

E-POST

Answers to Kipling Questions

1. What

Q: What is the primary objective of your project?

A: The primary goal of **E-Post** is to modernize and streamline the postal system by implementing **QR-based tracking and sorting** for both letters and parcels. The system ensures **real-time location updates, automated sorting, and role-based access**, reducing human errors and making postal services more efficient.

Q: What technologies and tools will you use in your project?

A: The project will be built using the **MERN stack** with AWS for deployment. The key technologies include:

- **Frontend:** React.js (for UI)
- **Backend:** Node.js, Express.js (for API handling)
- **Database:** MongoDB (to store parcel tracking data)
- **QR Code Handling:** qrcode.js (for generation & scanning)
- **Authentication:** JWT (for secure access control)
- **Deployment:** AWS (EC2 for backend, S3 for storage, MongoDB Atlas for the database)

Q: What functionalities or features will your project include?

A: E-Post will have the following key features:

- **QR Code Generation & Scanning:** Every letter and parcel will have a unique QR code for easy tracking.
- **Real-Time Location Updates:** Every scan updates the item's status and location.
- **Automated Sorting Assistance:** The system suggests the next destination (e.g., head post office, branch office) based on postal routes.
- **Parcel & Letter Tracking:** Customers can track their shipments in real time.
- **Role-Based Access:** Different users (Postmen, Sorting Officers, Transporters, and Admins) have different permissions.
- **Analytics Dashboard:** Displays delivery efficiency, processing time, and potential delays.

Q: What are the expected outputs or deliverables of your project?

A: The project will result in:

- A **fully functional web application** for postal tracking and management.
- A **QR-based scanning system** that updates letter/parcel statuses.
- A **data analytics dashboard** to optimize delivery routes and identify inefficiencies.

2. Why

Q: Why is this project important?

A: Traditional postal services rely heavily on **manual sorting and tracking**, which leads to inefficiencies, misplaced packages, and delivery delays. **E-Post automates** these processes, ensuring **faster, more accurate** deliveries while also providing **real-time transparency** to both customers and postal workers.

Q: Why have you chosen the MERN stack for this project?

A: The MERN stack is ideal for **scalability, performance, and full-stack JavaScript development**.

- **React.js** ensures a dynamic and interactive UI.
- **Node.js & Express.js** allow for a high-performance backend with RESTful APIs.
- **MongoDB** efficiently stores and retrieves tracking data with its flexible document-based structure.

Q: Why will end-users benefit from this project?

A: The end-users will be benefitted as follows:

- **Postal Workers & Sorting Officers** will have an automated system to **streamline sorting and tracking**.
- **Postmen & Transporters** can quickly **update statuses** using mobile-friendly QR scanning.
- **Customers** will enjoy **real-time tracking and transparency**, reducing lost or delayed shipments.
- **Postal Administrators** can analyse **delivery performance** and optimize logistics.

3. When

Q: When will you complete each project phase?

A: The entire project will be completed within **10 weeks**, following this timeline:

- **Weeks 1-2:** Planning & research, finalizing requirements.
- **Weeks 3-4:** UI/UX design, database schema, backend architecture.
- **Weeks 5-6:** Frontend & backend development, API integrations.
- **Weeks 7-8:** QR code generation & scanning implementation.
- **Weeks 9-10:** Testing, bug fixes, deployment on AWS.

Q: When will you integrate the frontend, backend, and database?

A: The integration of the project will be done on the following weeks:

- **Frontend & Backend Integration:** Week 6
- **Database Setup:** Week 4
- **QR Code Tracking System:** Week 7

Q: When will you perform testing and validation?

A: The performance testing and validation will be done in the manner shown below:

- **Unit Testing:** Continuous testing during development.
- **Integration Testing:** Week 8, after connecting frontend, backend, and database.
- **User Testing & Final Validation:** Week 9, before AWS deployment.

4. How

Q: How will you structure your project?

A: The project will be divided into three main components:

- **Frontend (React.js):** User interface for tracking, scanning, and role-based dashboards.
- **Backend (Node.js & Express.js):** API handling for tracking updates, authentication, and QR code generation.
- **Database (MongoDB):** Storing tracking history, user roles, and scanned data.

Q: How will you ensure responsiveness and interactivity?

A: We will ensure responsiveness and interactivity by using the following methods:

- The **UI will be mobile-friendly** for postmen to scan QR codes on their phones.
- **Tailwind CSS or Bootstrap** will be used for a clean and responsive design.
- **Real-time tracking updates** will be implemented using Event based API updates.

5. Where

Q: Where will you host or deploy your project?

A: The entire system will be deployed on **AWS**, using:

- **AWS EC2** for hosting the backend.
- **MongoDB Atlas** for database management.

Q: Where will you store user data, and how will you ensure data security?

A: User data and tracking logs will be securely stored in **MongoDB** (locally) and **MongoDB Atlas** (deployment).

The Security Measures Include:

- **JWT Authentication** for secure user access.
- **Role-Based Access Control (RBAC)** to restrict unauthorized access.
- **Data Encryption** for sensitive information.
- **Encrypted QRs** the QRs will have encrypted information which only the scanner using web-application can only decode.

Q: Where will users interact with your application?

A: The users of the web application are categorised into 3 and their interactions will be as follows:

- **Postal Employees:** Will use mobile/tablet devices for scanning and updating status.
- **Head Officers & Managers:** Will access the admin dashboard via desktop.
- **Customers:** Will track their letters and parcels through a web-based interface.

6. Who

Q: Who are the target users of your project?

A: The target users are divided into 3:

- **Postal Employees** (Postmen, Sorting Officers, Transporters).
- **Postal Office Managers & Head Officers** (for monitoring efficiency).
- **Customers** (for tracking their letters and parcels).

Q: Who will be responsible for design, development, and testing?

A: The project team will be divided into different roles:

- **UI/UX Design:** Gaurav
- **Frontend Development:** Gaurav and Drishti
- **Backend Development:** Chris and Drishti
- **Database Management:** Chris
- **QR Code Handling & API Integration:** Chris
- **Testing:** Gaurav and Drishti

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