Construction Company Management System Requirements Specification

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Table of Contents

Executive Summary

1.1 Project Overview

It seems that many businesses in our country still uses the old version of keeping information for their workers like using notebooks or excel .In the cases of constructing companies they do not have a specific program that shows that the project they are working in currently or how the work is divided between their workers . The business we are helping to solve this problem is a construction company named "Druri –Shqip shpk" .

This company is using excel to keep the working days for each worker to account their payment based on their working days. As for the project they are currently working with, they do not have a proper database to keep all the project and which worker is currently working on that project. They also use only an accounting program for the economist for the material use but that program do not include which materials was used on that project .

For these reasons we have decided to create a program which will help this construction company ,it will digitalize the information on working days for each worker including on which project they are currently working. The owner will have it easier to have all the information of the project in his computer. It will also help the other users with their work in the company in order to have everything in one place. Admin, team leader, economist, jurist, administrator will be the ones that will be able to use this desktop application. The 5 main users will have their account in order to have all the information in one place.

1.2 Purpose and Scope of this Specification

In order for a construction company to get a project well done, it is needed that every employee to coordinate their work with each other. So, the main purpose of our Construction Company Management System is to build a communication bridge between every employee in the business.

Currently, the business owner is gathering and organizing all data manually and he is doing mostly anything on his own. This program will make sure that engineers cover the processes

of planning and coordinating different projects. This way, the system will bring a digitalization of the work in order to make things work as quick, efficient an effective as possible.

This software will help in organizing the work of the company and since everyone is doing their part, it will be less time-consuming. The tracking of the resources and assets, as well as monitoring of the costs, purchases of the materials, progress and the performance of the workforce will be easier. This way the business can achieve what is called competitive advantage in the existing market.

2. Product/Service Description

2.1 Product Context

This software is a desktop application which is going to provide the best solution to the management. The system will help the company with the daily activities also cover the processes of planning, coordinating and controlling different projects that are executed by existing teams in the company. This will cover most of the work done by hand which is time consuming, not efficient and can lead to certain misunderstanding or problems. The application's goal is to also make the process of keeping track of inventory and the purchasing order less time consuming and easier to deal with.

2.2 User Characteristics

There will be five main users where each user will have their personal window to work. In the login window will be a selection box to choose the logging user who is working

1. Owner (admin) window

    a) Create, remove, update employees

    b) Read days off requests and approve them

    c) Open the project that they are about to work on

    d) Approve or decline the project suggested by the team leader

    e) Add account in order to do the needed changes regarding the account of the application

2. Team Leader window

    a) Create, remove, update projects

    b) Assigns workers to projects

    c) Report the materials used daily and the amount use

3. Economists

   a) Mark the employees that show up to work daily

   b) Makes days off requests for the

workers

   c) Keep track of the inventory

   d) See for each worker the work days from the day he selects to another day and
   calculate the payment

   e) See for each project the materials use as well as the price

   f) Fill a project order list for the materials needed as well as the amount

4. Jurist

   a) Enters the contract in the system

   b) He can edit or delete them

   c) Enter the tenders that the company applied for

   d) Looks at the ones that are in progress as well

5. Administrator

   a) Looks at the list of the company's suppliers

   b) Can add, update, delete new suppliers of the materials

   c) When opening the certain supplier he can look at the details of that supplier

   d) After looking at the supplier he can make an order listing the quantity needed

   e) Will have a to do list where he can add new things for the day and also mark things as
   done after completing them

2.3   Assumptions

On this Application:

- It is assumed that every user has access to a computer.

- It is assumed that the admin will have access and also have the power to add users and also employees to the system(CRUD functionalities)
- It is assumed that the computer devices that will use the application will have Windows or Linux operating system
- It is assumed that admin will have access to everything that other users post.
- It is assumed that the application will be secure and the data will be confidential.
- It is assumed that every user like admin, economist, administrator, jurist and team leader will be trained to use this application before starting to use it.

