

B.Sc. (Hons) in Information Technology**IT2080 IT Project****Activity 01 - Requirements Analysis Activity**

Group Number - ITP25_B1_WC1-04**Project Name – QuarryLink****Student Members**

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Part 01

Introduction

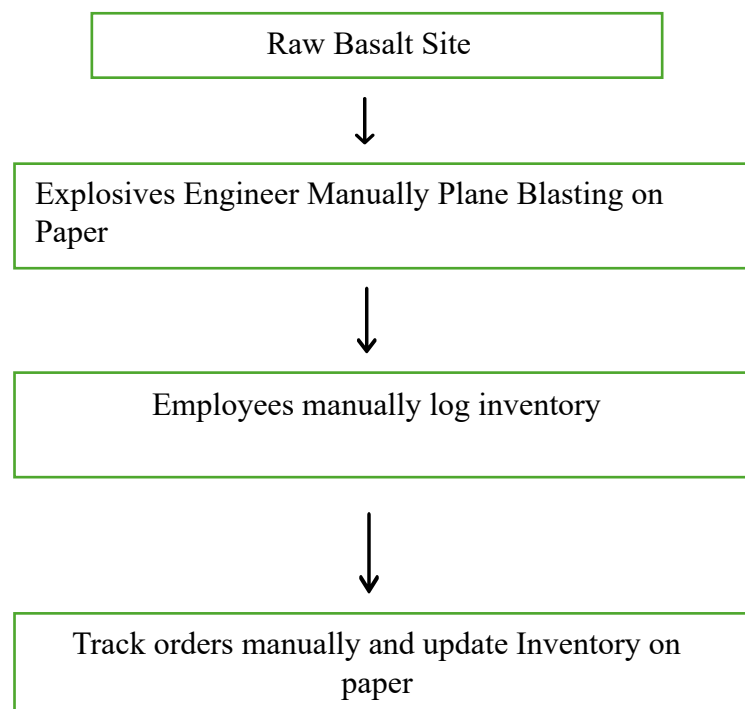
QuarryLink is an IT system designed for a basalt quarrying company to enhance operational efficiency, safety, and client management. The company extracts basalt using controlled explosions, processes it into different rock sizes, and supplies it to various clients. QuarryLink will include key features such as role-based access control, detonation planning, event scheduling, inventory management, and client order tracking. By integrating these functionalities, QuarryLink will streamline quarry operations, improve safety compliance, and optimize resource management.

The primary users of the system are and the benefits that they will get,

- General Employees
- Administrators – Improve client interactions, Assign roles and permissions easily.
- Explosives Engineers – Safely plan blasting operation ahead of time and make the approval process simpler.

By implementing this system, all employees will benefit by improvement in safety operations through conflict alerts and up to date information on quarry's day to day operation. Moreover, with access to real time data such as inventory stock will help improve operational efficiency.

The following describe how the company operated now as well how the digital system will help improve business operations.



Aspect	Manual Operations (Before IT System)	IT-Based Operations (After System Implementation)
Blasting & Detonation Planning	Planned manually using paper logs. Approvals and compliance checks are slow.	Digitally planned by authorized Explosives Engineers with automated compliance checks and approvals.
Safety & Compliance	Safety procedures recorded manually, with high risk of human error.	System enforces safety compliance with alerts.
Inventory Management	Materials logged on paper, leading to stock mismanagement.	Real-time inventory tracking with automated low-stock alerts.
Order Management	Written order records, prone to miscommunication.	Clients' orders are stored digitally, reducing errors and improving order tracking.
Event Planning (Site Visits, Inspections)	Visits scheduled through manual communication, often leading to scheduling conflicts.	Automated event scheduling with notifications and reminders.
Data Storage & Reporting	Paper-based records, difficult to retrieve historical data.	Centralized digital database
Employee Access Control	No role-based restrictions; any worker can access sensitive information.	Role-based access control ensures only authorized personnel manage critical operations.

Management system of a mining company

Main features of the product that we are planning to develop.

- Access control system based on employee roles. e.g. – Only explosives engineer can plan explosives. **Thushan**
- Detonations planning e.g. -blasting rock using Dynamite or TNT **Kasuni**
- Event planning e.g.- Site visits (Client visits, Government Inspections) **Ravindi**
- Manage material types and Inventory control **Mahen**
- Manage client data, client orders **Kaweesh**

Main user requirements for the features we have identified.

Access control system based on employee roles

- The system should allow administrators to assign roles.
- Only authorized personnel should access specific features.
- Users should log in with secure credentials.

Detonations planning

- The system should allow scheduling and approval of blasting operations.
- The system should store approval documents for all blasting operations.
- The system should maintain an audit trail for explosive usage.
- Users should log details such as date, time, location, type of explosives, and expected outcome.
- Should give conflict warning when blasting operation is planned on the same time and date as an event.

