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| **Assignment # 12**  ***Session*: Spring 2022 *Total marks*: 100**  ***Name*** : ***\_NIMRA MAQBOOL\_\_ Roll number* : BSCE21012** |

***Submission:***

• *Email instructor or TA if there are any questions. You cannot look at others’ solutions or use others’ solutions, however, you can discuss it with each other. Plagiarism will be dealt with according to the course policy.*

*• Submission after due time will not be accepted.*

**There should be a Report explaining your code and highlighting results. Follow this naming convention for your report RollNumber\_Assignment#.pdf e.g BSCE21001\_Assignment12.pdf.**

**Note:** From this assignment onwards, you will create default and parameterized constructor/s and destructor for every class.

### **Problem** (Already discussed in class)

Cricket tournament scheduling aspect of the tournament, where program will take input of number of departments and batches in each of them.

Considering separate team for each department, degree and it’s year of enrolment.

It will tell as output number of teams in each group and their matches schedule.

And then how many top will qualify from each group and what would be knockout stage about.

**Sample:**

[**https://score7.io/kwarvahun6/overview**](https://score7.io/kwarvahun6/overview)

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| **Function.h:**  // // Created by Lenovo on 6/4/2022. // #ifndef INC\_2022\_SPRING\_CE\_OOP\_WEEK12\_ASSIGNMENT12\_BSCE21012\_FUNCTIONS\_H #define INC\_2022\_SPRING\_CE\_OOP\_WEEK12\_ASSIGNMENT12\_BSCE21012\_FUNCTIONS\_H  #include <iostream> #include <string> #include <iomanip> #include <fstream>  using namespace std;  class teams { public:  string departmentName;  string playerName;  string captainName;  int numberOfBowler;  int numberOfBatsman;  int numberOfAllRounder;  int reservedPlayers;  int currentlyPlaying;  int ageOfPlayer;  int totalNumberOfTeamPlayer;  long int phoneNumber;  string enrollmentYear;  string email;  string rollNumber;  string category; public:  teams() {  departmentName = " ";  numberOfAllRounder = 0;  numberOfBatsman = 0;  numberOfBowler = 0;  playerName = " ";  captainName = " ";  reservedPlayers = 0;  currentlyPlaying = 0;  ageOfPlayer = 0;  email = " ";  rollNumber = " ";  enrollmentYear = " ";  phoneNumber = 0;  totalNumberOfTeamPlayer = 0;  category = " ";  }   teams(string DepartmentName, string PlayerName, string CaptainName, int NumberOfBowler,  int NumberOfBatsman, int NumberOfAllRounder, int ReservedPlayers, int CurrentlyPlaying, int AgeOfPlayer,  long int PhoneNumber, string EnrollmentYEar, string Email, string RollNumber, int TotalNumberOfTeamPlayer,  string Category  ) {  departmentName = DepartmentName;  playerName = PlayerName;  captainName = CaptainName;  numberOfBowler = NumberOfBowler;  numberOfBatsman = NumberOfBatsman;  numberOfAllRounder = NumberOfAllRounder;  reservedPlayers = ReservedPlayers;  currentlyPlaying = CurrentlyPlaying;  ageOfPlayer = AgeOfPlayer;  phoneNumber = PhoneNumber;  enrollmentYear = EnrollmentYEar;  email = Email;  rollNumber = RollNumber;  totalNumberOfTeamPlayer = TotalNumberOfTeamPlayer;  category = Category;  }   void info() {  for (int i = 0; i < 7; i++) {  cout << "ENTER DEPARTMENT NAME = ";  cin.ignore();  getline(cin, departmentName);  fstream File;  File.open("playerInfo", ios::app);  if (!File.is\_open()) {  cout << "Error while creating the file";  } else {  cout << "ENTER TOTAL NUMBER OF TEAM PLAYERS = ";  cin >> totalNumberOfTeamPlayer;  cout << "ENTER NUMBER OF PLAYERS CURRENTLY PLAYING = ";  cin >> currentlyPlaying;  cout << "ENTER NUMBER OF RESERVED PLAYERS = ";  cin >> reservedPlayers;  cout << "ENTER NUMBER OF BOWLERS = ";  cin >> numberOfBowler;  cout << "ENTER NUMBER OF BATSMAN = ";  cin >> numberOfBatsman;  cout << "ENTER NUMBER