MANCHESTER METROPOLITAN UNIVERSITY

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School of Computing, Mathematics & Digital Technology
ASSIGNMENT COVER SHEET

Unit Title	Advanced Web Development
Assignment set by	Ismail Adeniran
Assignment ID	1CWK100
Assignment Title	Experimental Data-sharing Platform for Cardiomyopathies
Assignment Weighting	100% of the unit
Type (Group/Individual)	Group
Hand-in Deadline	11 March 2022 by 9pm
Hand-in Format and Mechanism	Your work must be submitted to GitHub and deployed to Firebase. The Moodle deliverables are: • Peer assessment document • Group PowerPoint presentation (GitHub and Firebase URL/passwords should be present) • Everyone must submit a copy of groupwork.
Support	Staff contact details and office hours are available on the Moodle area.

Learning Outcomes being assessed

LO1: Design and implement web applications using a range of contemporary web programming, data storage and server provisioning & configuration techniques.
LO2: Compare and contrast competing web technologies and select the most appropriate for a given task.
LO3: Critically evaluate current developments within field of web technologies, including web security best practice.
LO4: Synthesise results of research and development in web technology and present to peers.

Note: It is your responsibility to ensure that your work is complete and available for marking by the deadline. Make sure that you have followed the submission instructions carefully, and your work is submitted in the correct format, using the correct hand-in mechanism (e.g. Moodle upload). If submitting via Moodle, you are advised to check your work after upload, to make sure it has uploaded properly. *Do not alter your work after the deadline.* You should make at least one full backup copy of your work.

Penalties for late submission: See Regulations for Undergraduate Programmes of Study. The timeliness of submissions is strictly monitored and enforced.
All coursework have a late submission window of 5 working days, but any work submitted within the late window will be capped at 40%, unless you have an agreed extension. Work submitted after the 5-day window will be capped at zero, unless you have an agreed extension. Please note that individual tutors are unable to grant extensions to coursework. Extensions can only be granted on the basis of a Personal Learning Plan (PLP) or approved Exceptional Factors (see below).

Exceptional Factors affecting your performance: See Regulations for Undergraduate Programmes of Study. For advice relating to exceptional factors, please see the following website: https://www2.mmu.ac.uk/student-case-management/guidance-forstudents/exceptionalfactors/ or visit the Student Hub for more information.

Plagiarism: Plagiarism is the unacknowledged representation of another person's work, or use of their ideas, as one's own. Manchester Metropolitan University takes care to detect plagiarism, employs plagiarism detection software, and imposes severe penalties, as outlined in the Student Handbook and Regulations for Undergraduate Programmes. Bad referencing or submitting the wrong assignment may still be treated as plagiarism. If in doubt, seek advice from your tutor.

As part of a plagiarism check, you may be asked to attend a meeting with the Unit Leader, or another member of the unit delivery team, where you will be asked to explain your work (e.g. explain your code in a programming assignment). If you are called to one of these meetings, it is very important that you attend.

Assessment Criteria:	Indicated in the attached assignment specification.
Formative Feedback:	Feedback on your work is available during your timetabled lab sessions and onwards from when the assignment is set.
Summative Feedback Format:	Marks and feedback on your completed work will be available through Moodle.

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Assignment: Experimental Data-sharing Platform for Cardiomyopathies

1. BACKGROUND

Cardiomyopathy is a disease of the heart muscle that makes it harder for your heart to pump blood to the rest of your body. The most common forms of cardiomyopathy are Hypertrophic Cardiomyopathy, Dilated Cardiomyopathy and Arrhythmogenic right ventricular Cardiomyopathy. These cardiomyopathies occur due to mutations in genes that encode certain proteins in the cells of the heart.

Many research groups, clinicians, medical centres and labs perform experiments on cells from patients and animals to better understand the mechanisms that cause these cardiomyopathies. The aim is disease prevention and the development of therapeutic responses.

The data from these experiments are scattered in published papers in different journals and sitting on the hard drives of disparate and disconnected research groups and medical centres.