Event planning

- Users should schedule site visits for clients, government inspectors, and contractors.
- The system should track past and upcoming site visits.

Manage material types and Inventory control

- Users should receive alerts when inventory is low.
- Users should track the quantity of crushed rock available by size category.
- System should show a warning when order for a material exceed the current stock before placing the order.

Manage client data, client orders

- Employees should be able to enter, see and update client information.
- Employees should be able to add and modify orders.
- Employees should be able to see past orders.

Part 02

Database Design

EmployeeData

EmpID	EmpName	EmpAddress	EmpPosition	EmpContactNo	EmpSalary	EmpAccountNo	EmpPermissions
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ClientData

ClientID	ClientName	ClientAddress	ClientContactNo	ClientEmail
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ClientOrders

OrderID	ClientId	DeliveryAddress	OrderDate	DeliveryDate	Status	TotalPrice
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EventData

EventID	EventType	EventDate	EventStartTime	EventEndTime	EventAdditionalInfo
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DetonationPlanningData

ExpID	PlannedBy	ExpDate	ExpStartTime	ExpEndTime	Zone	Documentation	AdditionalInfo
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ProductCatalogData

ProductID	ProductCategory	Size	ProductImage	Description
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InventoryStockData

StockID	ProductID	CurrentStock	Available	LastUpdated
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GUI of the system

1. Login Page



The image shows a wireframe of a login page. It consists of a main window titled "LOG IN" with three window control buttons (minimize, maximize, close) in the top-left corner. Inside this window is a smaller, centered box with a close button in its top-right corner. This inner box is titled "Log In" and contains the following elements from top to bottom: an input field labeled "Email address", another input field labeled "Password", a dark rectangular button labeled "Submit", and a checkbox followed by the text "I accept the terms & conditions".

2. Home Page

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Home


ClientsOrdersProduct catalogInventoryEventsExplosives planingEmployees

Notice

3. Employee Data Page

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Employees



Clients Orders product Catalog Inventory Events Explosives Planning Employees


Add Employee

Name	Address	Position	Contact No.	Salary	Account No.
John	USA	General Employee	0714562389	\$20000.00	789123
Edward	Sweden	Admin	0714562389	\$20000.00	123456
Steve	Finland	Explosive Engineer	0774562318	\$13000.00	456789
Mark	UK	General Employee	0714562389	\$20000.00	789123
Clara	Finland	General Employee	0714562389	\$20000.00	789123

4. Client Data Page

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Clients



Clients Orders product Catalog Inventory Events Explosives Planning Employees

Add Client

Name	Address	Contact Number	Email
John	USA	0114523698	john@gmail.com
Edward	Sweden	0114523698	edward@gmail.com
Steve	Finland	0114523698	steve@gmail.com
Mark	UK	0114523698	mark@gmail.com
Clara	Finland	0114523698	clara@gmail.com

5. Explosives Planning Page

6. Event Planning Page

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Events

Clients

Orders

product Catalog

Inventory

Events

Explosives Planning

Employees

Add Event

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Event Type	Date	Start Time	End Time	Additional Info
Site Inspection	21st Feb 2025	08.00am	09.00am	Safety operation in... ○ ○
Government Insp...	21st Feb 2025	08.00am	09.00am	Documentation ○ ○
Client visits	21st Feb 2025	08.00am	09.00am	Clara-0112563478 ○ ○
Client visits	21st Feb 2025	08.00am	09.00am	Mark-0714562389 ○ ○
Client visits	21st Feb 2025	08.00am	09.00am	John-0774895623 ○ ○

7. Product Catalog Page

8. Inventory Page

Inventory

Clients

Orders

product Catalog

Inventory

Events

Explosives Planning

Employees

Add Stocks

Basalt

Type	Quantity(m ³)	Available(m ³)
30x40	3000	2500
30x40	3000	1500
30x40	3000	2000
30x40	3000	1000
30x40	3000	500

Concrete Blocks

Type	Quantity(blocks)	Available(blocks)
30x40	3000	2500
30x40	3000	1500
30x40	3000	2000
30x40	3000	1000
30x40	3000	500

Soil

Type	Quantity(blocks)	Available(blocks)
30x40	3000	2500
30x40	3000	1500
30x40	3000	2000
30x40	3000	1000
30x40	3000	500

9. Client Orders Page

Orders

Clients

Orders

product Catalog

Inventory

Events

Explosives Planning

Employees

Add Orders

Name	Delivery Addr...	Order Date	Deliver Date	Total Price
John	USA	21st Feb 2025	21st Feb 2025	80000.00
Edward	Sweden	21st Feb 2025	21st Feb 2025	80000.00
Steve	Finland	21st Feb 2025	21st Feb 2025	80000.00
Mark	UK	21st Feb 2025	21st Feb 2025	80000.00
Clara	Finland	21st Feb 2025	21st Feb 2025	80000.00

Update

Delete