2.4   Constraints

The application will conceivably have the following constraints:

- Each employee has to first show to the economist's office
- The users of the application should have basic knowledge of the application
- The users have access of the application only in the computers where it is installed

2.5   Dependencies

Dependencies of the application:

- The application needs to run in a computer
- The user cannot log in if the admin didn't open an account for them
- Project cannot start without the acceptance of the admin
- Also days off requests need to be accepted by the admin
- Admin cannot view the projects if they are not fully completed (detailed)

3. Requirements

3.1 Functional Requirements

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_01	The system is implemented as a desktop application with five main users	Every operation will be involving these users	1	4/29/20	Kristiana Cukaj Marina Collaku
BR_02	Every user will be able to log in to their accounts with their usernames and the passwords	This is the only way that they can use the application	1	4/29/20	Kristiana Cukaj **Marina Collaku**
BR_03	A database will be connected in order to keep all the data.	The only way to save the information of the application is by connecting it to a database that will keep all the data	2	4/29/20	Kristiana Cukaj **Marina Collaku**
BR_04	If the user trying to log in exists in the database, he should be able to open his page	The system checks with the database the information given by the user when logging in	2	4/29/20	Kristiana Cukaj **Marina Collaku**

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_05	The Admin account should have all the priviledges and must be able to enter in every users window.	In order to be in full control of what everyone is doing the admin should have access to different windows	1	4/22/20	Kristiana Cukaj Marina Collaku
BR_06	This system should provide the admin the right to add, edit and delete employees	This way if any changes are made in the business it will not be hard for the admin to adjust those changes in the system	1	4/29/20	Kristiana Cukaj Marina Collaku
BR_07	The Admin page is responsible of approving different projects suggested by the team leader.	Before team leader starts working on projects they send a draft of the project and it is up to the admin to approve them.	1	4/22/20	Kristiana Cukaj Marina Collaku
BR_08	The admin can add new employees by providing information such as: Name, Surname, Date of Birth, Position in the company.	This will be one of the main operations of the admin account.	1	4/22/20	Greta Meckaj Marina Collaku

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_09	The admin can view employees data in a tabular form where he can search and can make quick edits on data through the table or delete.	Through this option it will be easier to navigate through different employees	2	4/22/20	Greta Meckaj Marina Collaku
BR_10	The admin page is responsible on approving the days off requests for the employees	By doing so it will be easier for the admin to not forget about who wants a day off	2	4/22/20	Erjona Gosturani Pavlina Hysko
BR_11	The admin page is responsible for making the required changes for any of the account as well as the username and password of that account	In this way the admin will be in full control of the application	3	4/22/20	Erjona Gosturani Pavlina Hysko
BR_12	The admin can open a page where he sees all the projects and their activity status.	Through this it will be easier to navigate all the projects	3	4/22/20	Erjona Gosturani Pavlina Hysko

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_13	The team leader should specify his username and password and his position in order to open his page	This is an easy way to access the account and also secure	2	4/22/20	Kristiana Cukaj Erjona Gosturani
BR_14	The team leader must give information regarding the daily material usage along with the amount used	In this way it is easier for the team leader to communicate with the economist	2	4/22/20	Kristiana Cukaj Erjona Gosturani
BR_15	The team leader is responsible of creating new project by filling details and assigning workers for that project	By doing so it will be easier for the admin to control all the project	3	4/22/20	Kristiana Cukaj Erjona Gosturani
BR_16	The team leader must fill a form for the project he is creating	This way for every project there will be details which can be viewed easier	2	4/22/20	Pavlina Hysko Greta Meckaj
BR_17	The team can also update or delete a certain project.	Related to certain changes in the company the user should be able to reflets those changes in the system	2	4/29/20	Pavlina Hysko Greta Meckaj

