**Project Proposal:** GotoGro-MRM

**Team Details**

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| **Team Name:** | MSP 14 |
| **Tutorial:** | Tue 2:30 ATC325 |
| **Tutor:** | Dr Kaberi Naznin |

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| **Members:** | |
| Dylan Jarvis | 102093138 |
| Rabya Tayal | 103144215 |
| Simon Tran | 103602807 |
| Thomas Babicka | 103059885 |
| Cody Cronin-Sporys | 103610020 |
| Nicholas Dyt | 101624265 |

**Solution Direction**

In a realistic setting, the project calls for a web hosted database management system (DBMS) with desktop clients on all relevant point of sale (POS) machines. Together these constitute and enterprise framework. However, given the timeframe, we can simplify the implementation to either be entirely web hosted – accessible through a browser – or entirely desktop hosted, where the database exists directly on the host machine. Table 1 shows a comparison between the two alternatives:

**Table 1. Comparison of Solution Directions**

|  |  |
| --- | --- |
| **Desktop Application** | **Web Server** |
| Database is stored locally on machine | Database is stored on the web on a server |
| Program is self-contained | Program must be stored a separate web server |
| Program is not easily accessible from mobile devices | Program can run on any device with internet access |
| No additional hardware required | Server required, either through cloud-hosting or physical storage |
| Generally cheaper | Generally more overheads |
| Requires coding skills only | Requires coding skills, also skill with markup languages HTML, CSS etc. |

To make a distinction between the two, we must consider the problem domain, the solution domain as well as personal familiarity with relevant business knowledge, skills, and technology:

**Table 2. Knowledge of the Problem Domain**

|  |  |  |
| --- | --- | --- |
| **No.** | **Item** | **Description** |
| 1 | Customer needs | Knowledge of what a customer needs from the business, specifically, why are they using a member-based retail chain |
| 2 | Business needs | Knowledge of business needs, why they chose to use a member system, what benefits this provides |
| 3 | Current Technology | What kind of physical systems do they currently have in place, how do these function, how can they be used/repurposed |
| 4 | Network Architecture | How does the business currently manage its network, security concerns, how can this be leveraged to solve problems |

**Table 3. Knowledge of the Solution Domain**

|  |  |  |
| --- | --- | --- |
| **No.** | **Item** | **Description** |
| 5 | Solution Technology | Knowledge of what technologies exist already to deliver digital reporting, how are these used in industry |
| 6 | Server Management | How to set up and manage a physical/cloud-hosted server to store company information |
| 7 | Cybersecurity | What are the threats to the system and how can these be managed |
| 8 | Desktop Applications | Competency in a coding like C#, C++, Python, Ruby, enough to deliver the desired functionality |
| 9 | UI | Competency in linking raw code to a user interface which can be used by the intended users without issue |
| 10 | Database Management | Competency in working with and extracting data from a database |
| 11 | File Management | Competency in extraction data from software or database and saving it into a file, especially csv format |
| 12 | Web Technologies | Competency using HTML, CSS, PHP and Javascript to create a web interface |

**Table 4. Team Competencies**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Item** | **Dylan** | **Rabya** | **Cody** | **Thomas** | **Nicholas** | **Simon** |
| 1 | Customer Needs | Medium | Low | Medium | Medium | Medium | Low |
| 2 | Business Needs | High | Low | Medium | Medium | Medium | Low |
| 3 | Current Business Technology | High | Low | Low | Medium | High | Low |
| 4 | Network Architecture | Medium | Medium | Medium | Low | Medium | High |
| 5 | Solution Technology | Medium | Low | Medium | Medium | High | Medium |
| 6 | Server Management | Low | Low | Low | Low | High | High |
| 7 | Cybersecurity | High | Low | Medium | Low | High | Medium |
| 8 | Desktop Applications | High | Low | High | Medium | Medium | High |
| 9 | UI | High | Medium | High | High | Medium | High |
| 10 | Database Management | High | High | High | High | High | High |
| 11 | File Management | Medium | Medium | Medium | Medium | Medium | Medium |
| 12 | Web Technologies | High | High | Medium | High | Medium | Medium |

**Gap Analysis**

Table 4 demonstrates the overall competencies of our team in the skill areas required for the project. Overall, our strongest competency is in database management, which is ideal because both solution directions require a database.

Our weakest skill appears to be in server setup and management, closely followed by customer needs. Extra time must be assigned to these aspects to ensure they are up to standard.

In terms of experience with creating desktop applications versus web applications, we have a strong split, with a slight lean towards web proficiencies. Three of the team members opted for a web-based architecture, while the other three provided justification for a modified enterprise structure. In this model, the database would be hosted on a web server and business logic would be handled on another, but instead of providing access through webpages, a desktop client would be used to interface with the logic layer.

Ultimately, we decided to go for this model. The members of the team more comfortable with desktop applications will be responsible for creating the client software, while the team members with stronger web proficiency will be responsible for the database and business server setup.

**High Level Design**

The high-level design is broken down into three layers:

The client layer (application layer), which provides a UI and a visual method of interacting with the system.

The logic layer, where business logic takes place and drives things like calculation and reporting.

The database layer, which houses the raw business data.

Together they create an architecture as follows:

**A picture containing diagram

Description automatically generated**

**Member Comments**

**Table 5. Member Comments**

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| --- | --- |
| **Name** | **Description** |
| Dylan | I agree with the proposed models, we have the skills to cover all foreseeable complications so we should be able to complete the project in the timeframe. |
| Simon | I believe that the design of the project is well thought out and accomplishes its goal of outlining the requirements and scope as well as neatly delineating the strengths and weaknesses of our team. |
| Rabya | I believe the project design is neatly split into client, logic and business layers and the solution design is very good security wise as well. Based on the team member skills, the project seems doable within the given timeframe. |
| Cody | Our design has been selected and broken up effectively to allow for an effective end product and for many tasks that each team member can be assigned to based on their strengths/ weaknesses in different skills. |
| Thomas | I think the design of the project is well done and based upon our team member skills we'll be able to complete each aspect of the project to a high standard. |
| Nic | I think the solution direction proposed make perfect sense and breaks down all key elements into simple components. Using gap analysis and comparing these components with our team skills we have a good split between all necessary skills required to deliver this project successfully. In the high-level design I think the logic layer objects, web server and business server should be one object and not separate. I think one central business server would be able to perform both objects’ roles and make the web server redundant. I understand the separation of the two, but it may not be needed in the final design. |