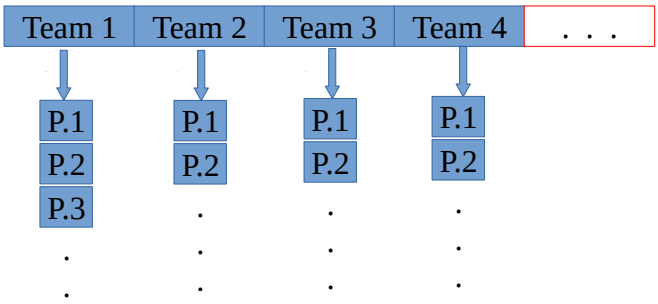
ITU Computer Engineering Department
BLG 223E Data Structures, Fall 2021-2022
Recitation #1

In this recitation, you are asked to write a C++ program that finds the best forward player among players in a list of football teams of last year tournament. There will be several teams and each team will have several forward players. The goal of this recitation is to implement re-sizable dynamic arrays.

You are expected to fill several addPlayer() and removePlayer() methods within the Team class and addTeam() removeTeam() methods within main.cpp file. The given main method should run properly using your classes, methods and variables. The main method should be able to create a dynamic array of teams and add/remove team or player objects.

If a new player is wanted to be added, and the related array size is exceeded, then its size has to be increased. If the current size is 0 then it should be increased by 3 otherwise it should be doubled. On the other hand, if a player is going to be deleted, and the number of elements in the related array is half of the array size, then array size has to be shrunk. Do nothing if the current size is 0 or 1. Otherwise, halve the size of the array. You can increase/decrease team array size by 1 whenever adding/removing operations asked.

The desired team-player structure is as follows:



The score evaluation to find the best player can be calculated as Eq 1. (#: total number)

$$score = \frac{\#\_of\_goals}{\#\_of\_matches\_played} * 3 + \frac{\#\_of\_assists}{\#\_of\_matches\_played} * 1 + (45 - age)$$

Given: main() method that makes operations over methods and classes. Team and player class header files.
Asked: Fill addPlayer(), removePlayer(), addTeam(), removeTeam() methods in these team.cpp and main.cpp files.

Implement the following methods with appropriate arguments:

1. addPlayer(): Adds a new player to the desired team. Prevent adding new player with number that already exist in the team.
2. addTeam(): Adds a new team to team array.
3. removePlayer(): Removes the desired player from the related team.
4. removeTeam(): Removes the desired team from the team array.

Complete and submit: Complete methods and team.cpp and main.cpp only.

Due time to submit: 19.09.2021 23:59 over ninova

Submission Rules
If explanations for this homework is not clear, you can ask your question on the message board for BLG 223E on NINOVA. Please check before writing your question whether your question is asked by someone else.
E-mail: Cumali Türkemnoğlu, turkmenogluc@itu.edu.tr

Make sure you write your name and number in all of the files of your project, in the following format: Make sure you write your name and number in all of the files of your project, in the following format:

/ @Author*
Student Name: <student_name>
Student ID : <student_id>
*Date: <date> */*

- Only electronic submissions through Ninova will be accepted no later than deadline.
- You may discuss the problems at an abstract level with your classmates, but you should not share or copy code from your classmates or from the Internet. You should submit your own, individual homework.
- Academic dishonesty, including cheating, plagiarism, and direct copying, is unacceptable.
- Use comments wherever necessary in your code to explain what you did.
- Note that **YOUR CODE WILL BE CHECKED WITH THE PLAGIARISM TOOLS!**