



Assignment Cover Sheet

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Additional Relevant Information (e.g. number of pieces submitted etc.):

<u>AI in Learner Assessment Policy</u> Indicate here applicable categories allowed for this assignment.	Category of AI Use	Allowed or not allowed
	No AI Use	No
	AI for Planning	No
	AI for Editing	No
	AI for Support Tasks	No
	AI for Collaboration	No
	Full AI Use	(NOT ALLOWED)

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Signature: Joshan John Date: 08/11/2025

Please note: Learners **MUST** retain a hard/soft copy of all assignments and must have the lecturer/member of Faculty acknowledge/sign as proof of submission.

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LUCKY WHEEL

Mobile Development – Milestone 1

Project Details

Project Name	Lucky Wheel
Sensor's Used	Accelerometer
Firebase Services	Authentication (email and password), Real-time Database
Data Preferences	Data Store (preference)
Fonts (Google Fonts)	Inter, Knewave, Merienda, Space Grotesk
GitHub Link	https://github.com/joshanjohn/luckywheel_3092883

Main Goal

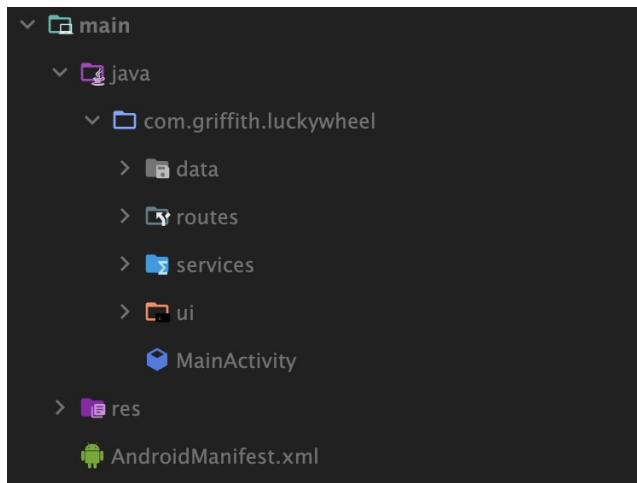
Lucky Wheel is a gaming app. The main goal of the app is to have a competitive gameplay for collecting the gold by spinning a wheel using a mobile sensor. The spinning wheel will land the pointer on a random choice (arch) on the spinning wheel. The player can earn or lose gold by spinning the lucky wheel. The app shows Real-time data ranking for players with high gold count.

Objective: Milestone 1

- Build a user authentication and registration system using Firebase.
- Implement preference for auto login using the datastore preferences.
- Use an accelerometer sensor to spin the wheel and the stopping mechanism.
- Make the spinning of the wheel feel natural, so that it starts with a varying acceleration and ends with some natural, smooth friction.
- Implemented a gold scoring system and a real-time leaderboard.
- Implemented a navigable screen to switch between the gold wheel section and the custom game.
- Implement a custom wheel with varying percentages of pi size, with an option to edit wheel item properties.

Project Architecture

The project is developed in an agile SDCL method. The project uses the Model View Controller (MVC) 3-level design architecture pattern.



All the model classes, defined as data classes in Kotlin, are organized within the data package. The services package contains all service and controller-related code, including the Firebase service, authentication service, and data store service. The UI elements, such as themes, screens, components, and UI logic, are placed in the UI package, along with the themes.

App UI Theme

The reason for choosing the current app UI theme is that it brings an arcade-playing feel. Just like a traditional red and black roulette wheel. For instance, in the gold collection game uses an alternative dark and light green colours, which mirrors the classic roulette wheel colouring pattern.

Some Key design considerations include:

- **Darker background:** Helps the user focus more on the spinning wheel while maintaining an immersive feel. The buttons also carry a green accent, maintaining visual consistency.
- **Interactive button design:** The press-and-hold button is circular, making it comfortable to use in any device orientation and reducing accidental touches. Additionally, the button changes to a light green shade when pressed, providing immediate visual feedback to the user.