OF ALL ROUNDER = ";  cin >> numberOfAllRounder;  File << "TOTAL NUMBER OF PLAYERS = " << totalNumberOfTeamPlayer << endl;  File << "NUMBER OF CURRENTLY PLAYING PLAYERS = " << currentlyPlaying << endl;  File << "NUMBER OF RESERVED PLAYING PLAYERS = " << reservedPlayers << endl;  File << "NUMBER OF BOWLERS = " << numberOfBowler << endl;  File << "NUMBER OF BATSMAN = " << numberOfBatsman << endl;  File << "NUMBER OF ALL ROUNDER = " << numberOfAllRounder << endl;  for (int i = 0; i < currentlyPlaying; i++) {  cout << "ENTER NAME OF PLAYER = ";  cin >> playerName;  cout << "ENTER PLAYER AGE = ";  cin >> ageOfPlayer;  cout << "ENTER PLAYER PHONE NUMBER = ";  cin >> phoneNumber;  cout << "ENTER ENROLLMENT YEAR = ";  cin >> enrollmentYear;  cout << "ENTER EMAIL : ";  cin >> email;  cout << "ENTER ROLL NUMBER = ";  cin >> rollNumber;  cout << "ENTER CATEGORY OF PLAYER = ";  cin >> category;  File << "PLAYER NAME = " << setw(20) << playerName << setw(20) << "AGE = " << setw(20)  << ageOfPlayer << setw(20) << "PHONE NUMBER = " << setw(20) << phoneNumber << setw(20)  << "ENROLLMENT YEAR = " << setw(20) << enrollmentYear << setw(20) << "ROLL NUMBER = "  << setw(20) << rollNumber << setw(20) << "EMAIL = " << setw(20) << email << setw(20)  << "CATEGORY : " << setw(20) << category << endl;  }  for (int i = 0; i < reservedPlayers; i++) {  cout << "ENTER NAME OF PLAYER = ";  cin >> playerName;  cout << "ENTER PLAYER AGE = ";  cin >> ageOfPlayer;  cout << "ENTER PLAYER PHONE NUMBER = ";  cin >> phoneNumber;  cout << "ENTER ENROLLMENT YEAR = ";  cin >> enrollmentYear;  cout << "ENTER EMAIL : ";  cin >> email;  cout << "ENTER ROLL NUMBER = ";  cin >> rollNumber;  cout << "ENTER CATEGORY OF PLAYER = ";  cin >> category;  File << "PLAYER NAME = " << setw(20) << playerName << setw(20) << "AGE = " << setw(20)  << ageOfPlayer << setw(20) << "PHONE NUMBER = " << setw(20) << phoneNumber << setw(20)  << "ENROLLMENT YEAR = " << setw(20) << enrollmentYear << setw(20) << "ROLL NUMBER = "  << setw(20) << rollNumber << setw(20) << "EMAIL = " << setw(20) << email << setw(20)  << "CATEGORY : " << setw(20) << category << endl;  }  cout << "ENTER CAPTAIN NAME = ";  cin >> captainName;  }  cout << "File created successfully";  File.close();  }  } };  class QuarterMatch { protected:  int count;  string time;  int matches;  int numberOfTeams;  int points[99];  float avg[999];  char teamsName[890]; public:  teams Teams;   QuarterMatch() {  time = " ";  matches = 0;  numberOfTeams = 0;  count = 0;  }   QuarterMatch(string Time, int Matches, int NumberOfTeams, int Count) {  time = Time;  matches = Matches;  numberOfTeams = NumberOfTeams;  count = Count;  }   void matchTiming() {  int opt;  int opt1;  for (int i = 0; i < 7; i++) {  cout << "ENTER DEPARTMENT NAME = ";  cin.ignore();  getline(cin, Teams.departmentName);  cout << "WHICH TIME DO YOU WANT TO CHOOSE?" << "\nANY RECOMMENDATIONS?" << endl;  cout << "ENTER 1 FOR YES AND 0 FOR NO.." << endl;  cin >> opt;  if (opt == 0) {  cout << "YOU CHOOSE NO " << endl;  cout << "NOW THE TIME SLOTS ARE GIVEN BELOW." << endl;  cout << "1.10-06-2021 AT 10 IN THE MORNING." << endl;  cout << "2.10-06-2021 AT 12 IN THE NOON." << endl;  cout << "3.10-06-2021 AT 2 IN THE EVENING." << endl;  cout << "4.10-06-2021 AT 5 IN THE MORNING." << endl;  cout << "5.11-06-2021 AT 10 IN THE NOON." << endl;  cout << "6.11-06-2021 AT 12 IN THE EVENING." << endl;  cout << "7.11-06-2021 AT 2 IN THE EVENING." << endl;  cout << "8.11-06-2021 AT 5 IN THE NOON." << endl;  cout << "9.12-06-2021 AT 10 IN THE EVENING." << endl;  cout << "10.12-06-2021 AT 12 IN THE EVENING." << endl;  cout << "11.12-06-2021 AT 2 IN THE EVENING." << endl;  cout << "12.12-06-2021 AT 5 IN THE EVENING." << endl;  cout << "13.EXIT.." << endl;  cin >> opt1;  if (opt1 == 1) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 2) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 3) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 4) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 5) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 6) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 7) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 8) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 9) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 10) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 11) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 12) {  cout << "the time slot to " << Teams.departmentName << "is given " << endl;  }  if (opt1 == 13) {  cout << "YOU CHOOSE TO EXIT." << endl;  }  } else {  cout << "ENTER TIME BETWEEN 10 TO 12 OF JULY." << endl;  cin.ignore();  getline(cin, time);  }  }  }   void pointsOfMatch() {  int min;  fstream File1;  File1.open("startingMatchInfo", ios::app);  if (!File1.is\_open()) {  cout << "Error while creating the file";  } else {  for (int i = 0; i < 7; i++) {  cout << "ENTER TEAM NAME = ";  cin.ignore();  cin >> teamsName[i];  File1 << teamsName[i];  cout << "ENTER TEAM POINTS = ";  cin >> points[i];  File1 << points[i];  cout << "THE " << teamsName[i] << " HAS SCORED " << points[i] << " IN QUARTER MATCH. " << endl;  File1 << "THE " << teamsName[i] << " HAS SCORED " << points[i] << " IN QUARTER MATCH. " << endl;  min = points[0];  }  for (int i = 0; i < 7; i++) {  if (points[i] > points[i + 1]) {  count = points[i] - points[i + 1];  cout << "THE " << teamsName[i] << " HAS WON THE MATCH BY " << count << endl;  File1 << "THE " << teamsName[i] << " HAS WON THE MATCH BY " << count << endl;  } else {  count = points[i + 1] - points[i];  cout << "THE " << teamsName[i + 1] << " HAS WON THE MATCH BY " << count << endl;  File1 << "THE " << teamsName[i + 1] << " HAS WON THE MATCH BY " << count << endl;  }  }  for (int i = 0; i < 7; i++) {  if (points[i] < min) {  min = points[i];  cout << "the team " << teamsName[i] << " having points " << min << "is out of the tournament"  << endl;  File1 << "the team " << teamsName[i] << " having points " << min << "is out of the tournament"  << endl;  }  }  File1.close();  }  }  void pointsOfQuarter(){   fstream File2;  File2.open("QuarterMatchInfo", ios::app);  if (!File2.is\_open()) {  cout << "Error while creating the file";  } else {  for(int i=0;i<6;i++){  cout << "ENTER TEAM NAME = ";  cin.ignore();  cin >> teamsName[i];  File2 << teamsName[i];  cout << "ENTER TEAM POINTS = ";  cin >> points[i];  File2 << points[i];  cout << "THE " << teamsName[i] << " HAS SCORED " << points[i] << " IN MATCH. " << endl;  File2 << "THE " << teamsName[i] << " HAS SCORED " << points[i] << " IN MATCH. " << endl;  }  if (points[0] > points[1]) {  cout << "THE TEAM " << teamsName[0] << " having points" << points[0] << " has won " << endl;  File2 << "THE TEAM " << teamsName[0] << " having points" << points[0] << " has won " << endl;  }  else if (points[1] > points[0]) {  cout << "THE TEAM " << teamsName[1] << "having points" << points[1] << " has won " << endl;  File2 << "THE TEAM " << teamsName[1] << "having points" << points[1] << " has won " << endl;  }  if (points[2] > points[3]) {  cout << "THE TEAM " << teamsName[2] << " having points " << points[2] << " has won " << endl;  File2 << "THE TEAM " << teamsName[2] << " having points " << points[2] << " has won " << endl;  }  else if (points[3] > points[2]) {  cout << "THE TEAM " << teamsName[3] << " having points" << points[3] << " has won " << endl;  File2 << "THE TEAM " << teamsName[3] << " having points" << points[3] << " has won " << endl;  }  if (points[4] > points[5]) {  cout << "THE TEAM " << teamsName[4] << " having points " << points[4] << " has won " << endl;  File2 << "THE TEAM " << teamsName[4] << " having points " << points[4] << " has won " << endl;  }  else if (points[5] > points[4]) {  cout << "THE TEAM " << teamsName[5] << " having points " << points[5] << " has won " << endl;  File2 << "THE TEAM " << teamsName[5] << " having points " << points[5] << " has won " << endl;  }  File2.close();  }  }   void pointsOfMatchSemiFinal() {  int min;  fstream File1;  File1.open("semiFinalMatchInfo", ios::app);  if (!File1.is\_open()) {  cout << "Error while creating the file";  } else {  for (int i = 0; i < 3; i++) {  cout << "ENTER TEAM NAME = ";  cin.ignore();  cin >> teamsName[i];  File1 << teamsName[i];  cout << "ENTER TEAM POINTS = ";  cin >> points[i];  File1 << points[i];  cout << "THE " << teamsName[i] << " HAS SCORED " << points[i] << " IN QUARTER MATCH. " << endl;  File1 << "THE " << teamsName[i] << " HAS SCORED " << points[i] << " IN QUARTER MATCH. " << endl;  min = points[0];  }  for (int i = 0; i < 3; i++) {  if (points[i] > points[i + 1]) {  count = points[i] - points[i + 1];  cout << "THE " << teamsName[i] << " HAS WON THE MATCH BY " << count << endl;  File1 << "THE " << teamsName[i] << " HAS WON THE MATCH BY " << count << endl;  } else {  count = points[i + 1] - points[i];  cout << "THE " << teamsName[i + 1] << " HAS WON THE MATCH BY " << count << endl;  File1 << "THE " << teamsName[i + 1] << " HAS WON THE MATCH BY " << count << endl;  }  }  for (int i = 0; i < 3; i++) {  if (points[i] < min) {  min = points[i];  cout << "the team " << teamsName[i] << " having points " << min << "is out of the tournament"  << endl;  File1 << "the team " << teamsName[i] << " having points " << min << "is out of the tournament"  << endl;  }  }  File1.close();  }  }  void finalMatch(){  for (int i = 0; i < 2; i++) {  cout << "ENTER TEAM NAME = ";  cin >> teamsName[i];  cout << "ENTER TEAM POINTS = ";  cin >> points[i];  cout << "THE " << teamsName[i] << " HAS SCORED " << points[i] << " IN QUARTER MATCH. " << endl;  }  if (points[0] > points[1]) {  cout << "THE TEAM " << teamsName[0] << " having points " << points[0] << " has won " << endl;  }  else if (points[1] > points[0]) {  cout << "THE TEAM " << teamsName[1] << " having points " << points[1] << " has won " << endl;  }   } };   #endif //INC\_2022\_SPRING\_CE\_OOP\_WEEK12\_ASSIGNMENT12\_BSCE21012\_FUNCTIONS\_H   * **In first class I have asked the user to enter the information of players their age, their department, roll number, phone number etc.** * **And then stored it in the file.** * **Then I have made a function to set the time of the match in which user can enter time of his own will and we can also recommend some time.** * **Then in the starting match I have knockout only 1 team.** * **Then in quarter I have knockout half teams.** * **Then in semi-final I have knockout 1 team again.** * **Then in final I have checked the points and then knockout the team with less points.**   **Main.cpp:**  #include <iostream> #include "Functions.h" #include <iomanip> #include <string>  using namespace std;  int main() {  int opt;  QuarterMatch Q;  QuarterMatch Q1("20-10-10 at 5", 2, 4, 6);  do {  cout << "CHOOSE ANY OPTION." << endl;  cout << "1.INFO OF PLAYERS ?" << endl;  cout << "2.SET MATCH TIMING?" << endl;  cout << "3.STARTING MATCH." << endl;  cout << "4.QUARTER MATCH." << endl;  cout << "5.SEMIFINAL MATCH." << endl;  cout << "6.FINAL MATCH." << endl;  cout << "7.EXIT." << endl;  cin>>opt;  if (opt == 1) {  teams T;  teams T1("itu", "ali", "talha", 3, 4, 3, 4, 11, 34, 0322545, "bsce-17", "bsce21017@itu.edu.pk", "bsce21010",  15,  "batsman");  T1.info();  }  if (opt == 2) {  Q1.matchTiming();  }  if (opt == 3) {  Q1.pointsOfMatch();   }  if (opt == 4) {  Q1.pointsOfQuarter();   }  if (opt == 5) {  Q1.pointsOfMatchSemiFinal();   }  if (opt == 6) {  Q1.finalMatch();  }  if (opt == 7) {  cout << "YOU CHOOSE TO EXIT.." << endl;  exit(3);  }  }while(opt>=1 && opt<=7);    return 0; }  **In main I have made a menu.** |