

Week 4 Assignments

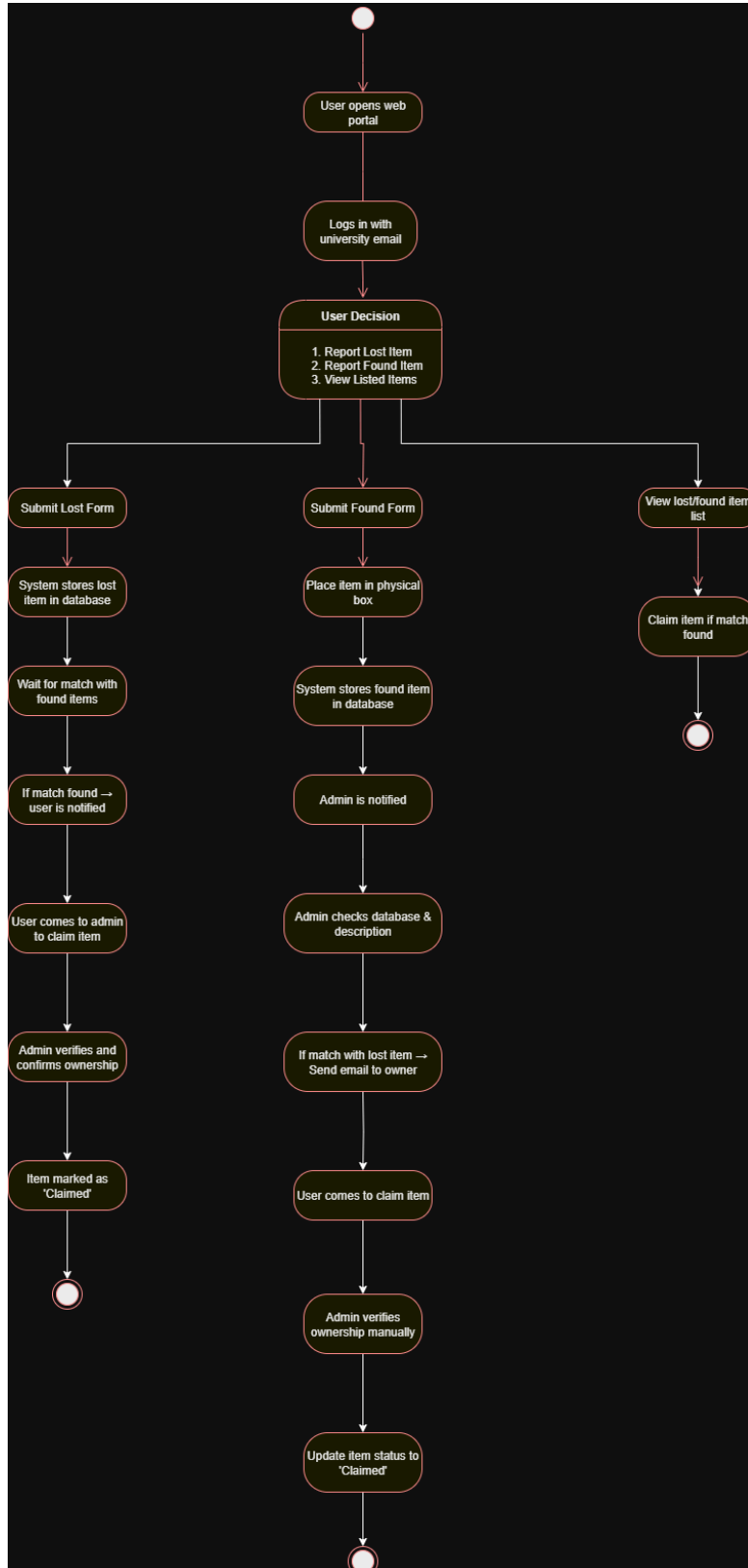
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Activity Diagram



Cost Analysis for Lost N' Found

In estimating the development cost of the Lost N' Found web application for King's College, we adopt the **Lines of Code (LOC)** method, a commonly used metric in software cost estimation. LOC is a practical way to predict the effort, time, and cost required to complete a software project based on how many lines of source code will be written.

Estimation Approach

The core formula for our cost estimation is:

$$\text{Total Cost} = \text{Estimated LOC} \times \text{Productivity Factor} \times \text{Cost per Hour}$$

Where:

- **Estimated LOC** = Total number of lines of source code.
- **Productivity Factor** = Average number of hours needed to write 100 lines of code (typically 8–15 hours).
- **Cost per Hour** = Developer rate per hour (in NPR).

