Level 4 Project Progress Report

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Project Title: *Online Java Revision Tool*
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Project Description

The project is to create a revision tool for Level 2 Computing Science students within the University of Glasgow. One of the courses taught within the school is Java Programming 2, which introduces students to the Java programming language and teaches them the basic syntax and concepts used. Jeremy Singer thought that some students with no prior knowledge of Java may struggle to grasp the basics and hopes that by providing them with a learning application, this will help them improve and become confident with their programming skills. The aim of the application is to allow students to practice Java at any time they feel necessary, throughout the course, at exam time and even in later years in order to recall the basics they may have forgotten. Through using interactive activities, which students can work through at their own pace, the idea is to make the application enjoyable and easy for the students to revise with.

Progress

Throughout the first semester of the year, I carried out a lot of background work, finding applications which are similar or use similar concepts. For each application I found, I noted the advantages and disadvantages of each, in order to discover which approach was the most effective for learning a new programming language.

I completed my first set of requirements gathering by speaking to a sample of 10 **fourth year students**, who have previously taken the Java programming 2 course. This allowed me to find out their thoughts on the course, what they did and didn't like about it, what they thought was missing from the course and tools and applications they would have liked to have been available to them when taking the course.
Overall, it would seem that the fourth year students thought the lectures were adequate, they provided enough information to be useful for exam revision, however they didn't provide enough examples to demonstrate how the concepts are used. **From the results collected, I believe that the students find interactive tools more useful when learning a programming language as it allows them to practice and improve on writing correct Java code.**

I then asked a sample of 60 current **second year students** to complete a survey about the Java Programming 2 course. I asked them their thoughts about the course, what tools and applications they used to help them learn Java, what they turn to when they are having problems with their lab exercises and tools/applications they would like to be available to them while completing the course.
Overall, the majority of students think that the material provided for the course is very useful, however, they find that they learn more by completing the lab exercises. When the students are having problems, they look more to community-based applications, such as StackOverflow, in order to try and help them by looking for problems similar to their own. Some of the suggestions for applications they would like to be available are video tutorials, code and examples from lectures to be provided, and to be provided with plenty of examples and exercises to complete.
From these results, it would seem that students learn more by completing examples and

exercises where they are able to practice writing Java code.

From this, we decided that the best approach would be to provide the students with the following different activities for learning and practising:

- Multiple choice questions for predicting the behaviour of the code
- Fill in the blanks for small Java source code examples
- Fix the broken code for small Java source code examples
- Write your own code for simple problems
- Video tutorials (possibly)
- Tutorials to go over the basics.

I have created the basic interface for my application, and am currently working on implementing the first couple of activities. I have implemented simple multiple choice and fill in the blanks, and I am currently working on getting these to work with the database and back-end of the application.
In order to try and avoid a lot of work at the end of March, I have started writing my dissertation and continue to write it as I go, meaning that I can remember precisely all details and tasks which I carried out.

Plan

My plan is to complete the implementation of the activities over Christmas and hopefully have them fully implemented in order to provide the students with a prototype and get some feedback about how effective they are.

Challenges

The activity which I think may provide the most problems is Write your own code, as I am unsure how to allow the students to run and test the code they have written within the application. This may also be a problem for Fix the broken code, as if the user wants to directly amend the code, there will also need to be an editor to allow them to do so.