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_18	The team leader should send this project as a request to the admin in order to approve them.	It will be easier for the team leader to access all the project from all team leaders	2	4/22/20	Pavlina Hysko Greta Meckaj
BR_19	The team leader can view all the details of the projects he is a team leader of.	As the team leader is the engineer all the project he has done till now can be accessible	3	4/22/20	Pavlina Hysko Greta Meckaj
BR_20	The team leader can edit the details of the project he is currently working on or former projects	so if he also wants to edit work in progress projects	1	4/22/20	Kristiana Cukaj Greta Meckaj
BR_21	The economist account is responsible of showing who is showing up to work every day.	This is an efficient way to have the list of everyday working worker instead of having to write them down	3	4/22/20	Kristiana Cukaj Greta Meckaj
BR_22	The economist is sending days off request to the admin with the request of the specific worker	By doing so it will be easier for the economist to not forget about who wants a day off	2	4/22/20	Erjona Gosturani Marina Collaku

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_23	The economist can view the daily usage of the material for the project as well as the amount used	As to make it easier for the economist to not forget nothing that the team leader buys this can be a help	3	4/22/20	Erjona Gosturani Marina Collaku
BR_24	The economist can view the unit price and the price of the total of the materials used	This is an easy way to look at the costs a specific project has	3	4/29/20	Erjona Gosturani Marina Collaku
BR_25	The economist can calculate the workers payment based on the selected period	Based on the calculation of the days worked * their daily wage	2	4/22/20	Erjona Gosturani Marina Collaku
BR_26	The economist can fill a list of the materials needed and send it to the administrator page.	Looking at the inventory it will be easier if the economist send it to manager of supplies in order to make the order	2	4/29/20	Erjona Gosturani Marina Collaku
BR_27	The jurist can view all the contract in a list and when selected a bigger window with the pdf showing will open.	In order to be more organized when the jurist selects the contract he want then the details will show	2	4/29/20	Erjona Gosturani Marina Collaku

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_28	The jurist user can new contract, edit or delete.	Jurist can add when a new contract is made and also update it according to the changes	2	4/29/20	Pavlina Hysko Greta Meckaj
BR_29	The jurist can also add notes to a certain contract.	If necessary he will add some notes under the contract	3	4/29/20	Pavlina Hysko Greta Meckaj
BR_30	The jurist can also view the tenders that the company has applied for.	This way he will have everything in one place and look at the status of his work as well	2	4/29/20	Pavlina Hysko Greta Meckaj
BR_31	The jurist can also look at the tenders in progress.	This is a way that he can see where he stands with his work	3	4/29/20	Kristiana Cukaj Pavlina Hysko
BR_32	When selected the jurist can see more details about the tenders.	In order to be more organized when the jurist selects the tender he want then the details will show	2	4/29/20	Kristiana Cukaj Pavlina Hysko

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_33	The jurist can also add, edit and delete tenders.	Changes are made following the changes in the business	2	4/29/20	Kristiana Cukaj Pavlina Hysko
BR_34	The administrator when logged in can view the list of suppliers of the company.	Having the suppliers name will be easier to orientate to whom to make the order	1	4/29/20	Marina Collaku Greta Meckaj
BR_35	The administrator can open a supplier's detail and make an order for the materials needed.	This way by just opening he will have the details of the supplier where he wants to order and only make the order	2	4/29/20	Marina Collaku Greta Meckaj
BR_36	The administrator can add new orders for a certain supplier.	Besides the already made order he can make a new order	2	4/29/20	Marina Collaku Greta Meckaj
BR_37	The administrator can also make notes about the order he makes.	This way there is an easier way to explain the special needs an order may have	3	4/29/20	Marina Collaku Greta Meckaj

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_38	The administrator can make a to-do list about the day.	This is a way to be more organized and keep I mind the works for the day in order to see the progress made.	2	4/29/20	Marina Collaku Greta Meckaj
BR_39	The to-do list will first consist of the materials needed as suggested by the economist.	The first to-do list should consist in the materials needed as suggested by the economist	3	4/29/20	Marina Collaku Greta Meckaj
BR_40	The administrator can add things to the list and save them afterwards.	This will give the opportunity to also keep in mind the work needed to be done for the day.	2	4/29/20	Erjona Gosturani Pavlina Hysko
BR_41	The administrator can also check them as done after completing.	This is a way to keep track of what is already done and what needs to be done	3	4/29/20	Pavlina Hysko Erjona Gosturani