LOC Breakdown by Components

Based on the planned modules in our component diagram, we estimate:

Component	Estimated LOC
Frontend (HTML/CSS/JS)	800
Backend (Node/PHP/etc)	1000
Database (SQL Scripts)	400
Admin Panel	300
Email Service	200
Total	2700 LOC

Assuming:

- **Productivity = 10 hours per 100 LOC**
- **Hourly rate = NPR 500** (standard for student/freelance developers in Nepal)

$$Total\ Hour = \frac{2700}{100} \times 10 = 270\ hours$$

$$Base\ Cost = 270 \times 500 = NPR\ 135000$$

Risk Buffer and Final Estimate

To prepare for delays, bug fixes, testing, and documentation, we add a **20% contingency buffer**:

$$Buffer = 0.20 \times 135,000 = 27,000$$

$$Final\ Estimated\ Cost = 135,000 + 27,000 = NPR\ 162,000$$

Cost Justification

This cost estimation is reasonable for a student-led software project developed over 6–8 weeks. It provides clarity on:

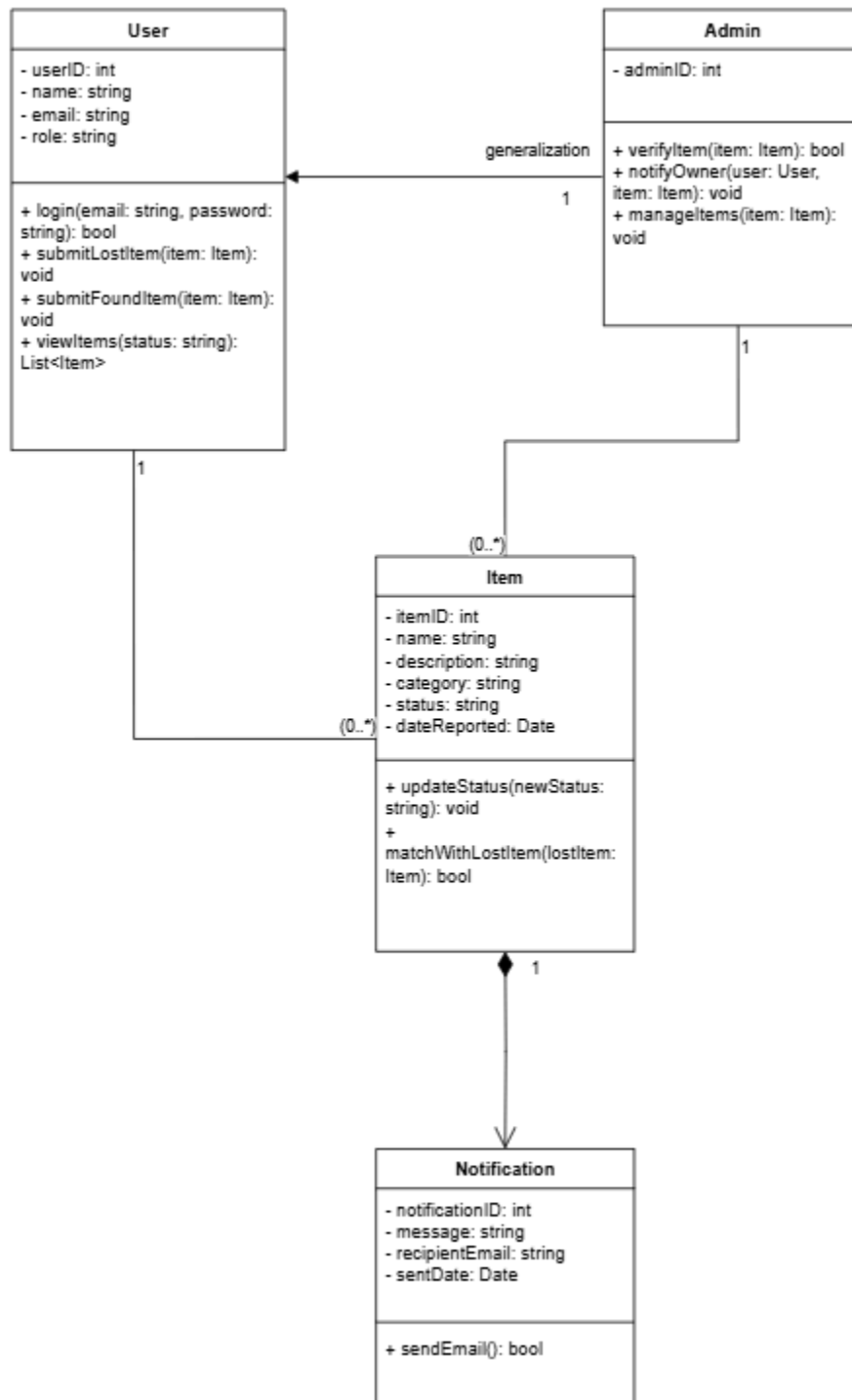
- The amount of work required
- Justification for workload distribution across the team
- Future planning for maintenance or upgrades

The cost includes planning, development, UI/UX, backend logic, database design, and notification service. It does not cover optional expenses like server hosting or external APIs.

Conclusion

Using the LOC-based method with a developer hourly rate of NPR 500, the total estimated cost for developing the Lost N' Found web portal for King's College is approximately **NPR 162,000**. This model helps guide both budgeting and resource allocation during the software development process.

Class Diagram



Component Diagram