In order to foster better collaboration and aid the speed of cardiovascular research, it would be beneficial to have a central repository for the data that can be queried by interested parties anywhere in the world.

2. THE ASSESSMENT

Consequently, you will develop a web application that:

1. enables experimental data to be submitted to the database.
2. responds to queries relating to the stored data on cardiomyopathies.
3. queries other existing, related databases for additional useful information relating to cardiomyopathies.
4. graphs/plots appropriate experimental data for easier consumption and interpretation.

The experimental data to be stored include properties/measurements of the heart under different cardiomyopathy mutations, e.g., left ventricular mass, left ventricular ejection fraction, etc. (See Section 3.1).

3. ORGANISATION

This assessment will simulate as much as possible the processes carried out in an industry/commercial setting from the initial meeting with a potential client (in this case, your tutor) to the delivery of the product. Hence, your professionalism will also be assessed.

You will be divided into groups of four/five (published on Moodle: Unit Assessments area) and you are expected to use the agile methodology to complete your project. No individual work will be accepted.

To enable you to work confidently on the assessment, you will learn during the lectures and lab sessions:

- how to develop a front end web application using VueJS.
- how to develop a back end using Firebase.
- how to make a connection between the front end and the back end.
- how to perform CRUD (Create, Read, Update, Delete).
- how to create line charts.
- version control.
- UI Design.
- Project Management including the Agile Methodology.
- how to ensure high code quality.
- Unit testing and end-to-end testing.
- GitHub Actions for CI/CD to automate every step of your development workflow.
- deployment of your code to the Web.

The skills highlighted above, and the developed web application can be used as evidence for future job applications and will stand you in good stead during interviews. It will also serve as a platform to build upon either to learn new technologies or improve existing and develop new technologies.

3.1 FIRST STEPS: CLIENT REQUIREMENTS AND INITIAL DATA

Each group should set up a meeting with the client (your tutor) to discuss in detail the specific requirements and how to obtain initial data.

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4. MARK SCHEME FOR GROUP PROJECT [60]

TASK	**Front End Development**	**Back End Development**	**Front End Communicating with Back End**	**Testing and Deployment**	**Value-Added***
MARK	**40**	**30**	**5**	**15**	**10**
	Home page and other subsequent pages are well-designed, functional, informative and user-friendly. [10 marks]	Back End can perform CRUD operations [15 marks]	Establish an appropriate method of communication between the front end and the back end. [5 marks]	User tests and Task tests [5 marks]	**Useful additional feature(s) [5 marks]**
	User can add and delete experimental data easily. [10 marks]	Back End can perform user authentication [5 marks]		Tests web service/web application with CI/CD [10 marks]	**PROFESSIONALISM [5 marks]** Evidence of the use of Agile Methodology, e.g., • Setting up client meetings, • User stories • Issues • Sprints • Stand-up Meeting minutes, etc.
	User can query existing experimental data. [10 marks]	Back End can perform task authentication [5 marks]			
	Data presented appropriately with user-friendliness in mind. [10 marks]	Back End can securely store passwords [5 marks]			

*You must implement ONE feature not in the task list to achieve the full marks. You can discuss this with your tutor in the lab sessions or by making an appointment or during the initial meeting.

5. GROUP PRESENTATION DEMO [10]

This presentation will be held during the lab sessions in the assessment week **(Monday, 7 March 2022 and Tuesday, 8 March 2022)** at a mutually arranged time with the client. The project will culminate with you delivering an oral group presentation that details the design, decisions and workings of your full-stack web application including a demonstration of the working application.

This should meet the following criteria:

- The rationale for the layout and design of the front end.
- The design of the back end.
- The communication between the front end and the back end.
- A (live) demonstration of your web application and its functionality via Firebase.
- How you employed agile practices in the development of the project.

