UNIVERSITY OF WEST LONDON
The Career University

Advanced Topics in Software Engineering

Assessment 2

Assessment weight: 30%

Assessment type: group work

Given Date: 18 March 2024 00:00

Submission Date: 19 April 2024 until 23:00

Given by: Dr. Cain Kazimoglu

Submission Date: 04 May 2023 until 23:59

Similarity Check: Ignore the similarity check for this assessment.

Submission type: Individual – even though students work in groups, all students should individually submit the same report. As an example, Student A and Student B worked in the same group and wrote the report X together. They both submit the X report. **If you do not do a submission, feedback cannot be provided.**

Submission includes Turnitin report submission report which has a cover page that includes a YouTube video link to the demo the software versions produced as part of the agile development and management. There should be three different iterations of the software in one video which should not exceed more than 10 minutes. All group members must talk in the video regarding the part(s) they covered in the assessment. The video should be publicly accessible.

1. What is the assessment?

This is the second assessment (i.e., A2) given to you as part of the overall assessment of the Advanced Topics in Software Engineering module you are taking during the 2023-2024 Spring Semester at University of West London.

In this assessment, you need to create a report, 3 different versions of a software system (a mobile app or a web site) that should practice Agile Development and Management approaches. Additionally, DevOps approaches and tools (e.g., Dockets, Jenkins) are highly encouraged to be practiced and combined with Agile methods to create a realistic automated framework for software development. The aim of the assessment is to practice agile development and management approaches in addition to an opportunity to practice DevOps Engineering tools. Whether you select the website and/or the mobile app approach, you will need to create 3 version of a software system which should be divided as initial, intermediate, and final prototype version – each later iteration should be more advanced than the previous one(s). Although the assessment requires the development of a software system, the main practice is to use Agile development and management methods as well as an opportunity to practice DevOps tools.

As submission, you need to submit a) a report which the format is shared with you down below in Section 3 and b) a public streaming video link (preferable YouTube or Vimeo) which would show the software versions developed as well as a reflection of how you have used the tools to support agile and/or DevOps approaches.

Remember that this is a team project (not a group project). Each team must consists of at least 3, at most 5 members. In a team, people have different and usually precise responsibilities. While the workload must be divided by you, you as a team must be the sole owner of your project as a team. The code you write is expected to be optimized, plagiarism-free, efficient and should not include any direct copy/paste from the Internet/AI tools. Each team must deliver a unique project. You also should not use someone else's work or involved any kind of plagiarism.

2. What needs to be done in this assessment?

As stated above, you need to develop a web based / mobile application with using agile development and management methods. You will need to use SCRUM/Kanban or a mixture of both methods (Scrum + Kanban = Scrum Ban) to practice an agile methodology. Whichever management model you choose, you should embrace and cover main agile development practices though which is basically **Extreme programming and Cycles of release with Agile Boards**. **As part of extreme programming, you are expected to use user stories and test-driven development (TDD)**. You may optionally show refactoring and pair programming exercises as proof – however this is not a requirement

You are also highly encouraged to use other DevOps tools and if you provide sufficient evidence, this will be counted as you sought to go above and beyond earning you to gain a first mark. However, **practicing DevOps is an option, not a must**.

3. What shall I do in this assessment personally?

This assessment practices roles among agile frameworks and the tasks you have to engage in an agile development environment. You will need to design and develop an application (a server-side web page/ a mobile application or a java/C#/C++/python application) through using Agile Development and Management methods as well as with version control systems. You are first suggested to download the Git services (e.g., GitHub) for version control management as **using Git is a must for this assessment**. Essentially, you (i.e., every team member) need to use Git services and its features to support the software development such as a) keep different version of the system b) commit pushes and observe who has changed what in the project c) observe and manage changed committed by different user accounts for merging the project and other version control features and approve these.

Having done this, your agile practices should be managed by tools specifically designed for this purpose. Within these tools, you should be able to use to manage project, practice approaches such as limiting work in progress or sprint cycles, and other agile practices.

Similar to first assessment, you will be asked to form your own team, select roles for team members and assign a Scrum master/Agile coach for the team. As stated above, every team member should be involved in using the agile, git features and also in one aspect of regular software development such as programming, front end and back-end development.

4. What tools do we need to use?

As stated above, explicit practice of agile development and management tools are required for this assessment. To do this effectively, you can use one or more of these tools to support your activities:

You must use one of the Git services below, GitHub is the most popular among them:

GitHub: https://github.com/
GitLab : https://about.gitlab.com/
BitBucket: https://bitbucket.org/product

You must also use at least one of the following tools to support Agile development and management activities (More than one tool can be used as well):

Free Trial Options (generally more advanced, easier to use options):

Jira Software: https://www.atlassian.com/software/jira
Miro : https://miro.com/app/
ClickUp: https://clickup.com/
Monday.com: https://monday.com/
KanbanFlow: https://kanbanflow.com/
ProofHub: https://www.proofhub.com/
ShortCut: https://www.shortcut.com/
Asana: https://asana.com/
Trello: https://trello.com/

Open-Source Options (free options, but mostly requires download or set-up) :

Taiga: https://www.taiga.io/
MyCollab: https://products.containerize.com/project-management/mycollab/
Bugzilla: https://www.bugzilla.org/
RedMine: https://www.redmine.org/
OpenProject : https://www.openproject.org/

The usage of tool should also be discussed in your report to prove that you efficiently used the tool to manage and develop the project. You may also use other tools that are not listed here – so long as the tool is a dedicated agile development and management tool.

