UNIVERSITI MALAYSIA TERENGGANU

FACULTY OF OCEAN ENGINEERING TECHNOLOGY & INFORMATICS

[CSM3114]

FRAMEWORK-BASED MOBILE APPLICATION DEVELOPMENT

TITLE: HAULIER TRACKING APPLICATION

GITHUB LINK:

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1.0 Executive summary

The Haulier Tracking App is a complete solution made to improve and streamline the transportation and logistics sector's productivity. This cutting-edge tool gives hauliers the ability to track and monitor in real-time, enabling them to streamline their processes and raise the standard of their services.

Fundamentally, the software improves route planning and logistics coordination by letting hauliers track the whereabouts and conditions of their fleet in real time. The software uses GPS technology to deliver precise and current information, facilitating prompt decision-making and cutting down on delays. In addition to helping haulers, this real-time tracking function improves customer happiness by offering precise arrival estimates and increased transparency.

With its extensive capabilities, which include route optimization, fuel usage monitoring, and vehicle maintenance scheduling, the Haulier Tracking App goes beyond basic location tracking. Hauliers can save operating expenses, optimize fuel efficiency, and guarantee fleet maintenance by utilizing these capabilities. Hauliers can easily access and understand crucial data thanks to the app's user-friendly layout, which helps them make better business decisions.

In the logistics sector, security and data integrity are critical, and the Haulier Tracking App takes sophisticated security precautions to meet these needs. The application utilizes encryption algorithms to protect confidential data, guaranteeing that only individuals with proper authorization can access vital information. This dedication to security raises the platform's credibility and makes it a dependable resource for haulage companies.

To sum up, the Haulier Tracking App is an advanced system that is completely changing the logistics and transportation industry. Through the integration of real-time tracking, route optimization, and comprehensive security measures, the app enables hauliers to optimize their operations, minimize expenses, and provide their customers with superior service. The Haulier Tracking App is at the vanguard of this industry's ongoing evolution, promoting efficiency and positive transformation in the haulage sector.