Colour Theme

The App uses the following colours for the app scaffold background colour, in a linear gradient fashion. For some elements, it has a golden yellow colour.

	Colour	Hex value
	darkGreenColor	0xFF0BA136
	darkerGreenColor	0xFF092609
	extraDarkerGreenColor	0x85071507
	lightGreenColor	0xFF20B652

Font Theme

The application uses the Google Fonts service for its typography. The primary fonts are **Inter** (Anon, n.d.), which is used for main UI text, body content, and labels, and **Space Grotesk** (Anon, n.d.), which is applied to secondary headings and highlighted sections.

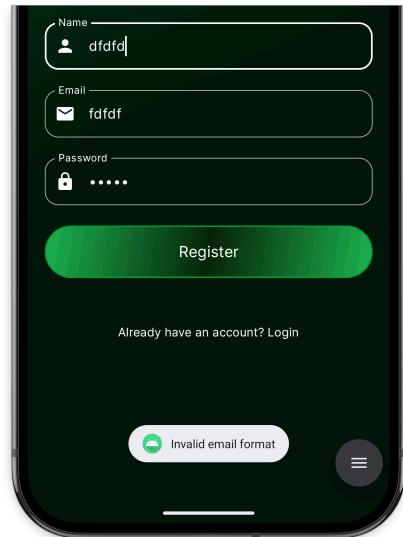
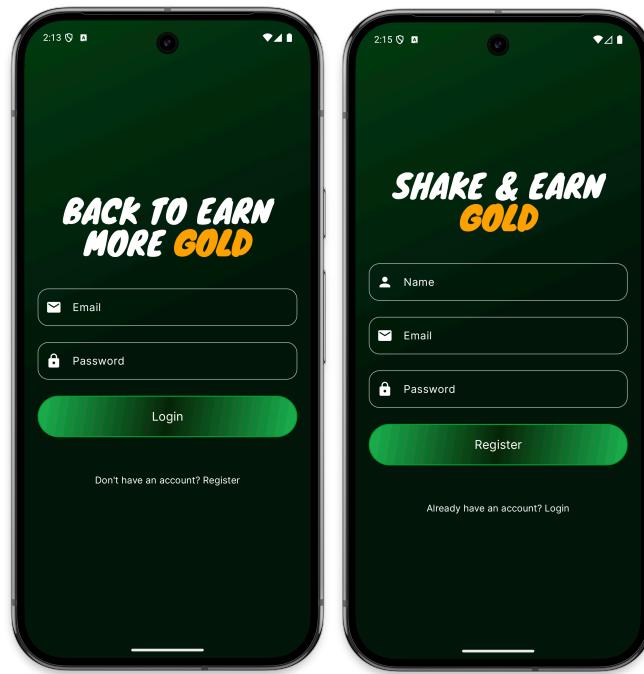
For decorative titles and special headers, the app uses the **Knewave** (Anon, n.d.) font, while instructional text within the playground area is styled with **Merienda** (Anon, n.d.). These fonts are all sourced from Google Fonts.

