

## Asset Pulse IT Asset Management System

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### PROBLEM

As students and IT professionals, we recognize that many small organizations still rely on spreadsheets, paper logs, or disconnected tools to manage assets. These outdated processes lead to inaccurate records, lost equipment, slow audits, and limited visibility into device ownership and inventory status.

### CURRENT SYSTEM

Traditional asset tracking often relies on manual updates, inconsistent naming, and limited accountability. Most solutions are either too expensive, too complex, or not designed for small teams.

### REQUIREMENTS

Asset Pulse was designed with these core requirements:

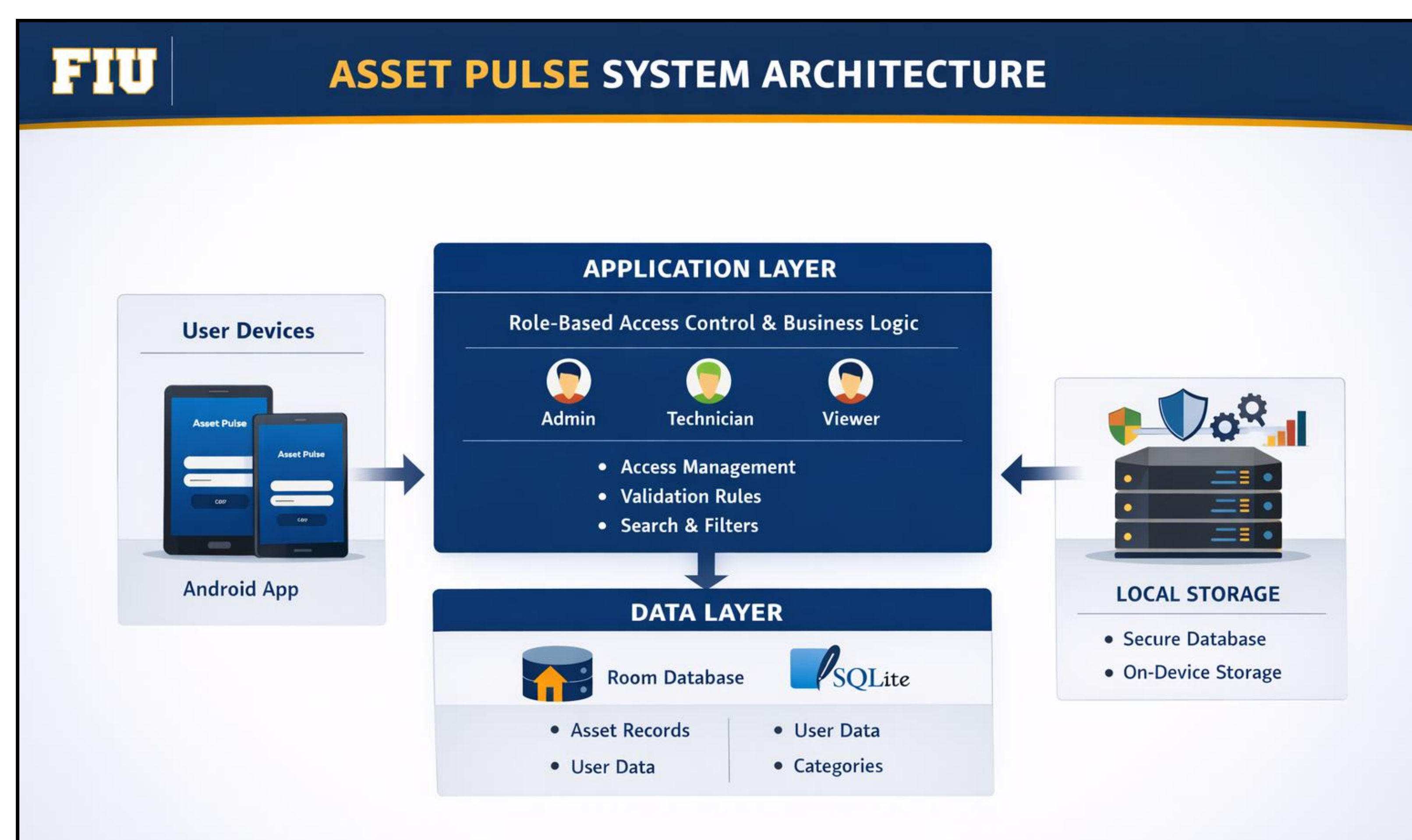
- Secure user login
- Role-based permissions
- Add/edit asset records
- Search and filter inventory
- Check-in / check-out workflow
- Dashboard metrics
- Export reports to CSV
- Mobile-friendly usability

### SYSTEM DESIGN

Asset Pulse uses a lightweight three-layer architecture:

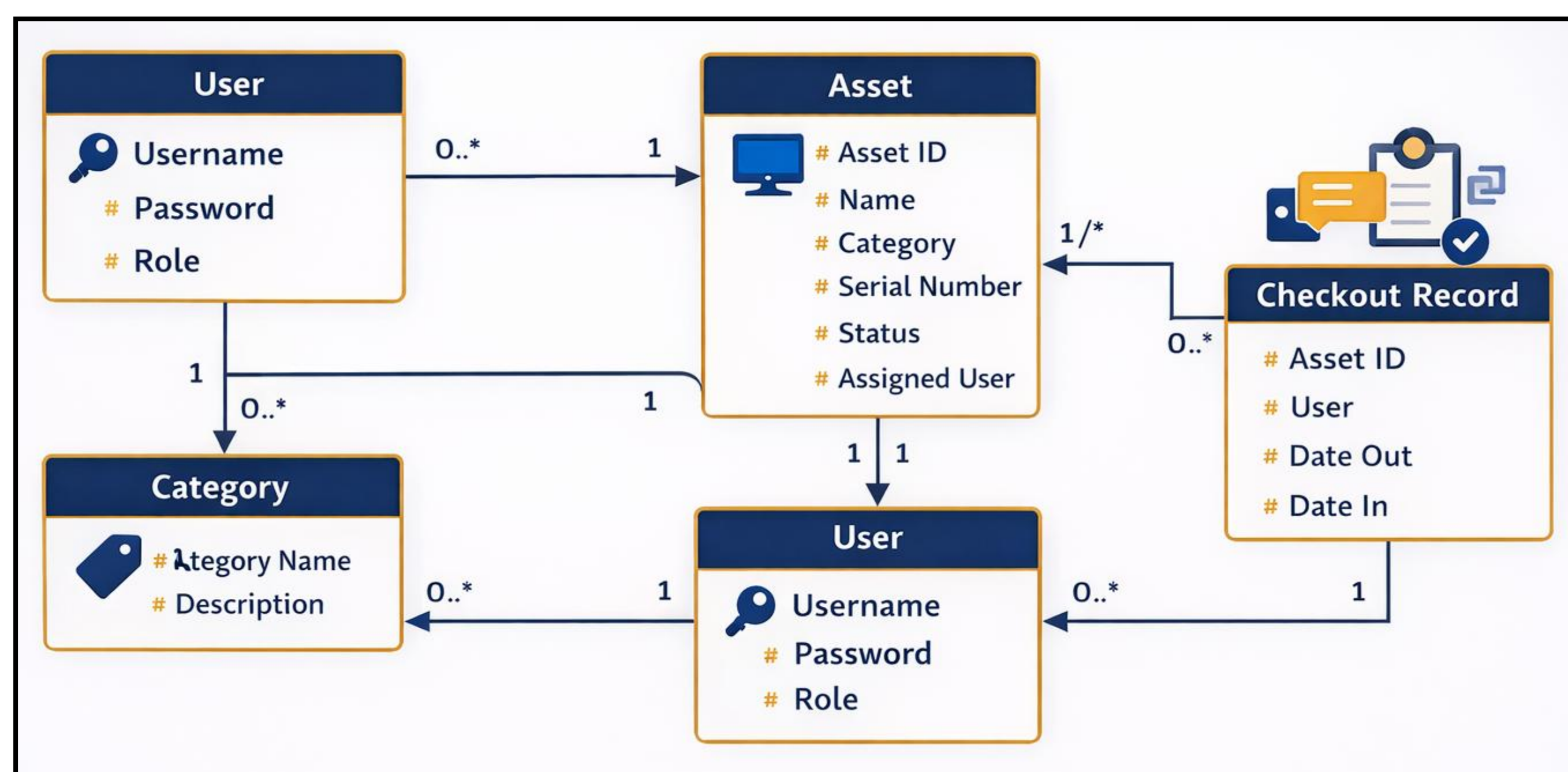
- **Frontend:** Android mobile application
- **Logic Layer:** Access control, validation, workflows
- **Data Layer:** Local Room/SQLite database

Designed for simplicity, speed, and offline usability.



### OBJECT DESIGN

Main data objects in the system



### IMPLEMENTATION

The application was developed in **Android Studio** using modern Android tools:

- Kotlin
- Jetpack Compose
- Room Database
- SQLite
- Material Design UI

**Key features implemented:**

- Auto-generated IDs
- Real-time dashboard
- Search/filter tools
- CSV export



### VERIFICATION

Testing was performed using emulators and physical devices.

**Tests Completed:**

- Login validation
- Role permissions
- Asset creation
- Search accuracy
- Navigation flow
- Check-in/check-out process
- Data persistence

**Results:**

- Stable Performance
- Accurate data storage
- Correct access restrictions

### SUMMARY

Asset Pulse transforms asset tracking into a simple, efficient, and accessible experience for IT teams and everyday users. The project highlights practical engineering strengths ranging from mobile UI design and database architecture to validation logic, testing, and cross-team collaboration across 2 semesters and many sprints.

### REFERENCES

- Android Developers Documentation
- Kotlin Official Documentation
- Jetpack Compose Documentation
- SQLite Documentation
- Room Persistence Library Docs
- Course Materials / Senior Design Guidance