2.0 Use Case

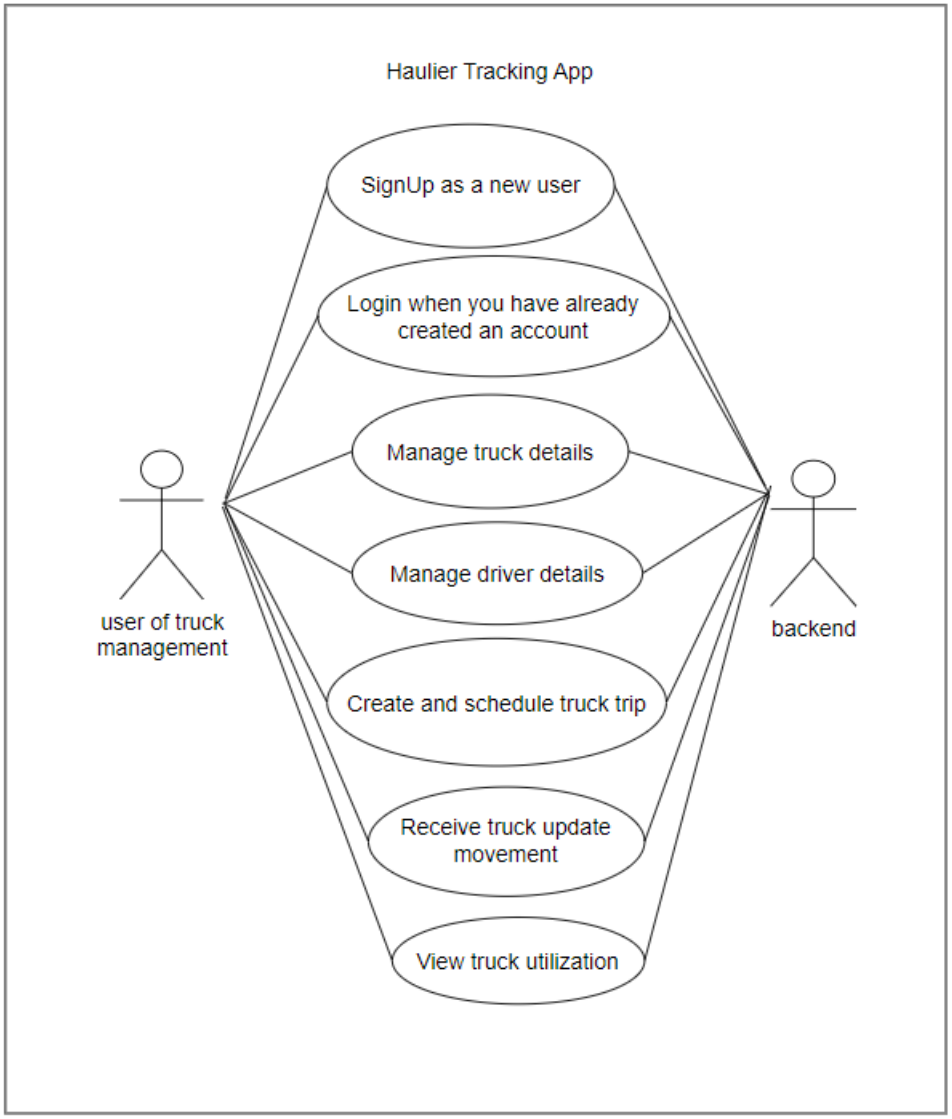

Figure 2.1 Haulier Track Use Case

3.0 The common structure of tree widgets used when designing and developing the application

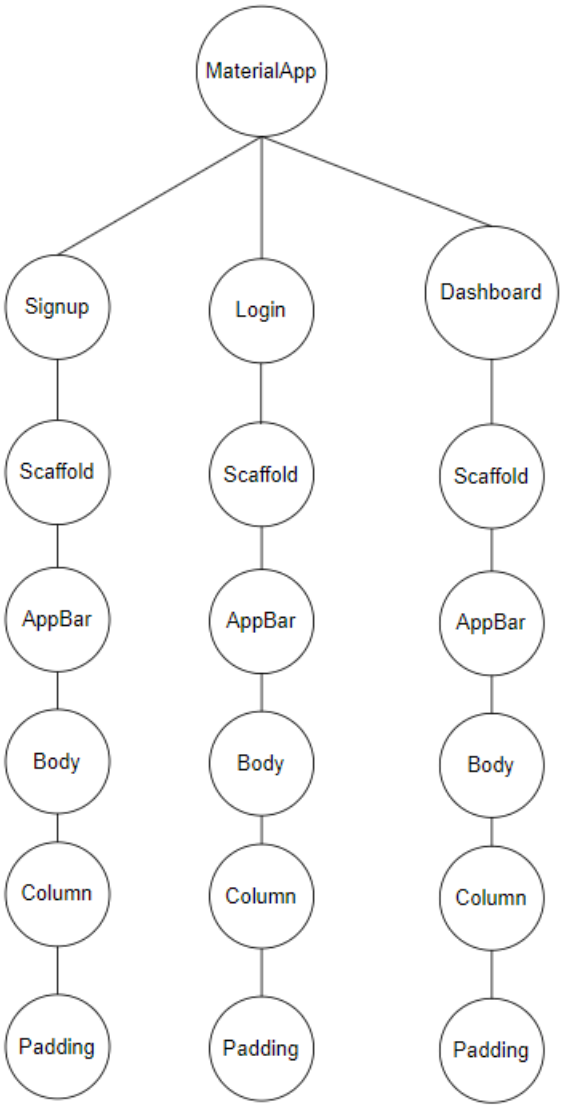

Figure 3.1 Widget tree of signup, login and dashboard

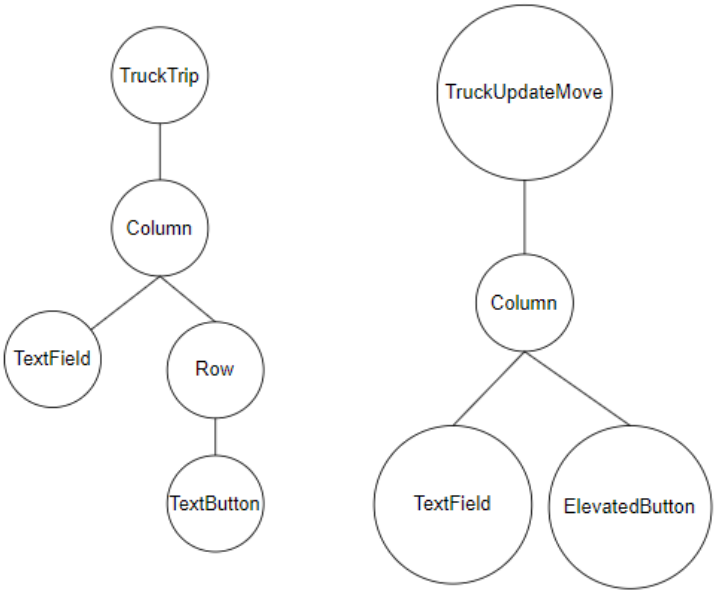

Figure 3.2 Widget tree of TruckTrip and TruckUpdateMove

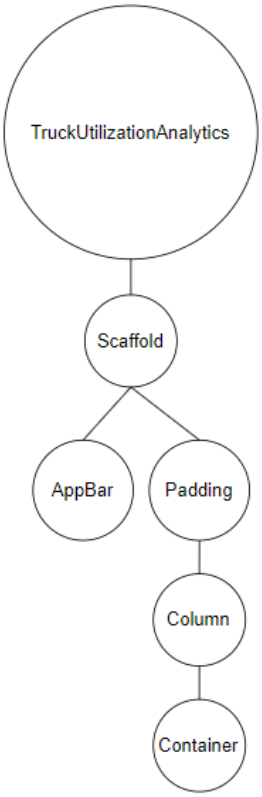

Figure 3.3 Widget tree of TruckUtilizationAnalytics

4.0 Flutter widget and features adopted in the application

There are many flutter widget implemented in the application such as Material Design Widgets, which are AppBar and Scaffold. The AppBar is used for the header of the screen and it provides a constant navigation and title to be displayed. As for Scaffold, it is the foundation structure for the interface of the application. It contains app bar, body, and many other components. Text Input is indeed crucial for the application as the user need to input many types of details regarding the truck and driver management. ElevatedButton is important to be implemented for forms submission, creating, editing, updating, and deleting profile, truck trips, also to cancel the trip operation. TextButton is used for non primary actions, like selecting a date and time.

Next, list and scroll Widgets are essential for effectively organizing and presenting information. Truck trip listings are displayed using the ListView widget, which provides a scrollable user interface for sorting through items. The ListView.builder widget is used to maximize speed and dynamically produce list items based on data. The application smoothly incorporates the showDatePicker and showTimePicker widgets to capture date and time information in truck trip details. Furthermore, Dialog Widgets are used to improve user interactions; in particular, the showDialog method is used. These pop-up dialog boxes are useful for adding or modifying driver information and validating important operations like deleting profiles. When combined, these widgets help make the application's user interface fluid and responsive.

Other than that, the application employs StatefulWidget for state management, which allows it to handle dynamic modifications in components such as the truck trip screen. Widget tree rebuilds are triggered by the setState method in response to state changes, guaranteeing a responsive user interface. The program uses the PieChart widget from the fl_chart package to visualize data and display truck utilization stats as eye-catching pie charts. The TextStyle widget is used to apply text styling, which improves the user interface by enabling modification of the font size, family, and color. To further enhance an appealing and well-thought-out user experience, the program uses the Shadow widget to apply shadows to text components.

For the features, the application has extensive functionality for managing truck trips and user profiles. Users can quickly amend and update their name, email address, and mobile number, among other personal data. Users can create, update, and delete truck trips by providing necessary information such as the task, assignee, truck ID, date, time, location, and distance. The program also provides informative metrics on vehicle utilization, including a pie chart that displays jobs that have been done. This analytics area provides statistics on the overall number of tasks performed, the distance traveled, and the number of locations reached by breaking down completed tasks based on truck ID. The combination of these strong features results in a logistics management experience that is both efficient and intuitive.

