Feasibility Study for Smart Bus Assistance System

1. Technical Feasibility

For the Smart Bus Assistance System, technical feasibility is high because:

- The project uses reliable and widely supported technologies such as:
  Kotlin, **XML Layouts**, and **Firebase**.
- Firebase services like **Authentication**, **Realtime Database**, and **Storage** ensure smooth backend operations without needing a custom server.
- osmdroid map or another free map library can be used for live bus tracking without requiring paid API keys.
- All required tools (Android Studio, Firebase Console) are free, stable, and have strong community support.

Conclusion:

The system can be developed easily using the available technologies, making it technically feasible

2. Operational Feasibility

For this project:

- The system is simple, user-friendly, and designed with basic navigation suitable for passengers and administrators.
- Users can view real-time bus locations, ETA, and submit complaints with minimal effort.
- The app reduces confusion related to bus arrival times and removes the need for manual inquiry at bus stands.
- Admins can easily monitor bus status and complaints through the dashboard.
- No special training is required—any mobile user can operate the app.

Conclusion:

The system fits well into the daily operations of passengers and administrators, making it operationally feasible.

3. Economic Feasibility

For the Smart Bus Assistance System:

- Development cost is extremely low since all tools used—Android Studio, Firebase, and OSMDroid—are free.
- No expensive hardware or external servers are required.
- Maintenance cost remains minimal due to Firebase's free-tier services and simple app design.
- Ideal for an academic mini project with zero financial burden.

Conclusion:

The project is economically feasible because it can be developed and maintained at almost no cost.

4. Schedule Feasibility

- The project modules (Login, Tracking, ETA, Complaints, Admin View) are clearly defined and manageable.
- The development tasks can be completed comfortably within a mini project timeline.
- Using Firebase reduces backend development time significantly.
- No complex algorithms or high-risk features are included, ensuring timely completion.

Conclusion:

The project can be completed within the given timeframe, making it schedule-feasible.

Questionnaire:

1. How do you currently find bus timings or routes?
2. Do you face difficulties in knowing when the next bus will arrive?
3. Would real-time bus tracking be helpful for your daily travel?
4. How important is an accurate ETA (Expected Time of Arrival) to you?
5. Would you prefer digital tickets over paper tickets?
6. How often do you need to report issues related to bus service?
7. Would a complaint system with text or image upload be useful?
8. What features would you like in a bus assistance mobile app?
9. Do buses usually arrive on time at this stand, or is there a frequent time difference between the expected and actual arrival?
10. Would you use a mobile app that shows bus location, tickets, and complaints in one place?