LAB 3: UML DESIGN GROUP PROJECT

Aims:

- Practice your object oriented analysis and design/maintenance skills
- Practice working in small design teams
- Consider how to design software with lower maintenance effort in the future

You are supposed to work with your **group project group members** on this!

THE STUDENTSHIP MATCH APPLICATION

You have been asked by the Student Union to develop a new "Student-Internship Match" application for them. A legacy system exists but it was abandoned some years ago. The idea is to match students with the right skillset to internship offers provided by local companies.

Before students and companies can use the application they need to register and once they received their username/password they can log in. After registration students and companies need to add a profile which will be stored in a database (together with their login details). The profile can be edited at any time. Companies can then start posting job offers which will be stored in the database. Student profiles consist of student details and skills while job offers consist of company details, a job description and requirements. Skills and requirements are to be submitted in form of predefined keywords so that they are easy to be matched in later searches.

Once the data has been stored in the database students as well as companies can then query the database and a query engine will try to match job offers with student profiles and vice versa. At a later stage the student union is planning to replace the keyword search with an intelligent query engine. It is a requirement that the application is designed following object oriented principles and that it is easy to maintain and extend. If you have any ideas for extensions in order to improving the usability of the application you are encouraged to add these to your design.

The legacy system was operated by a secretary who would handle all the data input and search requests. The only surviving design artefact from this system is the class diagram shown in Figure 1.

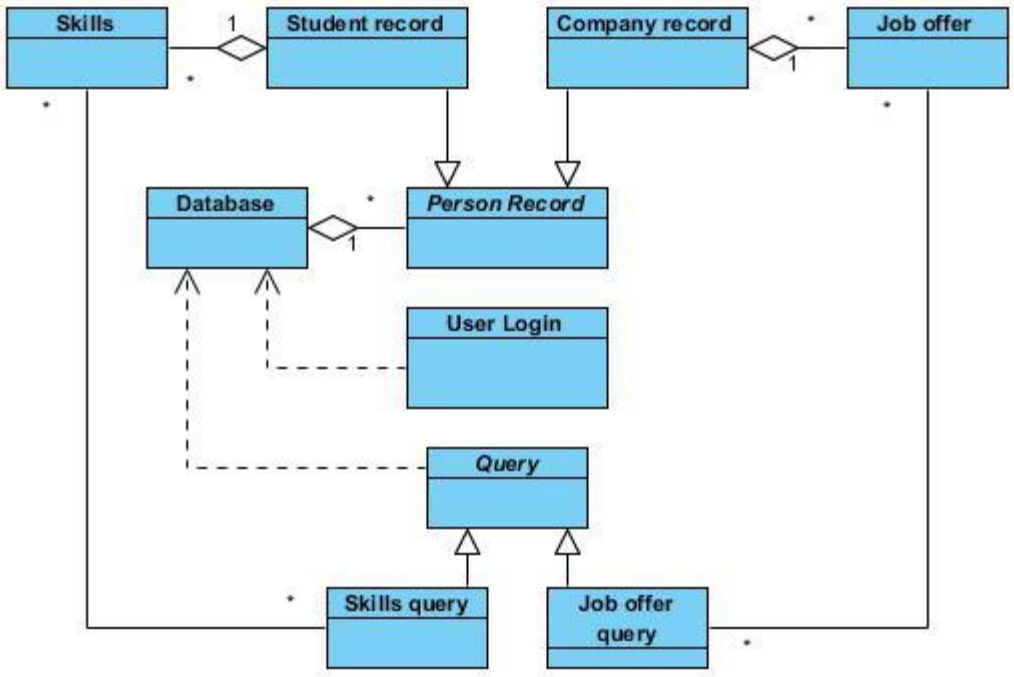

Figure 1: Legacy system class diagram

YOUR TASK

Find your group project group members and work together for the object oriented analysis and design of this application.

You are asked to produce the following for the new "Student-Internship-Match" application:

- Use-case diagram for the described application
- Complete use case specification for a non trivial use case (e.g. "search for jobs")
- Activity diagram of the same use case
- Sequence diagram of the same use case
- Class diagram
    - Classes including key attributes and operations o Relationships
    - Multiplicity indicators
- Non trivial state machine diagram for one of the classes

Remember that this is a group exercise - so you should work together with your peers. We recommend using pen and paper for an initial brain storming of your ideas (with the whole team) and then swapping to Visual Paradigm for finalising your diagrams (you find Visual Paradigm on the lab machines but you can also download and install a free Community edition on your own machine). For finalising the diagrams perhaps two team members should work together - XP style :). Make sure that all your diagrams are coherent in the end and be prepared to explain your design to the lab helpers during the last half hour of the lab.

Link for downloading Visual Paradigm Community Edition:

- https://www.visual-paradigm.com/download/community.jsp

Visual Paradigm Quick Guide:

- https://cdn.visual-paradigm.com/quickstart/quickstart.pdf

To improve ease of maintainability in the future, try to think about these points when you design your system:

- Keep it as simple as possible (KISS principle)
- Keep similar functionality together, and different functionality apart (encapsulation)
    - Also known as “high cohesion, and loose coupling”
- How easy would it be to change a module or feature in the future?
- How good are your diagrams at explaining the system to a new programmer?