Users can easily input and update position and timestamp data with the application's Truck Movement Update functionality. Custom styling, uniform styling for MaterialAppBar components, and theming with a custom typeface are all part of the visually appealing and consistent user experience. When updating or adding truck trips, the application uses stateful widgets to guarantee dynamic changes and form validation to verify user inputs, improving data integrity. All these design decisions work together to provide a polished and intuitive user experience.

Maintainability is encouraged by the codebase's emphasis on reusability and modularity, which is demonstrated by the development of custom widgets like CustomButton. Flutter packages that improve functionality and state management are provider and fl_chart. The application of responsive design principles guarantees that well-styled components can adapt to different screen sizes and orientations.

5.0 Sample of interface with the explanation

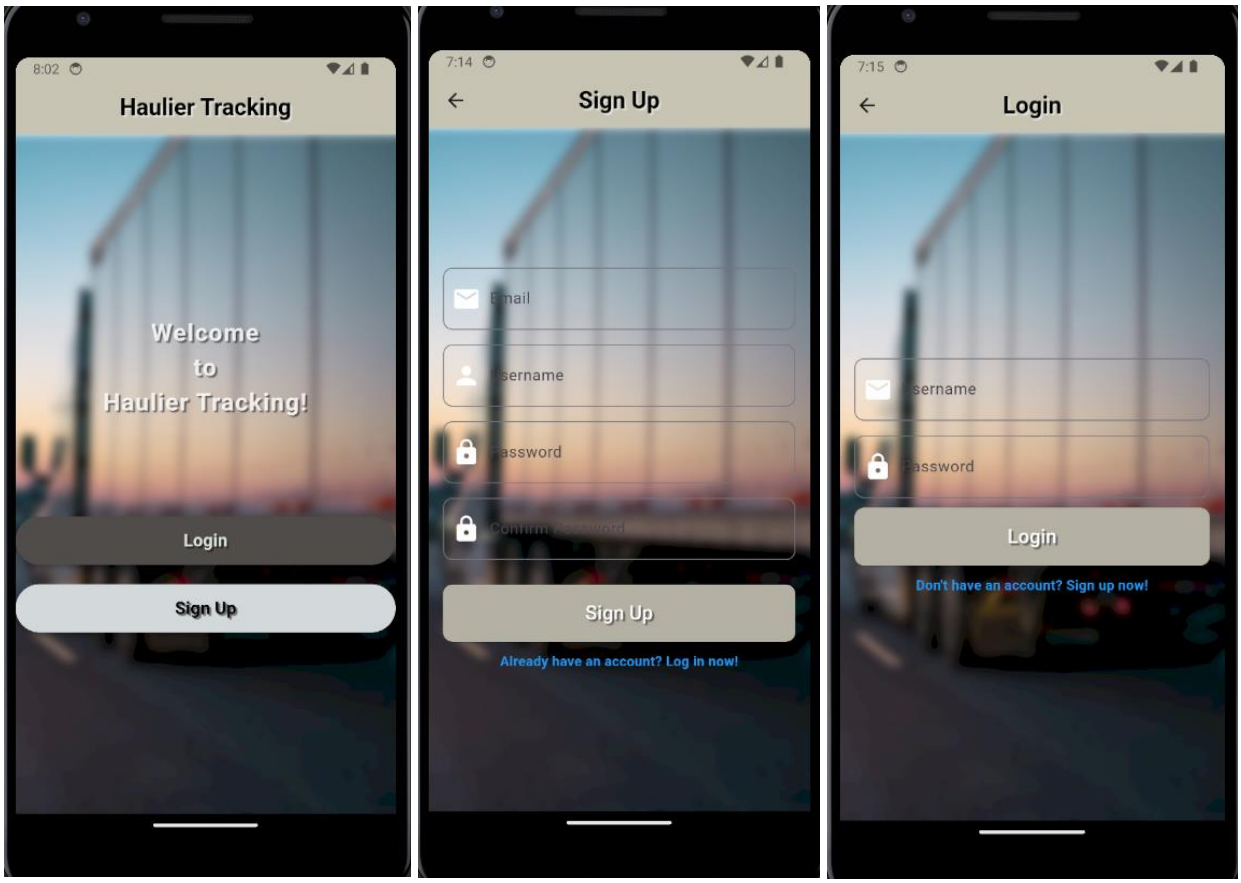

Figure 5.1 Home, Sign Up and Login page

User will be seeing the homepage first before creating an account in sign up page. After filling in the details in the sign up page, user needs to click on sign up button to login into the account. The username and password must be the same as the one created in the sign up page as invalid message will be displayed and user is not able to access the dashboard of the application.

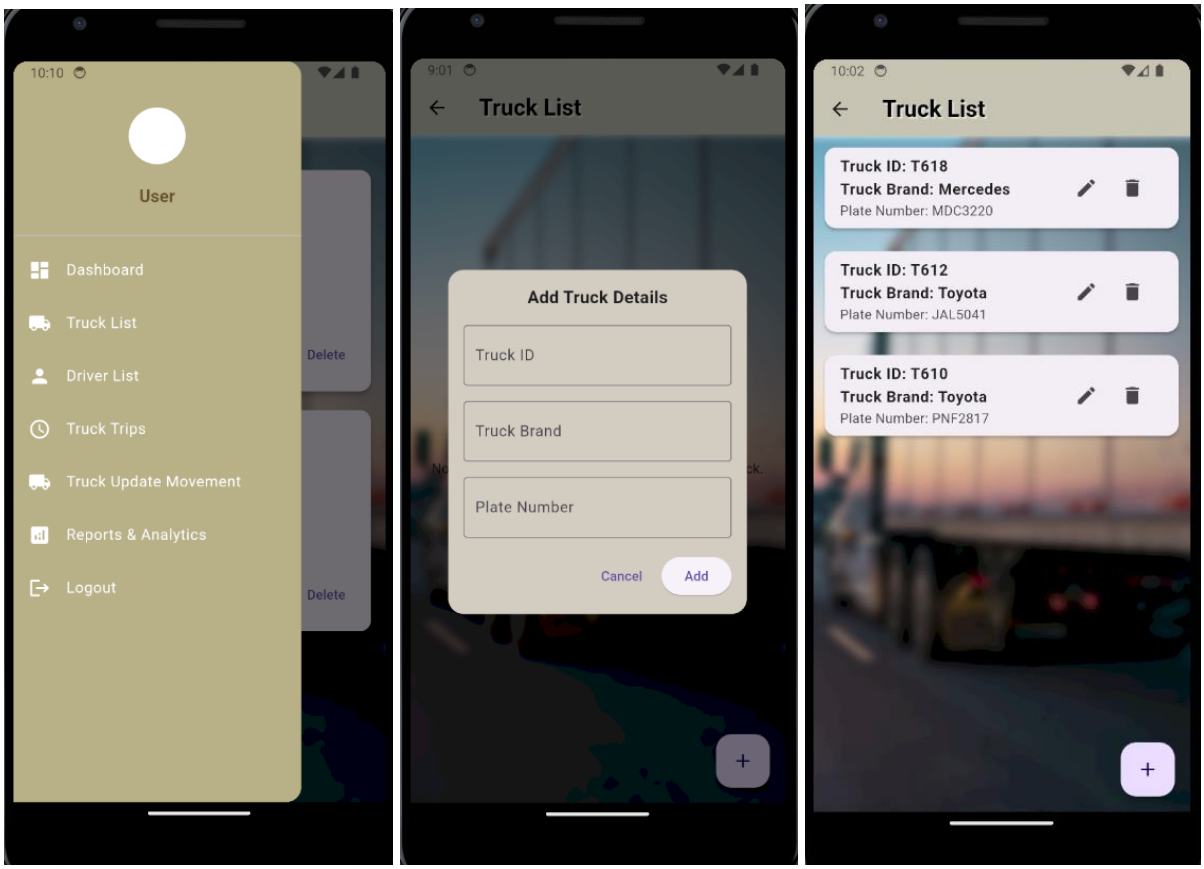

Figure 5.2 Dashboard and Truck List

After successfully logged in into the application, user can click on the menu to view some of the functions. User can click on the User text to create, edit, update and delete the profile management. Next user may navigate to Truck List to create truck owned by the user. The truck created can also be added more, edited, updated, and deleted. User may navigate to all screens displayed in the drawer.

