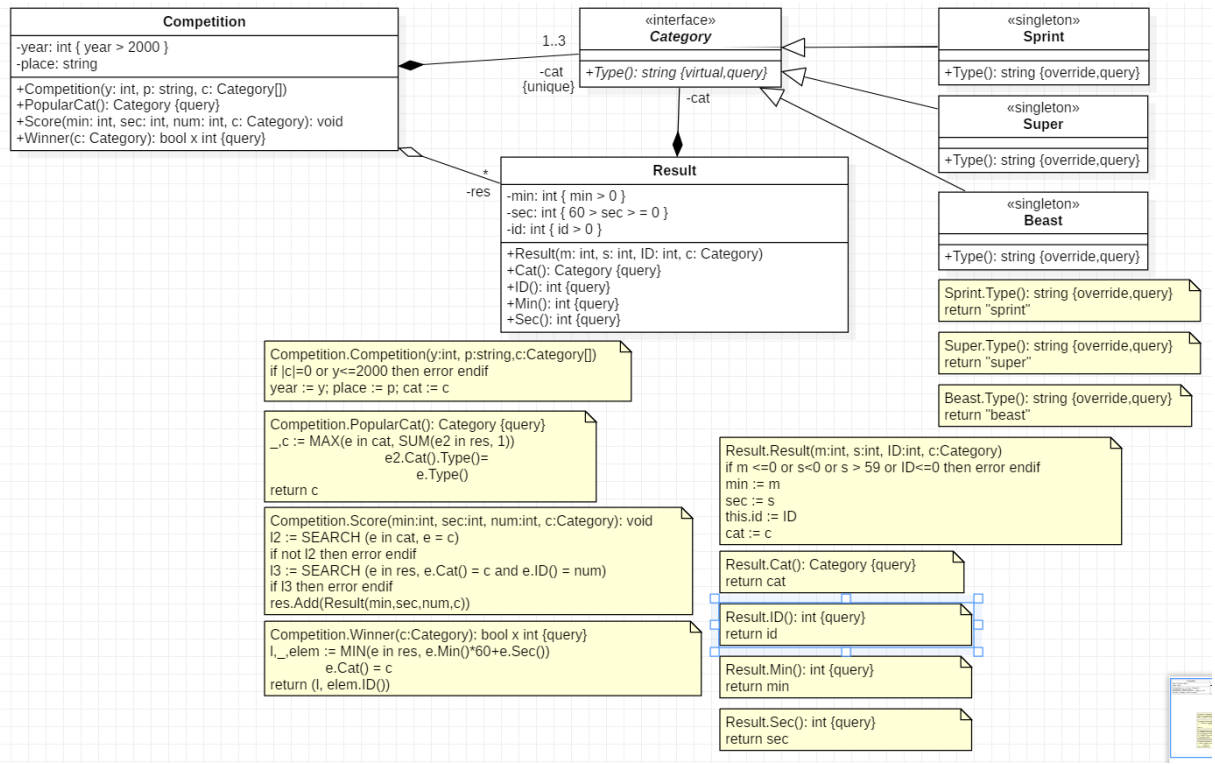
For Grade 3

Model a race of **Spartan** Race Hungary. The race has a place and an organization year. It is stored which categories were organized on this race. The categories may be sprint, super, and beast. It is not sure that all of them were organized, but there is at least one category. A competitor may participate once in any category (even in multiple categories) that was organized. The race results are also stored. A result consists of the ID of the competitor, the category, the minutes, and the seconds in which the competitor has finished the race in that category.

1. Give the most popular category in which the greatest number of competitors have finished.
2. Define the winner of a category.

An UML class diagram is given, which solves the given task, implement it! The diagram is attached in vector graphic format, too. Note that this plan does **not** satisfy the SOLID principles of OOP.