When using Git features CoPilots are suggested to be practices.

5. What are the topics we can work on?

You can select wide variety of topics which are listed down below:

Topic Name	Description	Programming Languages that can be used
Scientific Calculator	A scientific calculator that would perform four basic arithmetic. and advanced operations using one text field only (only one textbox should be used). This should include chain of operations such as 5 * 2 / 4 + 17 – 12 *6	Any Native Mobile or Hybrid Technology (This should not be done with web technologies as it is too easy)
Hangman game app	Reserve random words in a data source and create the word puzzle game. The user is going to guess the letters in the secret word to solve the puzzle. The user/player can guess a letter by clicking it or typing it on your keyboard. They will score points for each correct letter guessed right, and if they manage to solve it, then they will be scored how fast they solve it.	Any client/server-side technology or mobile app technology.
Pizza Ordering App	Select a bunch of ingredients from a series of combo Boxes, radio Buttons and checkboxes to make Pizza! Show the pizza and ingredients as images at the end. Ask the user their address to deliver the Pizza (no real address approve/location detection is needed.)	Any Native Mobile, web or Cross platform Technology
Quiz Application	ask 10 randomly shuffled multiple-choice questions to user that comes from database/collection (e.g., array) and assess the score of the user based on the correct answers provided. Each time the quiz is taken, the questions are random – which means they will come from a question bank of at least 25 different questions.	C++/Java/C#/ or any other server-side technology with HTML5
PDF Converter	Ask to user to upload a text file name, count the number of words and characters in that uploaded .txt file and show the entire file with word and character count as a PDF file and vice/versa – PDF can be converted back to word/txt.	C++/Java/C#/PHP or any client and server-side technology with HTML5
Distance Converter	Ask the user to enter a specific type of distance and convert to other type of distances, particularly work with meter, kilometer, centimeter, inch and foot/feet all interchangeably (back and forth).	Any Native Mobile or Hybrid Technology
Book Reservation System	Design and develop a registration and login system to a library where users can reserve books in between 2 dates. There should be at least 10 books in your	PHP or any other server-side technology with HTML5

	library. The registration and the books will be stored in a database.	
Secondhand shop for students	Design and develop an app/web site where students can login and post secondhand stuff they want to sell/give to other students. The portal should be made for students so each user should be strictly asked to login with their student number. The secondhand items can be stored in a JSON/database, all student info should be stored in a database.	Any Native Mobile, Hybrid Technology, PHP, or any other server-side technology with HTML5
Visual Tic Tac Toe Game	Design and develop a Visual Tic Tac Toe game. The game must be played visually– should not be a console application.	C++/Java/C#/PHP/Pyhton, mobile or with a game engine (Unity/Unreal)
Optical character recognition app	Design and develop a mobile app that can take a picture of a computer written text and convert this to an editable format.	Any Native Mobile, Hybrid/Cross Platform Technology

Notice that you are given almost a month to complete this assignment, hence please use this time efficiently. Additionally, if you did not like any of the topics listed above, you can approach to the module leader and negotiate your own idea as a team (not individually – as a team). This means that the whole team should commit to the idea you are proposing.

6. How can I guarantee a good mark?

You can guarantee a good mark in this assessment and seek to go above and beyond by practicing DevOps tools and approaches. One of your team members can take up the role of a DevOps engineer and integrate DevOps management and integration tools such as the tools listed below:

- Continuous management (**Puppet**, **Chef**, and **Ansible**)
- Continuous integration (**Jenkins**, **TeamCity** and **Bamboo**)
- Continuous testing (**Docker**, **Selenium**, and **Cloud Foundry**)
- Continuous monitoring (**Nagios**, **Splunk**)

A DevOps approach combined with agile is going to guarantee a first-class mark (a mark over 85) for the whole team if this is practiced correctly with solid evidence.

7. What is the report format and the video content?

Assessment Report details are listed:

The assessment report should have the following titles:

1. Introduction
2. Work division – how the work is divided, who was responsible from what.
3. Agile Development (Extreme programming activities: **User stories, acceptance criteria, test-driven development*** and optionally pair-programming and refactoring). A test-driven unit and automated testing approach are going to show clear evidence that you applied agile development effectively. **All three versions of the software should be discussed in this section.**
4. Agile Management***** (describe tools and methods used to manage agile development such as Kanban/Scrum board, merging and deployment)
5. Git usage (use pictures, push commitment screens, screenshots to prove all members effectively used Git features)
6. Conclusion/Final Words
7. References

* This should reflect on agile activities, how these organized, took place, supported/carried.

A sample project is shared with you.

The assessment video:

Should follow the same layout as the report that is introduction, work division, agile development and management, git services, tools, and conclusion.

The video should be in between 5 to 10 minutes.

Everyone needs to talk in the video regarding the parts they covered in the project and worked as a team. When you are talking, make sure to enable auto-generated subtitles on YouTube/Vimeo/Streaming platform and make sure your full name and student id are always visible.

Project Grading:

Please see the module information page

8. Anything else I need to know?

You are bound by academic integrity rules listed in the students' handbook. The latest version of the students' handbook can be reached at:
https://www.uwl.ac.uk/sites/uwl/files/2022-10/StudentHandbookAY2223.pdf

Additionally, the code you generate in your work must be your own sole work. However, your code does not need to be included in the report or displayed in the video as the sole purpose of this assessment is not to judge how well you coded, but rather how well you learned the tools and approaches to support agile development and/or DevOps approaches. In other words, you do not need to share your code in the report or in the video.

Good Luck in your assessment.