->maxPlayers)//if the team is full

{

return;

}

else//if the team not full

{

readPlayer((editTeam->playerList) + editTeam->playerCounter);//add new player to location of 0+num of players

editTeam->playerCounter++;//count the new player +1

}

}

//return the team with the highiest number of wins

team\* maxSuccees(team \*teamList, int teamCount)//return the team with the highiest number of wins

{

if (teamCount == 0)//exit statement

{

return teamList+teamCount;

}

if (((teamList)+teamCount)->winCounter >= maxSuccees((teamList), teamCount - 1)->winCounter)

{

return((teamList+teamCount-1));//if this team has bigger rate of wins - return it

}

else

{

return maxSuccees((teamList), teamCount - 1);//else return the team with the bigger rate of wins with a list that less by 1 of this list size

}

}

//return an array of players in with first letter A in thier names,the players in the same team

player\* nameLikeA(team \*checkThisTeam,int \*arrANameSize)

{

//tempory team for being an A names team

team \*aTeam = (team\*)calloc(1, sizeof(team));

aTeam->playerList = (player\*)calloc(checkThisTeam->playerCounter, sizeof(player));

int i = 0, aCounter = 0;//initialize the counter

while (i < checkThisTeam->playerCounter)//check all the players in the team

{

if ((checkThisTeam->playerList+i)->name[0]=='a' || (checkThisTeam->playerList + i)->name[0]=='A')//if its mactched so

{

//add to the array

\*((aTeam->playerList) + aCounter) = \*(checkThisTeam->playerList + i);

aCounter++;

}

i++;//go to next one

}

player \*returnList= (player\*)realloc(aTeam->playerList, (aCounter) \* sizeof(player));//copy all players to new array in the real size

free(aTeam);//free the tmp team memory

\*arrANameSize = aCounter;//connect to pointer the size of the 'A' names array

return returnList;

}

//check if this date equilant to this day

int isBirthday(date d)

{

//real time initialize

time\_t now = time(0);

tm \*ltm = localtime(&now);

if (ltm->tm\_mday == d.day && ((ltm->tm\_mon)+1) == d.month && (ltm->tm\_year+1900) == d.year)//if there is a match to today date

{

return TRUE;

}

else//if there is NOT a match to today date

{

return FALSE;

}

}

//check this player and print his details

void printPlayer(player checkThisPlayer)

{

printf("\nPlayer:\nID:%d", checkThisPlayer.id);//show id

printf("\nName:%s", checkThisPlayer.name);//show name

printf("\nShirt-Digit:%d", checkThisPlayer.shirtDigit);//show shirt digit

printf("\nBirth date:%d/%d/%d", checkThisPlayer.birthDate.day, checkThisPlayer.birthDate.month, checkThisPlayer.birthDate.year);//show birth date

if (isBirthday(checkThisPlayer.birthDate) == TRUE)//if its his birthdate

{

printf("\nToday his Birth Date");

}

else//if its not his birthdate

{

printf("\nToday it's NOT his Birth Date");

}

}

//check this team and print it details

void printTeam(team checkThisTeam)

{

printf("\nTeam:\nName:%s",checkThisTeam.teamUniqueName);//name of the team

printf("\nNumber of players in present:%d", checkThisTeam.playerCounter);//number of players

printf("\nNumber of Wins:%d", checkThisTeam.winCounter);//how many wins

int i = 0;

while (i < checkThisTeam.playerCounter)//print the details of all team players

{

printPlayer(\*(checkThisTeam.playerList+i));

i++;

printf("\n");

}

}