App UI Design

Authentication Screens

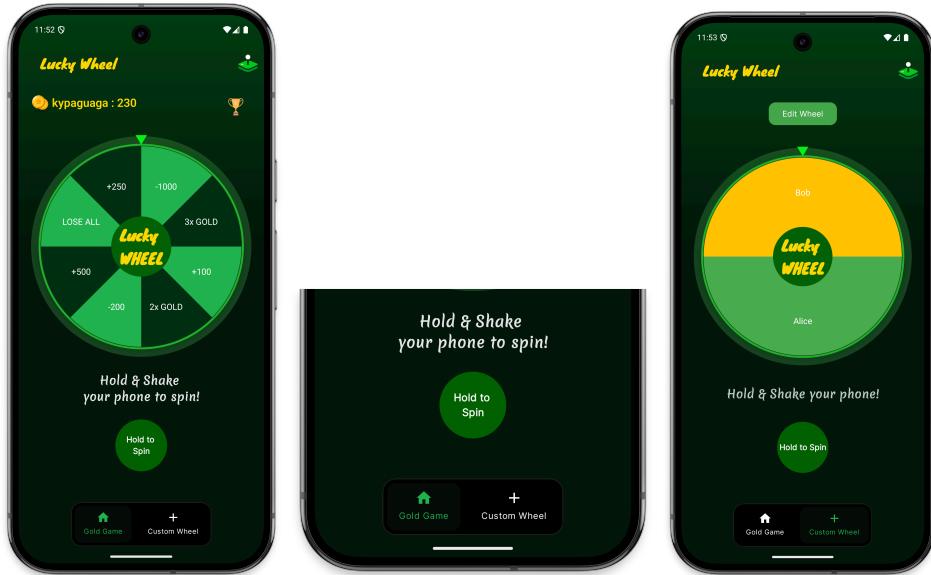
The app allows new user to register using their name, email, and a password. The existing user could log in. Once the player logs in, the login info will be stored in the data store as a preference, so next time when the user comes back after a pause or closing the app, the app will still be logged in.

Both the login and register text fields are sanitised and validated before authorization. Any validation error will be displayed as a toast at the bottom.



Playground Screens

Inside the playground, the player could switch between the gold game and the custom player spinning wheel game.



Gold Wheel Section

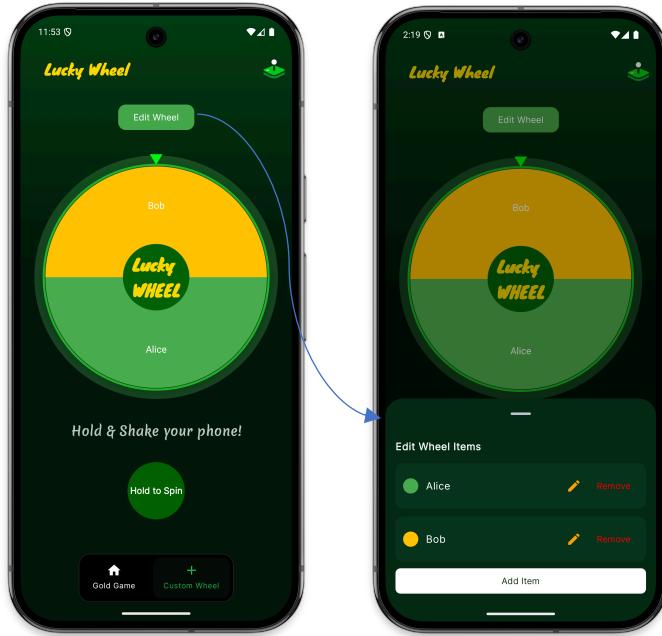
Player spins the lucky gold wheel by pressing and holding the green bottom button and shaking to spin the wheel. The spinning result shows as soon as the wheel stops as a pop-up window.



