Assignment 2.3: Software Development Group Project

The purpose of this assignment is to apply the new skills you have learned through this course to develop an educationally sound software tool. You will be using the educational concepts you have encountered in lectures and your own research, to design and develop this tool.

This is a **group project**. Please check Canvas for your project groups. These groups are identical to those you used for Assignment 2.2.

There is no restriction on the technology stack you choose to use for this assignment. We have discussed some optional tools, but feel free to use what you feel is best to support your development. There is an expectation that you are using your Software Engineering skillset to create your project.

Details

This group project will be the development of an educational tool, built using your skills as a Software Engineer and applying the educational concepts you have learnt this semester. While you must use your SE skills to develop your tool, it does **not** need to be designed to teach SE/CS skills. You can target any content you wish, as long as the main purpose of the tool is to teach the user about a topic. For example, to stay consistent with the examples I have used previously, this could be a language learning tool targeted at teaching the user a new language.

The most important aspect of this project is to demonstrate the effective use of educational theories in the design of your tool. The quality of the code, and the visual quality of the tool, will be less important. You will need to ensure that you are making deliberate design decisions — this means having a good justification for the approaches you take. You will be expected to explain these design decisions during your presentation. You will be graded based on the suitability of the educational concepts you have used to design your tool, as well as the quality in which they have been implemented.

Creativity will be an important aspect of your project. It is appropriate to use existing tools for inspiration and ideas, but you should try to avoid directly reimplementing a tool that already exists. Make sure that you have enough unique elements if you are developing in a domain that has a variety of existing tools.

User research is also a critical part of your project. By developing personas that represent at least two different types of users, you'll gain clearer insights into their needs and expectations. In addition, reach out to at least one real user to gather feedback on your design. Their insights can help you refine your application and better understand how it will be used. Learning to listen and respond to user feedback is a vital skill that will serve you well throughout your software engineering career.

During the lectures, we have looked at examples that will help to define the scope of this project. You should create a set of <u>learning outcomes</u> that you would like your tool to target and plan the educational design that you will use to achieve these. There is not an expectation that you create an industry-level, complete educational tool in just a few weeks! However, there will be enough time to develop short activities that reach a subset of your target learning outcomes. I encourage you to still include a planned design for those activities that you will not have time to implement. Clearly these expectations will change depending on the topic your tool is teaching, and how rigorously an individual activity is designed. You will have many opportunities to discuss expectations with the lecturer, and this is your best option for ensuring you develop to the expected scope of the project.

Presentations

There are **TWO** times where you will present your project as a group. Please see the Canvas announcements to see how to sign up for a presentation time slot.

The first presentation will happen once in week 9 – 11 where, beginning Friday 16th May, two groups will present during each lecture from 2pm – 3pm. The purpose of this presentation is to facilitate discussion during the design and development process. You should introduce the current state of your group's project, the discussions that you have had as a group, and what you plan to do next. Then, you will have the opportunity to discuss your project with the lecturer and your peers. This will give you good guidance for your own project, and also give you the opportunity to teach and learn from your peers. You will have approximately 25 minutes to present and discuss. Every member in the group must participate at some point during your session. However, not every member must speak while presenting your progress/plans if it is not necessary. **There will be individual marks attributed to participating in this activity.**

While presenting your progress during weeks 9 – 11, you are encouraged to attend other groups' presentation sessions. Each of you will be asked to submit an online form that collects your reflections and comments on other groups' work. Only the teaching staff will have access to the forms you have submitted. Watching presentation recordings is acceptable, but attending in person will enable you to propose your questions and feedback to help other groups, as well as your group, refine your applications. The link to the online form will be provided through a Canvas announcement in week 9 and due in week 11. The teaching staff will anonymise and summarise your comments and share them with the target group members before the final presentation.

The second presentation will happen in week 12 and is a **10-minute presentation** of your complete, or near-complete, educational tool. This will be a more formal presentation than the previous one. You should prepare a demonstration of your tool, alongside a discussion, with examples, of how you have applied educational design. **There is an expectation that every member of your group presents a portion of your work**. This will be followed by a short question and answer section, where the teaching staff will have the opportunity to ask you questions. **You will receive individual marks based on your presentation.**

Requirements

1. There is no limitation on the technology stack you choose to design your educational tool with. We have discussed recommendations in class.
2. You must create the tool using your Software Engineering skillset. For example, a website or application. An example that would not meet this criterion would be a book or (physical) board game.
3. You should include a method for keeping track of individual contributions. This could be taking meeting and contributions notes or using a code repository with tracking capabilities such as Github. If this is not included, the markers will assume that the contribution was equal between all members (as it ideally should be).

Tasks

1. Design an educational tool that will be created using your skills as a Software Engineer to teach a topic of your choice.
2. Develop some core activities of your educational tool, with an explanation of how you would extend this development to future designed activities.
3. Present and discuss your group's current progress during one of our lectures from week 9 – 11.
4. Attend other groups' progress presentations, and submit peer-review online forms for at least two groups during week 9 – 11.
5. Present and discuss your complete (or near-complete) educational tool during week 12.

Submission

The main submission for this assignment is your **final presentation** in Week 12. Your group will also be expected to give the lecturer a final version of your project by the due date. This should be the source of your project and instructions on how to run your tool. You should have **ONE** member of your group be responsible for this. For example, you could add the lecturer to your code repository or send the source code (e.g. via USB or email), or submit a ZIP file through the Canvas submission portal. **Each member should also include a short description of their individual contributions through the Canvas submission portal.**

Guidelines on using AI tools for Coding and Presentation

As future software engineers in an AI-driven world, you need to learn how to use AI tools effectively and critically in your software development and maintenance. Appropriate use of AI tools will speed up your production and improve the quality of your work. For this group project, you are encouraged to use Generative AI tools for draft code generation, explanation, review and debugging, optimisation and refactoring, and testing cases writing, and documentation refinement. **Note:** please critically read and understand every generated line and word first, then decide which part of them you should or should not use. They are tools, please do not over-reliance on them and weaken your core SE/CS knowledge and skills.

You are allowed to generate ideas and tips to inspire the preparation of your presentation. You may use a GenAI tool to explain difficult concepts or ideas in a clear way for a broader audience. You can generate images to illustrate your presentation, provided you correctly reference the source, e.g., "image/illustration generated by [AI tool] (model version X)." **Note**: Just like all GenAI outputs, these images may unintentionally contain copyrighted material. Using such images outside the strict educational context carries certain risks. You may not use GenAI-generated images in your presentation without proper source attribution giving the impression that you created them yourself.

Assessment Rubric

Task	Description	Marks
Educational concepts	The suitability of the educational concepts you have chosen for your educational tool and target topic.	1.5
Educational design	The quality of how your educational concepts have been applied to design your educational tool.	3
Creativity	The creativity of your educational tool. Has a unique approach to teaching the target topic.	1.5
User research	You will receive full marks if you include at least two personas of your target users, and feedback about your design from a 'real' user.	1.5
Tool usability	The usability features of your tool.	1.5
Tool design	The visual design of your tool.	1.5
Progress Presentation	You will receive full marks as long as you are present and participate in the discussion of your project.	1.5

Final Presentation	You will receive marks based on your presentation skills (preparation, clarity, accuracy, and engagement).	1.5
Peer Review Participation	You will receive full marks if you submit your peer-review online forms for presentations of at least two other groups.	1.5
Individual Contribution Document	There is an expectation that every member of your group has an equal contribution to your work. Markers will reduce marks if there are evidence-based, uneven contributions accordingly.	-
		Total: 15 (15% Overall Grade)