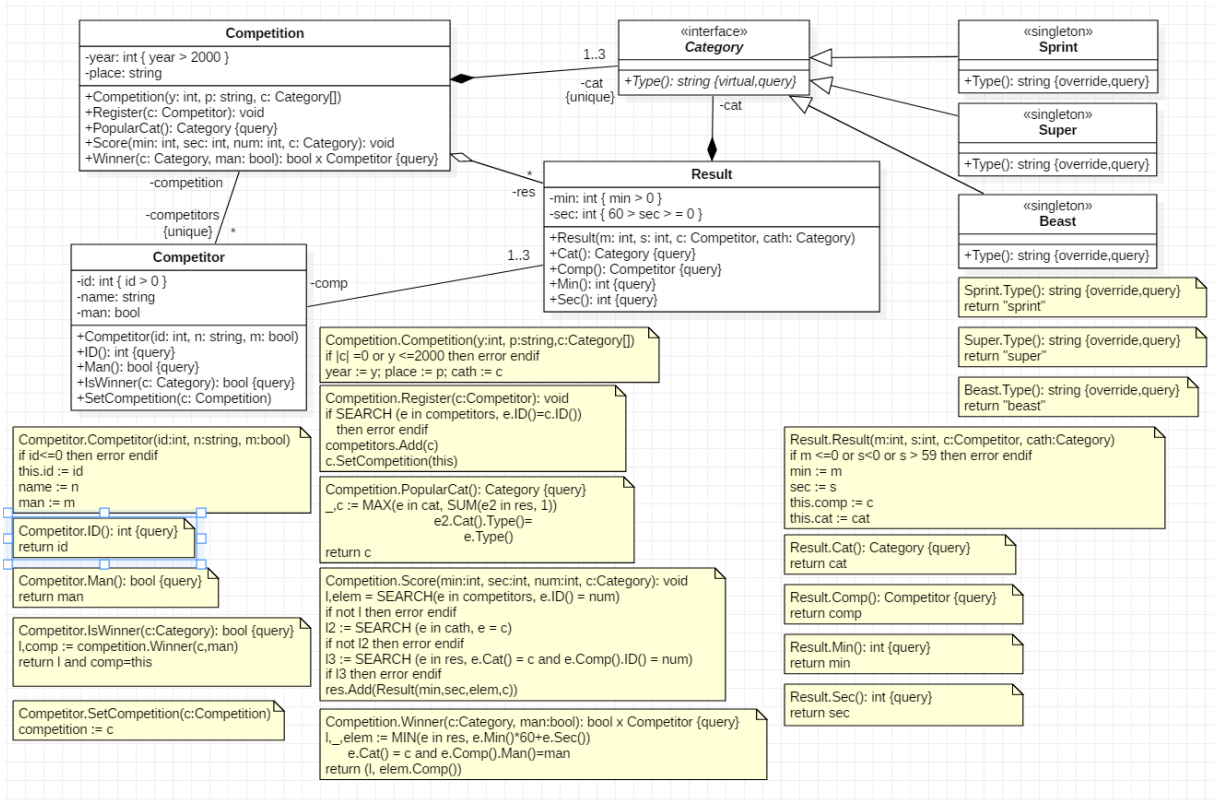
For Grade 5

Model a race of **Spartan** Race Hungary. The task for grade 3 is extended: there are competitors who can register for the race. A competitor has an ID, a name, and a gender. The race results stored differently: not only the competitor ID is stored, but a reference to the concrete competitor. Only those competitors can participate in the race and have race results who have previously registered for the race. It is possible that a registered competitor does not have any result because of injury or sickness.

The new and modified questions to answer:

1. Define the winner of a category for a given gender.
2. Decide if a competitor has won in a given category in his/her gender.

An UML class diagram is given, which solves the given task, implement it! The diagram is attached in vector graphic format, too. Note that this plan does **not** satisfy the SOLID principles of OOP.



Parts to modify: Competitor class and its relations, Competition class's Register(), Score(), and Winner() methods, Result class's constructor and Comp() getter.

General information

You do not have to solve the one for grade 3 to get grade 5, but it is worthy to start with the smaller one. If you cannot pass the bigger one you will fail without a working solution.

When you are finished with a solution, you have to *zip it without the bin and obj folders* and upload it into TMS (files to upload: *.sln, *.csproj, *.cs). Make sure not to change the relative position of the files as the relative path of the files has to be kept.

You get the Program.cs for local testing, so you do not have to upload your solution to check if it is is good. You can modify the file, but in that case you ruin your test environment (it does not affect the tester).

Please put every code of yours into the same namespace as it is in the Program.cs, otherwise the TMS tester fails and you do not get a grade.

You get a grade only if you pass the TMS tester and a teacher has checked your code and accepted it.

If you pass the TMS tester, raise your hand and wait for a teacher to be checked, or continue with the task for grade 5.

To be graded, you have to be checked by a teacher on site personally. Without personal check you cannot get a grade. **If you leave the endterm without being checked, you fail.**

If you have question, raise your hand and wait for a teacher. The teacher can help you to understand the task, but cannot highlight your mistakes. The teachers do not help in debugging and finding bugs in your code. It is your job. Based on the pseudo code you have to be able to put it into C#.

The teachers can also help in general and with unexpected errors, like the windows crashes or if you can see an error in the UML diagram or in the provided Program.cs.

When the time is up (you get 135 minutes), please leave the room and wait outside. A teacher will take you to your computer to see if your solution works or not. If not, you fail unfortunately. If it works and the TMS verifies it via tests, you pass. Keep the code for grade 3 if you continue working for grade 5, or upload it and ask a teacher to check it!

If a teacher can see you cooperating with somebody else, you will be sent away and you fail even if you got a grade previously.

If you keep checking the monitor of another student, the same thing happens with you.

Good luck!