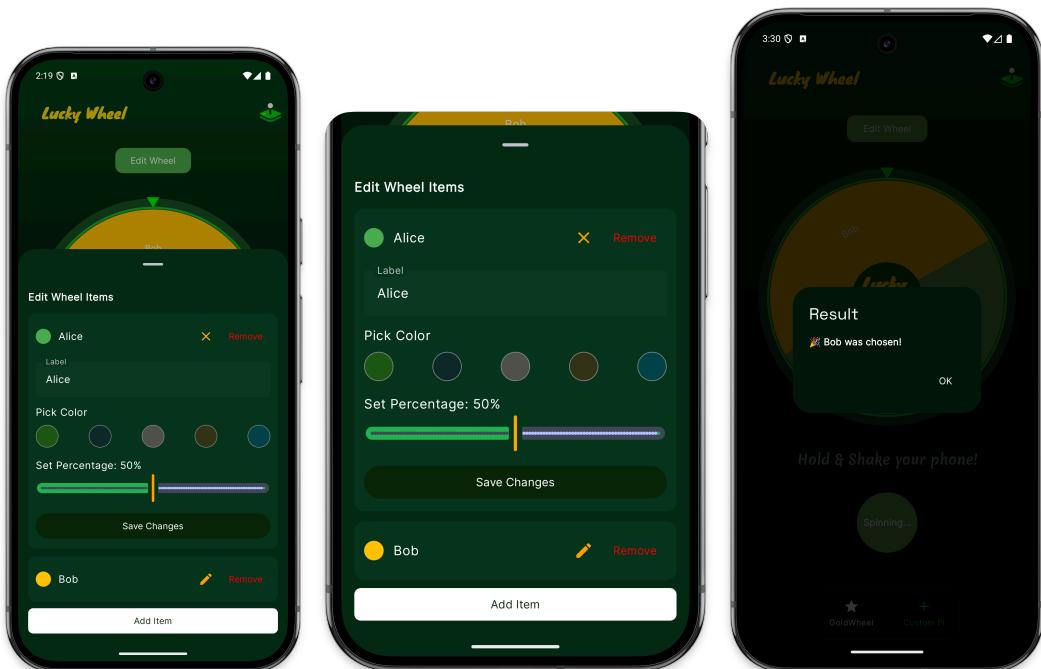
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Custom Wheel Section

The player can use the same press and shake feature to spin the user-customizable wheel.



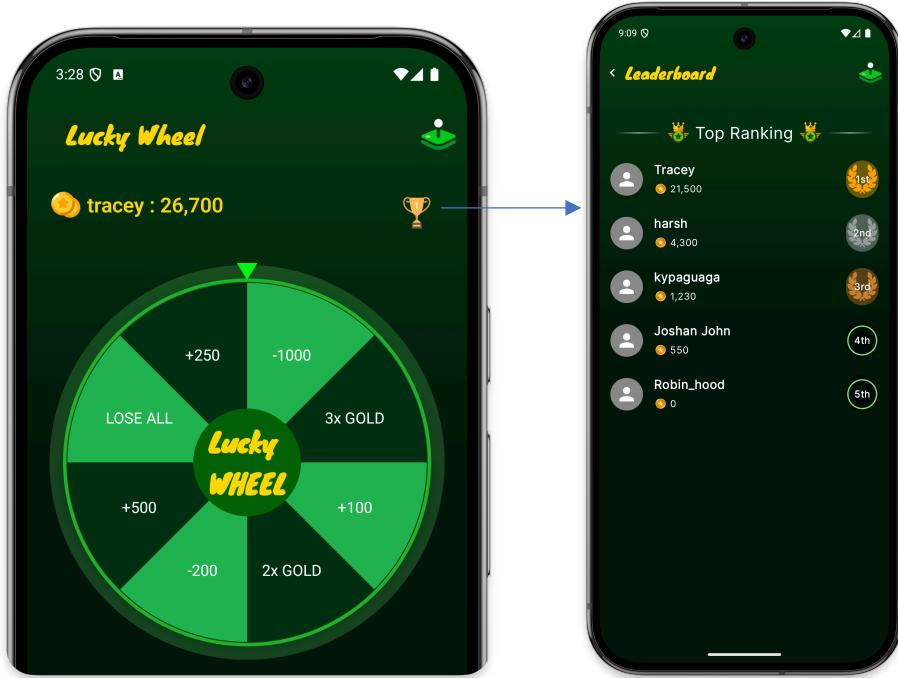
On clicking the “**Edit Wheel**” button, the user can add a new item to the pie and adjust the percentage of the pie. The user can also rename the label, edit the color. If needed user can also remove the item from the pie.