3.2 Non-Functional Requirements

3.2.1 Product Requirements

3.2.1.1   Usability

In software engineering, usability is the degree to which a software can be used by consumers to achieve objectives with effectiveness, efficiency, and satisfaction.
The main aim is to produce a software which must be easy and practical to use meaning that it would be very efficient and that each user can accomplish every task easily, quickly and with few or no user errors.

Our app system is very easy to be updated and get adjusted quickly with these new arrangements, providing users a fast and reliable way of performing each operation.
Every operation will be context sensitive and obvious to what it is achieving, in order to make it clearer to the user. It proceeds and manages the errors quickly in such a way that every operation will be context sensitive.

It shall not be intimidating, frustrating and look as though it demands a lot of time and effort to complete a simple task.

Every user will have its own type of interface, with the attributes and actions they can perform there.

The application would be highly responsive in both design and data generator, which will be integrated in the app.

Even if the app is really easy to use ,In order to foster the user learning the system, a PDF manual would be included, providing necessary, step by step information to learn all type of users how to effectively use the system and achieve common tasks.
 The software is user-friendly which makes it easy to work with.

Also it is secure.

3.2.1.2   Efficiency

3.2.1.2.1 Performance Requirements

The application is a desktop software which it means that can be installed on a single computer (laptop or a desktop) and used to perform specific tasks. The application is going to be used by 5 main users and doesn't need any internet connection. Users will have a high performance in completing a specific task of the management system.
The key features of desktop applications are the efficiency of the application is high and also these are highly customized as per user's requirements and flexibility.

1. Capacity

The software will work at the same time for the main users. Every change made will be reflected on the database so automatically reflected to all the other users. The application it will be install by using CD drive, it works on the system's local server and runs only on a PC operating system such us Window and Linux.

2. Availability

- The application would be available 24/7, therefore you can access it any time.
- The desktop app will be available to the users that have a pc or a laptop device
- The application can be accessed in any geographical area.

3. Latency

Connection latency will vary depending on the location of the users and the virtual machines. Windows Virtual Desktop services will continuously roll out to new geographies to improve latency.

3.2.1.2.2 Space Requirements

Being a desktop application, it will be stored in the computer server.

The number of simultaneous users will be limited to the number of users registered in the system but as a medium-size organization , it is not expected to be accessed by a very large number of users.

It will have a size of approximately 80-100 MB, whereas the database will probably be much less as it will be simple one. Being said that, the database that is going to be used will not be very complex, but also it will be capable enough to store everything that is needed.

To do all this we will be working on phpMyAdmin platform.

3.2.1.3   Dependability

1. Monitoring

The application's user interfaces will be simple and easy to be used which will minimize the possibility for any error or crash of the system. Firstly it will need two inputs, a username and a password that will redirect the user by its type to its corresponding page, in the log in page. In the case that inputs are not valid or not matched in the database an Error message will be displayed. During a crash, the system should restart as soon as the problem occurs by re-configuring the server.

The admin will have an access privilege among all other users who is followed by the manage, and so on with all the employees, depending on their specific duties.

2. Maintenance

The system will be very simple to use and the models are separated from each other with means that the transaction will occur separately, databases will loaded and the activities easy to process. But except of this, we will still make our test in order to define problems before occurring or fix the existing ones.

3. Availability

The application is not available anytime and anywhere as it can be opened only in the computer it is installed.

It can be accessed by the users in the computers /servers it is installed .

The system is language restricted (available only in English).

4. Reliability

The system shall provide to the users a fast and reliable way of completing their respective tasks promptly with no difficulties and errors.

The system shall be created in such a way that it will leave no room for error.

It will be difficult for a simple task to go wrong.