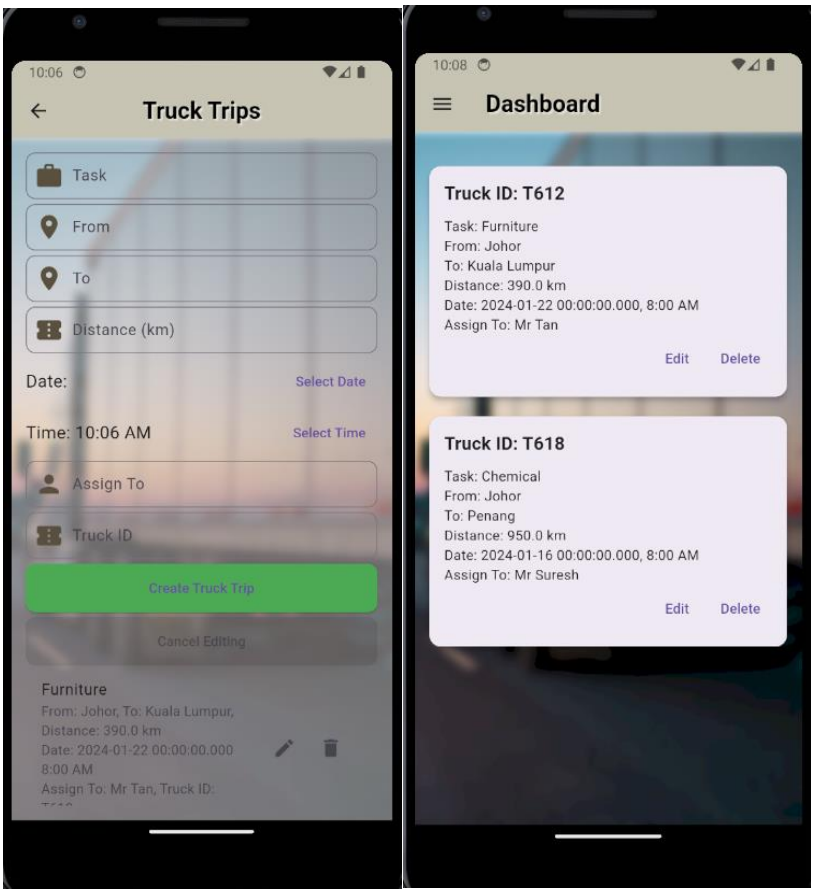

Figure 5.3 Dashboard and Truck Trips

To schedule truck trip, user firstly needs to create a truck trip on truck trip screen. Then it will be scheduled and displayed on the dashboard screen. User can create more, edit, update and delete truck trips. All the updated on truck movements can be viewed in truck update movements screen. In the Reports and Analytics screen, user may view the utilization of truck by the total number of destinations, total number of distance and total number of completed task.

6.0 Conclusion

Considering the initial obstacles that the logistics and transportation business experienced, the Haulier Tracking App shows up as a game-changing solution that gets past these obstacles and redefines industry norms. From the beginning, when delays and inefficient logistics were typical, the app ushered in a new era of more secure, real-time tracking, and optimized operations. By breaking with conventional methods, its deployment ushers in a new era where hauliers can precisely navigate their fleets, optimize routes for maximum efficiency, and guarantee the confidentiality and integrity of vital data. By filling in these gaps in the industry, the Haulier Tracking App transforms logistics and leads the industry into a new era of technical innovation and operational excellence.

7.0 Reference

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