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Leaderboard Screen

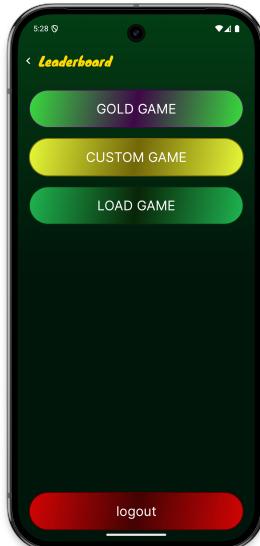
Players can view the top-ranked players by clicking the trophy icon.



Overall, the app has a green arcade-style theming with a golden splash on some UI components.

Settings Screen (In progress)

The settings Screens design and button are in progress, and can expect for milestone 2



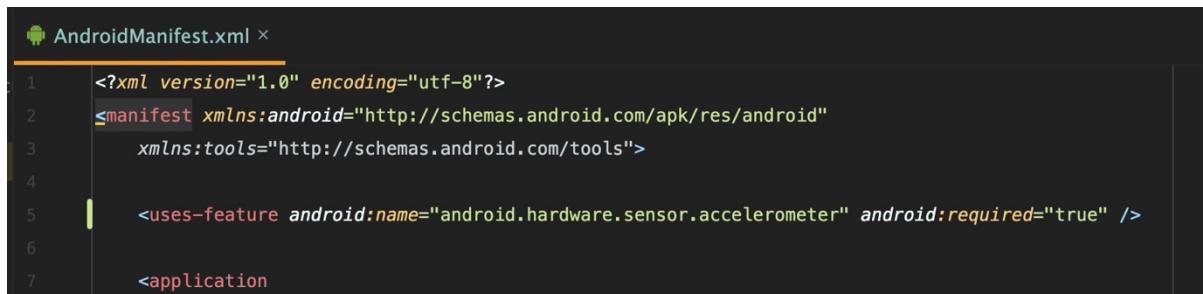
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Permissions and License

All the app assets are sourced from icons8 and are free assets. No copyright issues and are licensed.

- [Click here to view all icons8 asset licensing](#)

Declared the app uses the accelerometer mobile hardware sensor in the **AndroidManifest.xml**, and it is required to run the application.



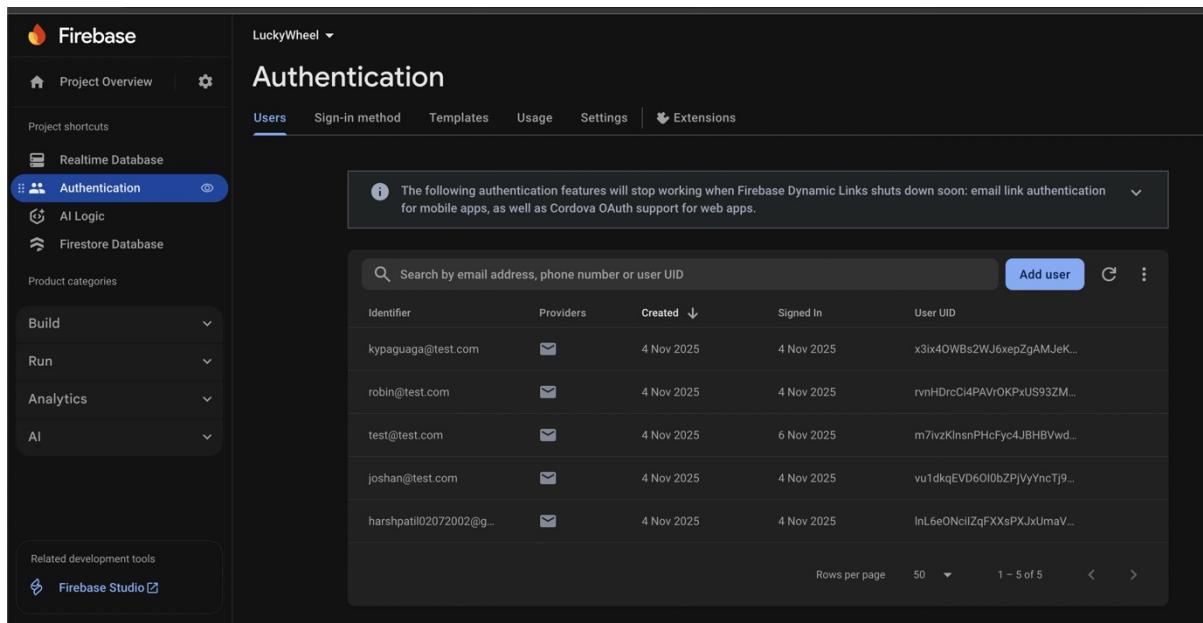
```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">

    <uses-feature android:name="android.hardware.sensor.accelerometer" android:required="true" />

    <application>
```