5. Monitoring

The system will be built in such a way that there will be no room for system crashes.

The login interface requires a username and password as inputs. These inputs will be validated to be of the correct form. In case of wrong login information or invalid inputs, an error message will be displayed.

Putting invalid input into a field, for example putting a number in the name field, will result in an error. Leaving necessary fields empty will also lead to an error.

A failure condition is also added when data being added is not compatible with data in the database.

3.2.1.4 User Inerface Requirements

Our desktop application will be divided in 5 big divisions, admin team, leader and economist administrator and jurist. The admin will be the owner, he will have access all over the system. The second division (users) will be for the team leader, the third division user will be for the economist, the fourth will be the administrator and the fifth one will be the jurist. As for the log in as password management there will be a page for this in the admin account.

We will focus on anticipating what users might need to do and will ensure that the interface has elements that are easy to access, understand, and use to facilitate those actions, while still keeping the application's design fresh and stylish.

Our system will consist of several pages, providing that it will manage an important part of the business .The admin is responsible for adding new users, such as team leaders , economists to the system, managing the existing ones and viewing their details. After registering a new user, he/she will provide them with their login information so that they can access the system. The first page is going to be a login page, where the username and the password of the user will be required. Users must provide their personal username and password.

 The admin also adds new workers that are not users of the application but are managed by the team leaders and economists. To accept and decline the project made by the team leaders is the admin who makes decisions and also for days off. The admin will also view all the projects.

The team leader page is the engineer page , he is responsible of creating new project and including details about it this details also include which of the workers will work on that project. He is also responsible for adding the materials bought each day , which every time they click the button approve this information will go to the economists.

The economist is responsible of clock in for every worker and also to calculate their payment. He can also see the inventor created by the team leaders.

The jurist is responsible of providing the contract and the tender information. The administrator is accountable for making the orders to the supplies.

3.2.2 Organizational Requirements

3.2.2.1   Environmental Requirements

The software will be able to run only in the PC operating system such as Window and Linux. It doesn't need any internet connection, it works on the system's local server.

3.2.2.2   Operational Requirements

In the beginning every user: Owner (Admin), Team Leader, Economists, Administrator and Lawyer will face each a login interface where they must provide their personal username and password. After completing this step each user will be sent to his personal appropriate window.

The main operations required by the users are:

- The users will be able to log in, and access their information anytime.
- The information provided in the system must be secured.
- The information will be accessible only by the specific users.
- Each user can Add, Delete and Update data.
- Each user should create specifics reports.
- And in the end each user can log out easily.

3.2.2.3   Development Requirements

Client-side programming (Front-end)

For the client-side programming we are going to use Java Swing GUI. Swing actually is a GUI widget toolkit for Java and was developed to provide a more sophisticated set of GUI components. That is the reason why we choose this technology for our project. Swing has a range of objects which can be used as containers for other objects like buttons and textboxes

and so on. The containers that we are using for our project are JFrame and JPanel. JPanel is a container that can store a group of components including other panels. But, it does not have a title bar. That why we are also using JFrame which is a top level window with a title and a border.

Server-side programming (Back-end)

For the server-side programming we are using MySQL database. This is because it is the most trusted and widely used open source database platform today. We are using also JDBC to access and modify data stored in MySQL database through Java code. JDBC (Java database connectivity) is a set of Java APIs which enables to connect and perform CRUD (create, read, update and delete) operations through Java on MySQL database.

3.2.3 External Requirements

3.2.3.1   Regulatory Requirements

Regulatory Requirements

- Privacy policy

The software users are reassure that we are committed to the rigorous implementation of the obligations deriving from the Law "On the protection of personal data" and the by-laws issued for its implementation.

-Copyrighted content

All content and images and documents that are used on this application are owned or licensed by the company for use on this application only. Unauthorized use is prohibited

3.2.3.2   Ethical Requirements

- Users of this software are not allowed to use unappropriated language.

- The software should respect the confidentiality and privacy of the employees and everyone else that is included in the process.
- The system is based on every rule and laws regarding the use of software.

