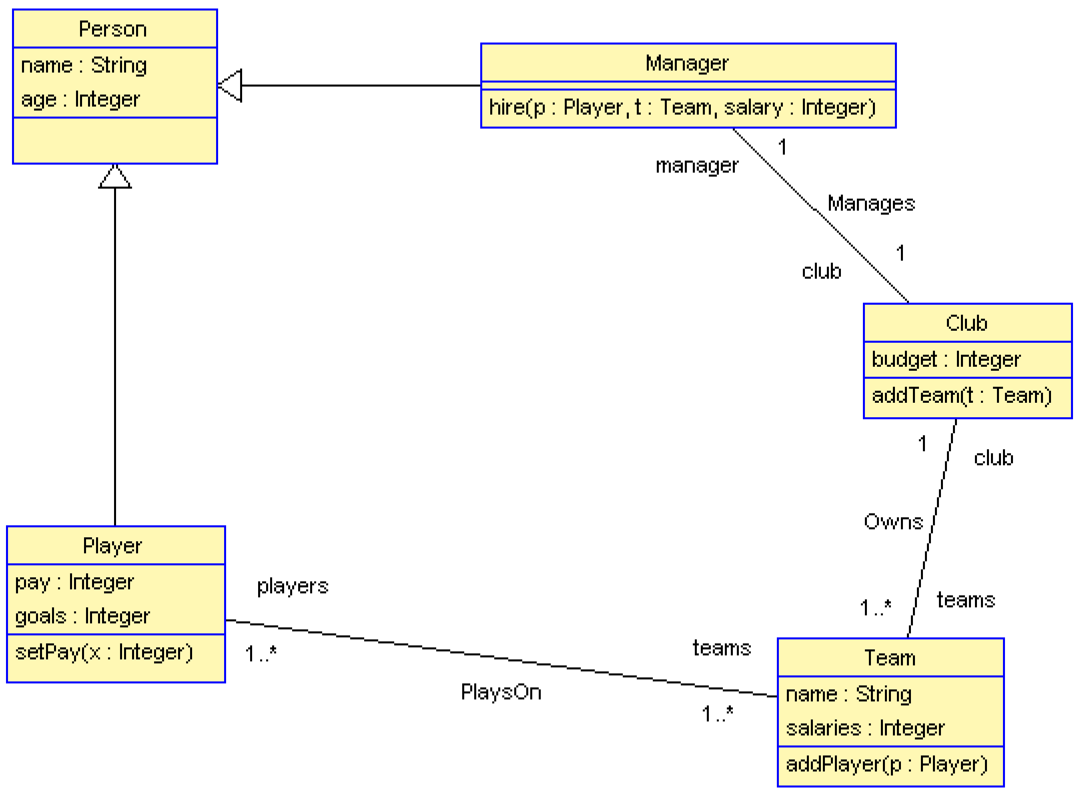
USE Lab Test for groups G1, G2, G3 & G4

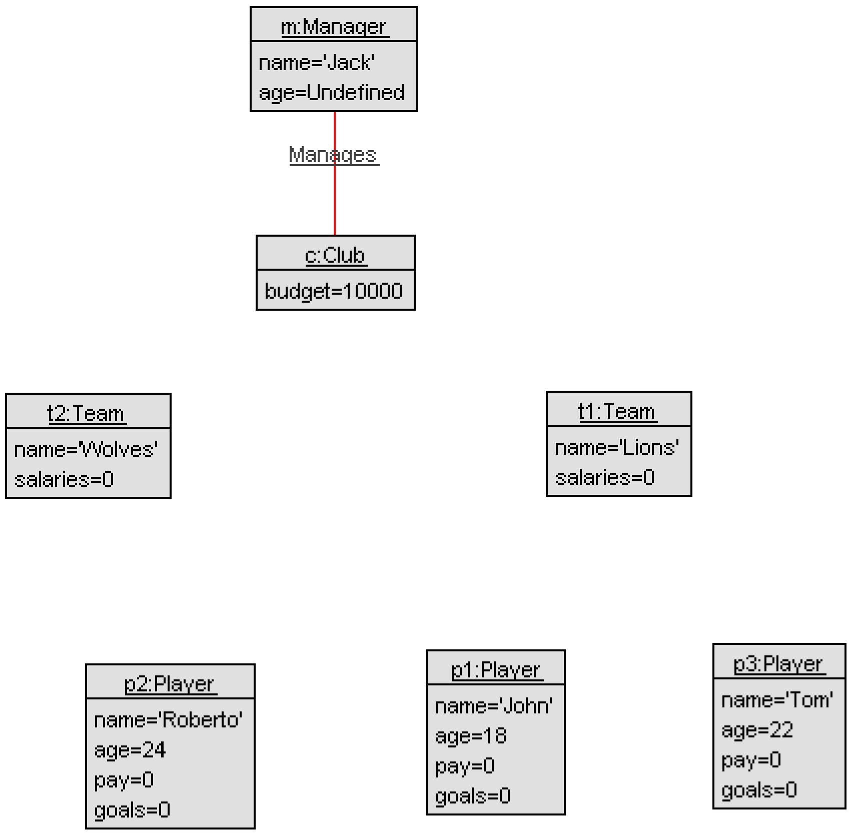
1. Using a text editor such as Notepad++, complete the partial USE model provided in club.use, so that it yields the following class diagram in USE. Save you class layout too.



2. Once you get this class diagram, copy and paste the diagram into a Word document named club.doc .
3. The default or initial pay for a player should be 0 and the salaries for a team should be initially 0. Add these initial values to the class definitions if you can. Otherwise, move on.

Next you are to write some operation contracts.

4. First load club.soil, open your object diagram, reaarange and save layout to get something like:



5. Modify the manager object **m** so that it has your full name and age, copy and paste the new object diagram to the Word document club.doc.

The following contracts can be put alongside the corresponding operation declaration or in the constraints section. Either way is fine.

Contract for addTeam(t : Team)

6. Do **not** implement this operation in SOIL. Write an appropriate precondition and postcondition for this operation in club.use and save it.

Testing addTeam(t : Team) with !openter/!opexit

7. Reload your model and use !openter/!opexit to test this contract with the objects **c** and **t1** provided in the soil file, club.soil, which will create some test objects for you. Do 3 tests: get postcondition to fail, postcondition to succeed and finally the precondition to fail.
8. When this is done use menu **File | Save protocol** to save your test interactions in club.txt.