6. MARKING CRITERIA FOR GROUP PRESENTATION

	Pass **40 - 49**	**2-ii** **50 -59**	**2-i** **60 - 69**	**1** **70 - 100**
Content **[30 marks]**	Limited knowledge, with some significant gaps and/or errors	Generally accurate and relevant; adequate knowledge but perhaps some gaps and/or irrelevant material	Detailed, accurate, relevant, good knowledge	Detailed, accurate, relevant; key points highlighted
Structure **[15 marks]**	Argument underdeveloped and not entirely clear	Mostly clear or logical	Clearly argued and logical	Rigorously argued, logical, easy to follow
Presentation Skills **[15 marks]**	Not always clear or easy to follow, unpleasant experience	Conveys meaning but sometimes unclear	Clear, lively; use of appropriate visual aids	Clear, lively, imaginative; good use of visual aids, pleasant experience

Time Management [10 marks]	Poorly prepared, disorganised and rushed	More or less right length, but some material not covered properly or over-runs	Well organised, Well prepared	Perfectly timed, well organised
Group Skills [10 marks]	Not all group members participated. Uncomfortable responding to questions	All members are present and each discusses his/her contribution. Responds reasonably well to questions	Attempts to engage with group and responds reasonably well to questions	Engages well with group; encourages discussion and responds well to questions
Agile Skills [20 marks]	Cursory discussion of client requirements. Little or no evidence of project planning No defined roles for group members.	Some discussion of project relative to client requirements. Some evidence of project planning. Defined role for one or two group members.	Discussion and evaluation of project relative to client requirements. Thorough evidence of project planning – user stories, minutes of meetings or equivalent, etc. Clearly defined roles for members, e.g., product owner, scrum master. Shows evidence of tests harness and CI/CD tools.	Critical evaluation and discussion of project relative to client requirements. Thorough evidence of project planning – user stories, minutes of meetings or equivalent, etc. Clearly defined roles for members, e.g., product owner, scrum master. Shows evidence of tests harness and CI/CD tools. Solicited client input and testing during project.

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INSTRUCTIONS

You will receive a final mark based on the following two components:

Component	Description	Marked by
Individual Mark (30%)	Based on the quality of your individual contribution to the group work with the results of the peer assessment.	Peers
Group Mark (70%)	Based on the overall quality of the work of your group	Tutor

See Sections 4 - 6 for a detailed mark scheme.

7. DELIVERABLES

Each individual must submit the following by the deadline (9pm on 11 March 2022):

Deliverable	Format	Submission Method
1. PPT presentation • GitHub URL ID • Firebase URL ID/Passwords 2. Peer assessment	ppt or pdf + docx or pdf	Moodle

Each group must submit the following by the deadline (9pm 11 March 2022):

Deliverable	Format	Submission Method
Code + Readme with code reviews	All source code	GitHub
Project Management	Text	GitHub
Firebase Deployment URL + Firebase details	Firebase URL, ID and password	Firebase details in submitted PowerPoint presentation

The presentations will be held during on Monday 7th March and Tuesday 8th March between 9am and 1pm.

8. FEEDBACK

There will be an opportunity to get formative feedback during the on-campus face-to-face lectures. There will also be opportunities to receive guidance and feedback on your work-in-progress during the weekly lecture and lab sessions.

Your final summative assignment feedback sheet will consist of an annotated copy of the marking criteria, see Sections 4- 6, with your levels of performance highlighted, and an overall final mark out of 100 with descriptive comments and written feedback.

9. GETTING HELP

Help is available in the weekly lecture lab sessions. We will also hold an assignment workshop during one of these timetabled sessions to check progress, solve group issues and provide feedback.

Just as you would in a professional setting, you can contact your client (your tutor) to clarify requirements, discuss ideas and discuss any issues impeding your progress. Do this at the earliest opportunity possible using the contact details below:

Dr Ismail Adeniran
Email: i.adeniran@mmu.ac.uk;
Office hours: Tuesday, Wednesday and Thursday: 11:00 am – 12:00 pm.

Email for an appointment for other times.

10. MARK SCHEME

Group mark (70%)
See section 4-6 for details.

Individual mark (30%)
Peer-assessment: each group member must complete the 'Peer review Form' and give marks for other group members in terms of cooperation, communication, organisation, contribution and reflection.