3.2.3.3   Legislative Requirements

3.2.3.3.1 Accounting Requirements

As far as our system is concerned there are no accounting requirements being put into effect until now.
However if there is any change in the future these requirements will be updated.

3.2.3.2.2 Security Requirements

- The main platform that it will be used in MySQL for database.
- ·   MySQL stores data in files in your hard disk. It stores the files in a specific directory that has the system variable "datadir".
- Another platform we considered using is Oracle for database as it is more powerful than MySQL.
- Oracle offers inline views, role based security, advanced replication which MySQL does not.

3.3   Domain Requirements

The system manages everything related to our construction company, more specifically to organize better the work of Druri Shqip SH.P.K. That means the digitalization of basic work related activities of its owner and employees. To enter the system every employee should log in to verify the time he/she starts and ends the shift, also to send requests for day off to the owner. External users that are not part of the company's staff cannot enter the system.

4   User Scenarios/Use Cases

1. User successfully logs in

   - User enters the username and password
   - User selects his position in the company
   - After checking with the database the user logs in

Admin

2. Admin adds new employee

   - Admin sees the table with the list of the employees
   - Admin presses the button add new employee
   - Admin gives the necessary required information
   - Admin saves the new information
   - The information shows in the table

3. Admin removes employees

   - Admin sees the list of all the workers of the company
   - If any changes in the business, admin can remove the employee from the list
   - Admin selects the remove button next to the name of the employee

4. Admin makes changes in the accounts

   - Admin goes to the add accounts option
   - Admin makes the required changes

5. Admin adds new account
   - At the add account page admin presses add
   - Admin fills the form with the name, position, username and password of the user

- Admin saves the changes made

6. Admin looks at requests

   - Admin looks at all requests for days off
   - Admin approves or declines the requests

7. Admin opens project page

   - Admin clicks the open projects button and goes to a different page
   - Admin can see all the different projects and their activity status
   - Admin can open the projects and look at the details
   - Admin approves or declines the projects sent as a request

Team Leader

8. Team Leader adds new project

   - Team Leader presses button
   - Team Leader fills a form
   - He gives details needed
   - He assigns workers

9. Team leader reports materials
   - He enters the date
   - He enters the materials used
   - He also enters the amount used

Economist

10. Economist does the clock in

- Economist writes who showed up at work
- Economist also enters the date

11. Economist send the requests

- Economist looks at all the list of employees
- Economist goes to the side of the name to the days off column
- Economist presses the request button

12. Economist sees the material report

- Economist selects from what day to what day he wants to see the material report
- He selects for what project he want the report
- He sees the materials used

13. Economist opens the calculate payment

- He selects the period of time
- He enters the daily wage
- He calculates the summary

14. Economist suggests the purchase order

- Economist looks what materials have been used the most
- Economist writes a list of materials needed
- Economist writes the amount of materials needed
- Economist sends it by clicking the send button

Administrator

15. Administrator makes an order

- Administrator look at the suppliers

- Administrator selects a suppliers

- He looks at the supplier's information

- Administrator enters the materials needed

- Administrator makes notes if needed

- Administrator send the order

16. Administrator adds to the to do list

- Administrator looks at the to do list

- Administrator adds new to do tasks

- Administrator checks them when done

Jurist

17. Jurist enters the contracts in the system

- Jurist clicks the add button under the jurist table

- Jurist fills the information and uploads needed files

- Jurist saves the information

18. Jurist edits or delete the contracts

- Jurist clicks the buttons edit or delete in the detailed contract information table

19. Jurist enters the tenders in the system

- Jurist clicks the add button under the tender table

- Jurist enters the certain information about the tenders

- Jurist saves the information

- The information shows at the table

20. Jurist edits or delete the tenders

- Jurist clicks the edit button
- Jurist makes the certain changes
- Jurist saves the changes
- Jurist clicks the delete button
- Jurist confirms the deletion
- Tender doesn't show in the table anymore