9. Add OCL code to **club.use** to represent the following contracts:

Contract for addPlayer(p : Player)

Precondition

- player p should not already be a member of the team

Postconditions

- player p now a member of the team

Contract for hire(p : Player, t : Team, salary : Integer)

Preconditions

- team t should be owned by club which is associated with the manager
- the existing salaries plus salary of new member should be less than the club budget
- if the player is younger than 21, then his maximum pay should be 500.

Postconditions

- team salaries after operation = salaries before + player's salary
- player's pay equals salary

SOIL Code

10. Implment setPay(), addPlayer() and hirePlayer() in SOIL code. One of these should call the other two. Re-save your model as club.use.

Testing Contracts & SOIL code

11. Test the contracts and soil code from steps 9 and 10 using the objects provided in club.soil. Save your testing protocol in club1.txt. Get the 4 preconditions to fail once and everything to succeed twice. Do **not** use !openter/!opexit here.

Diagrams

12. Create a sequence diagram view in USE, copy and paste it to club.doc. Also copy your object diagrams after the hiring to club.doc.

13. Add this invariant to the class Club: any player on any team in club **c** should earn at most 6000. Save it in club.use. You may need to rename club.use to club.use.txt before submittting on Webcourses.

Webcourses

Submit:

- club.use (or club.use.txt)
- club.txt
- club1.txt
- club.doc + 2 layout files.

Zipped or rar files will not be marked. **Do not compress**.