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| **Case Study 3** |  |
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|  | Introduction This project is a startup step of a group of an infrastructure engineers into building their own product for a client of theirs.  The team consists of a three members Robert, Ibrahim, and Gabriel. All three are a first-year infrastructure students at Fontys university at Eindhoven.  This project was proposed to them by a client in need of a product to help maintain and control their environment. Given that this is the team’s first standalone project every member is eager to prove themself as a capable engineer and make a mark for themselves by producing an excellent result for their work. Project background The client presented a request to provide him with a full layout build of their network and inside the main building.  The environment that the client has currently is a company that works with two warehouses and a main office. Given that the three locations are placed around the Netherlands, the need of communication and monitoring of the warehouses plus control over the data present on the website is a must to ease the management of the company’s resources. Problem definition For a successful delivery of the project the team has to meet the requirements of the clients in regards of his working environment, this environment is as followed:  A host server that will be responsible for the management of users and their workload separation. Additional data storing is needed through the use of databases which will be installed onto the server hosting the website to facilitate access to the data from website to tables.  Alongside the installation an active monitoring system is needed to monitor the warehouses and update the data content frequently to match available information to the data registered.  To simulate this environment the team opted to imitate the project in a controlled environment on base with a designed layout matching that of the customer’s firm,  The layout will host a web server and a database that contains all the information’s about the company and the items available in inventory, the client has two warehouses that needs monitoring and updating. Alongside the warehouses a website is needed, the website will be presenting the items in the warehouse, the items are added to the database on the database server. Project approach For the project, our team wanted to make something that can be easily expanded or constrained. Each team member came up with an idea and in the end, we combined it. We thought of each constrain that we were given and how possibly we can implement it into our project. | |  |
|  | Scope This project is intended for clients that have more than one storage or warehouse location and that are interested in the services and results that “RIG Network Engineers” is offering. Our focus is on creating a product/service for our client scenario and provide help and service support. The scope of this project is to create a network between website, application, and sensors. Each location has sensors and uses “RIG application” to connect to the website and store logs to database of the sensors and the website. Scope Definition  |  |  | | --- | --- | | Del  ID# | Description | | 1 | Application for sending and retrieving sensor information | | 2 | Application for server management | | 3 | Website for the client | | 4 |  |  |  |  | | --- | --- | | **Substitution**: Work Breakdown Structure (WBS) or mind-map attached | **WBS / Mind-Map** |  |  |  |  | | --- | --- | --- | | Task ID# | Task to be completed | Enter Del ID# | | 1 | “Smart Product filter” feature | 3 | | 2 | Program C code for sensors | 1 | | 3 | App to monitor website status | 2 | | 4 | Create a database for website logs | 2 | | 5 | Create a database for sensors logs | 2 | | 6 |  |  |  Items Beyond Scope  |  |  | | --- | --- | | This project **will exclude** the following: |  | | |  |

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|  | Requirements For this project we were given a few minimum constrains that must be met in the project. They are as follow in categories of the modules of the course: Provisioning and Securing  * Design the system that is resistant to a failure (think about design for failure). * Design few tasks using Bash. * Use RADUIS.  Managing and Securing  * Find out which parts of Infra setup need installation and setup of: * IDS/IPS * Monitoring tools * Analysis of log and event files * Demonstrate your pen-testing skills * To which assets of Infra setup? * Demonstrate your Infra setup complaint to GDPR  Programming  * Flask web application * Tkinter cross-platform application * Container for the application and database * Application Deployment modeling * Structural and behavioral modeling * Application security  Constrains Some of the constrains that would hold the project:   1. Encryption is not a success and would delay the deployment. 2. Constrains on the connection to the private server limiting the connection to the setup in testing. 3. Costs for purchase parts for the project is unavailable making what Is present the only available resources to work with 4. Some of the presented ideas may prove difficult for the moment for the team, this might affect the quality of the final result presented. | |  |
|  | Goals and Objectives Our main goal : fully fledged, functional network between website, application, and sensors.  Our objectives:   * Application for retrieving and sending sensor information * Website for the hypothetical client * Back-End application for the server and warehouse management:   + Website status   + Database, logs of the website   + Database, logs of the sensors * Dockers for handling server  Milestones For this project, the milestones are in the following order:   |  |  | | --- | --- | | Week 11 | Start with project plan – finish pitch presentation | | Week 12 | Having part of the documents ready and finalized after a successful pitch while the remaining part would go for the next week.  Documents include:  Project plan – design document – project roadmap – client’s personas. | | Week 13 | All documents are ready and finished – server is setup for the layout and ready to deploy work to it. | | Week 14 | Web server is deployed – website dummy is deployed – database is deployed and ready. | | Week 15 | Encryption is managed and tested Arduino is tested. | | Week 16 | Encryption is deployed on server with Arduino. | | Week 17 | Website is running alongside database taking data from it and sending to it  Encryption is deployed to database and Arduino is sending to the server. | | Week 18 | Deliver all workload on time. |  |  |  |  |  | | --- | --- | --- | --- | | **Risks**  Team members can start arguing with each other about something they do not agree . | **Impact**  Low, possible postponing deliverables | **Possibility**  Moderate | **Solution/Workaround:**  Team members will discuss what is better for them and if there will be no solution for their argue problem, teachers will get involved. | | Team member can get sick in such way that he will be incapable to work even from home | All work will be transferred to other team members, which can lead to postponing and decreasing quality of deliverables | Moderate | Team members will try to work on everything, and sick team member will try his best to work and to get better. | | Hardware failure | Extremely harmful, due to COVID-19 quarantine and inconveniency of maintaining it | Low | If fixing is not possible, then contacting client/teachers to find a workaround that problem. | | Internet failure of team members | Inability of a team member to work on a daily basis | Moderate | Notifying a mentor and a team member and contacting an internet provider for them to solve a problem. | | Due to quarantine all people suffer from reduced productivity. That can be the cause of the wrong time management. | Medium/High. Possible postponing of the deliverables and/or overworking. | Moderate | Having a fixed time for the meetings, forcing to work during those meetings. | | |  |

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