

Final Year Project Proposal

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| *BRIEF INFO ABOUT PROJECT* | |
| **PROJECT TITLE:** | **PharmaSentinel: Blockchain-Driven Fake Medicine Detection System** |
| **KEY WORDS:** | Blockchain, Fake Medicines, Pharmaceutical Supply Chain, React Native App, Medicine Verification, Drug Safety |
| **DOMAIN OF THE PROJECT:** | HealthTech / Blockchain Technology / Mobile Application Development |
| **SUPERVISOR’S NAME:** | MISS SANA IRSHAD |

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| **STUDENT INFORMATION**  *Write down the detail of all group members in BLOCK LETTERS ONLY.* | | | |  |
| *Sr.* | *Student ID* | *Name* | *Email* | *Mobile* |
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| **PROBLEM STATEMENT** |
| The Pakistani pharmaceutical industry is suffering due to the infiltration of counterfeit drugs, resulting in public health risks and financial losses for authentic companies. There is an urgent need for a transparent, secure system to verify and trace medicine from the manufacturer to the end user. |
| **EXECUTIVE SUMMARY** |
| PharmaSentinel aims to combat counterfeit medicines in Pakistan using blockchain technology. The system will track and verify the journey of medicine from pharmaceutical companies through suppliers to medical stores and end users. It includes a React Native mobile app and a desktop application for verification and authentication. By creating a transparent and immutable record of medicine provenance, the platform ensures that only genuine medicines reach patients. This project divides responsibilities across three modules: Company, Supplier, and Medical Store, each contributing to a secure supply chain. The implementation of blockchain is the most challenging yet essential component to guarantee trust and security in the system. |

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| **INTRODUCTION** |
| Counterfeit and pilfered drugs present a significant challenge globally, costing pharmaceutical companies an estimated $200 billion annually. In Pakistan, this issue has led to critical health risks and economic damage. Blockchain technology is a growing solution for ensuring transparency in supply chains. This project seeks to apply blockchain to the pharmaceutical sector, allowing users to verify medicine authenticity and ensuring safe distribution. |

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| **COMPETITORS/COMPETITIVE ANALYSIS** |
| 1. **MediLedger** – Used in the US, supports DSCSA compliance. 2. **BlockPharma** – Tracks medicine authenticity via blockchain. 3. **IBM Blockchain Supply Chain** – Generic supply chain traceability.   However, none of these directly address the Pakistani market or offer a complete mobile + desktop blockchain-based verification app. |

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| **OBJECTIVES** |
| To implement blockchain technology in tracking medicine from pharma companies to users.  To develop a mobile app for verifying fake or original medicine.  To ensure safe medicine delivery by suppliers to medical stores.  To provide a user-friendly interface for smooth interaction.  To build a desktop system for companies and suppliers for tracking batches. |
| **MOTIVATION** |
| Pakistan ranks among the countries most affected by counterfeit medicines. Many people lose their lives daily due to fake drugs. This project is driven by the motivation to save lives, protect public health, and empower consumers to trust what they consume. |

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| **FEATURES OF PROJECT** |
|  **QR Code Generation** for every medicine batch.   **Mobile App Scanning** to detect fake or original medicine.   **Blockchain Ledger** to trace the medicine's journey.   **Desktop Portal** for company, supplier, and store interactions.   **Role-Based Access** for each participant in the chain.   **User-Friendly GUI** for ease of use. |

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| **ARCHITECTURAL DESIGN** |
| In this Project we are trying to Design a user friendly React-Native app and Desktop  appplication. This will provide Original medicine supplying from company to medical  stores by usng the idea of block chain  This project is basically divided into three parts:  1. Company  2. Supplier  3. Medical store  **System Components:**   * **Frontend:** React Native (Mobile) * **Backend:** Node.js with Blockchain Integration * **Database:** MongoDB/Firebase |

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| **IMPLEMENTATION TOOLS AND TECHNIQUES** |
| **Implementation Tools and Techniques** **C#** – For developing the desktop application for pharma companies and suppliers.  **React Native** – For building the mobile app used by end-users to verify medicines.  **Firebase** – For storing data like user login, medicine info, and for authentication.  **Node.js** – For creating backend APIs and handling server-side logic.  **Git & GitHub** – For version control and managing project code with the team.  **Microsoft Visual Studio** – For writing and testing the C# desktop application.  **Visual Studio Code** – For developing the mobile app and backend code. |

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| **PROJECT PLAN***.* |
| **Team Member Responsibilities**  * **Nimrah Farid:** Blockchain setup, desktop application, backend APIs * **Fizza Mukhtar:** Blockchain setup , Mobile app (UI/UX, QR scanning)  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Phase No.** | **Phase Name** | **Duration** | **Weeks Covered** | **Description** | |  |  |  |  |  | | 1 | Requirement Analysis | 3 weeks | April (Week 1–3) | Understanding problem, gathering system requirements from real-world cases. | | 2 | System Design | 3 weeks | April (Week 4) – May (Week 2) | Designing architecture: modules (Company, Supplier, Medical Store), blockchain flow. | | 3 | Frontend Design (Mobile) | 3 weeks | May (Week 3) – June (Week 1) | Creating UI for React Native app, layout for user interaction. | | 4 | Backend Development | 4 weeks | June (Week 2) – July (Week 1) | Blockchain setup (smart contract), database design, APIs for communication. | | 5 | Integration | 3 weeks | July (Week 2–4) | Connecting frontend with backend and blockchain. | | 6 | Testing (Unit + System) | 4 weeks | August(Full Month) | Verifying data flow, fake medicine detection working, bug fixing. | | 7 | Desktop Version | 2 weeks | September (Week 1–2) | Building simple desktop app for Company/Supplier dashboard. | | 8 | User Acceptance Testing | 2 weeks | September (Week 3–4) | Testing system with dummy data and users, gathering feedback. | | 9 | Documentation | 3 weeks | October(Full Month) | Writing report, screenshots, working description, blockchain explanation. | | 10 | Final Presentation/Viva | 3 weeks | November – December | Prepare slides, demo, practice viva, submit final report. |   Gantt chart: |

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| **REFERENCES** |
|  Drug Supply Chain Security Act (DSCSA), US FDA   IBM Blockchain in Healthcare   MediLedger Project   Research papers on blockchain in pharmaceuticals   [www.who.int](http://www.who.int) – Counterfeit medicine statistics   [www.coindesk.com](http://www.coindesk.com) – Blockchain use cases |

**Supervisor’s Signature: - FYP-Coordinator’s Signature: -**