Team number : 5

Project Title: Labman – the responsive web-based laboratory management system

| Milestone 1 | Activities | Planned Outputs | Achieved Outputs |
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| Restate the milestone from your Draft plan . | Restate the key activities from your draft plan. | Restate the planned outputs from your draft work plan. | Outline the actual outputs compared to what was projected (or type “same as planned”) |
| In milestone 1 , Labman development team planned to deliver webpages which support the lab managing the borrowing and returning records online. | Sort out requirements of data  manipulation | Tasks and issues management on Github | Same as planned |
| Designing required tables of  relational database | Well designed EER diagram;  A database on cloud server. | Same as planned |
| Designing and implementing API for data  manipulation | API documents | Same as planned |
| Front-end development of  required pages | Equipment management page;  Request management page;  Return management page | Same as planned |
| Back-end development—building  tables | Well-defined tables with proper fields and relationship;  the document for EER diagram of database | Same as planned |
| Back-end development—API  development | request related APIs;  borrowing related APIs;  equipment type related APIs; | Same as planned |
| Integration—API testing | Passed the designed testing cases | Same as planned |
| Integration—Debugging | Bug-free website | Same as planned |
| Team reflection on progress | Provide some comments below regarding the completion of this milestone specifically around:  1. How is the project progressing?  2. Are there any differences between projected and actual outputs/outcomes? | | |
| **1.How the project progresses**  1.1 Time  The project is currently progressing according to the scheduled timeline. We have completed milestone 1 in week 7, which is 40% of the total project. Based on the experience we gained from milestone 1, we are speeding up and on track to meet the project's overall goals before week 13.  1.2 Scope  Our client is pleased with the features we designed for version 1.0(milestone 1), which has been finished and tested by our client. The rest 60% of the requirements are scheduled in milestone 2.  1.3 Quality  We delivered the version 1.0 with a high quality because we conducted regular testing, code peer review, evaluation of the user interface, and sought feedback from clients then adjusted the system solution quickly. And we will continue to deliver the final version with high quality.  **2.Differences between projected and actual outputs**  None. | | | |

| Team reflection on managing problems | Have you encountered any problems to date?  If so, how have you managed them? |
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| We encountered several problems during the LabMan project and have effectively managed them:   1. Cloud server free license expiration: The expiration affected our access to the database, slowing down our development progress. We resolved this by registering a new MS Azure account, migrating our database, and updating the license and database settings files on Github. This solution allowed us to maintain uninterrupted access to our database. 2. Ineffective API documentation: This issue hindered communication between the front-end and back-end teams, causing delays in development as the front-end developers could not understand how to call back-end APIs.To address this, we adopted Restful API standards and held regular meetings to ensure efficient communication and collaboration between both sub-teams. 3. Database design modifications during development: The initial design inadequately met the project's requirements, which could have led to performance issues. As the development progressed, we identified these limitations and made the following necessary adjustments to the database structure, ensuring it effectively supported the system's needs:   a. Removing foreign keys in some tables for improved performance and flexibility.  b. Changing the primary key of the student table for better data handling.  c. Setting the type\_name of the equipment\_type table as unique to maintain data integrity.  d. Updating status definitions for request and borrowing tables.   1. Frequent front-end design updates:This problem could have slowed down development, wasting valuable time on design changes. We managed this by modularizing the front-end system, making it more adaptive to design changes, increasing development efficiency and reducing the time spent on design updates. 2. Digital certificate path inconsistency: This issue caused the same back-end project not to compile on some teammates' computers, leading to delays in the development process. We resolved this by importing the path package to address path differences, ensuring a smooth development process for all team members. 3. MySQL package for Express not supporting promises: This limitation could have resulted in lower code quality and maintainability due to callback hell, as our project had numerous async functions. We used the “promisify” function from the util package to convert callback-based functions into promise-based ones, improving code quality and maintainability, and preventing callback hell. | |

| Supervisor assessment | Please, rate your team (1) effort, (2) project progress and (3) their self-reflection for milestone 1  Rating scale 1-10 as per standard marking scheme, ie 5 is a Pass and 7 is a credit.  Add some comments to explain your rating |
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| Effort:  Progress:  Reflection: |  |