Backend Services

Currently, Firebase is primarily used as a backend service. This includes Firebase authentication for secure use, registration, and logins. Also, the application uses Firebase real-time database to fetch and store player info and gold count in real time with no delay.



The screenshot shows the Firebase console's Authentication section for a project named "LuckyWheel". The left sidebar lists "Realtime Database", "Authentication" (which is selected), "AI Logic", and "Firestore Database". The main area is titled "Authentication" and contains tabs for "Users", "Sign-in method", "Templates", "Usage", "Settings", and "Extensions". A message at the top states: "The following authentication features will stop working when Firebase Dynamic Links shuts down soon: email link authentication for mobile apps, as well as Cordova OAuth support for web apps." Below this is a search bar and a table of users. The table columns are "Identifier", "Providers", "Created", "Signed In", and "User UID". The data in the table is as follows:

Identifier	Providers	Created	Signed In	User UID
kypaguaga@test.com	✉️	4 Nov 2025	4 Nov 2025	x3ix40WBs2WJ6xepZgAMJeK...
robin@test.com	✉️	4 Nov 2025	4 Nov 2025	rvnHDrcC4PAVrOKPxUS93ZM...
test@test.com	✉️	4 Nov 2025	6 Nov 2025	m7ivzKnsnPfFcYc4JBHBVwd...
joshan@test.com	✉️	4 Nov 2025	4 Nov 2025	vu1dkqEVd60I0bZPJyYncTj9...
harshpatil02072002@q...	✉️	4 Nov 2025	4 Nov 2025	inL6eONciIZqFXXsPXJxUmaV...

The screenshot shows the Firebase Realtime Database console for a project named "LuckyWheel". The left sidebar includes links for Project Overview, Authentication, AI Logic, and Firestore Database. The main area displays the Realtime Database interface with tabs for Data, Rules, Backups, Usage, and Extensions. A banner at the top right says "Need help with Realtime Database? Ask Gemini". Below the tabs, a shield icon indicates protection against abuse. The Data tab shows a tree view of database nodes. One node under "players" is expanded, showing a child node "m7ivzKlnsnPHcFyc4JBHBVwdF8C2" which contains "gold: 64600", "playerId: "m7ivzKlnsnPHcFyc4JBHBVwdF8C2\"", and "playerName: "Tracey"". Other nodes like "lnL6eONciIZqFXXsPXJxUmaVCeP2" and several others starting with "r" and "v" are also listed.

References

Inter. Google Fonts. Available at: <https://fonts.google.com/specimen/Inter> (Accessed: 5 November 2025a).

Knewave. Google Fonts. Available at: <https://fonts.google.com/specimen/Knewave> (Accessed: 5 November 2025b).

Merienda. Google Fonts. Available at: <https://fonts.google.com/specimen/Merienda> (Accessed: 5 November 2025c).

Space Grotesk. Google Fonts. Available at:
<https://fonts.google.com/specimen/Space+Grotesk> (Accessed: 5 November 2025d).