

# Final Mobile Application Development Group Project Report

## Project Title:

QUIZ APP

## Team Members:

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## 1. Introduction:

The Quiz Application we created focuses on single-choice questions that users must answer within a set time, ensuring a well-organized testing environment. By integrating Google Firebase for authentication and real-time data management, the app guarantees a smooth user experience with immediate performance feedback. The primary aim is to create an engaging learning experience that promotes knowledge retention and ongoing improvement. The app addresses the problem of delayed feedback in traditional assessments by providing instant performance results, helping users quickly identify weaknesses and make improvements. It also overcomes accessibility issues, allowing users to take quizzes from anywhere, offering flexible, convenient access to practice and enhance their knowledge at their own pace.

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## 2. Design and UI (15%)

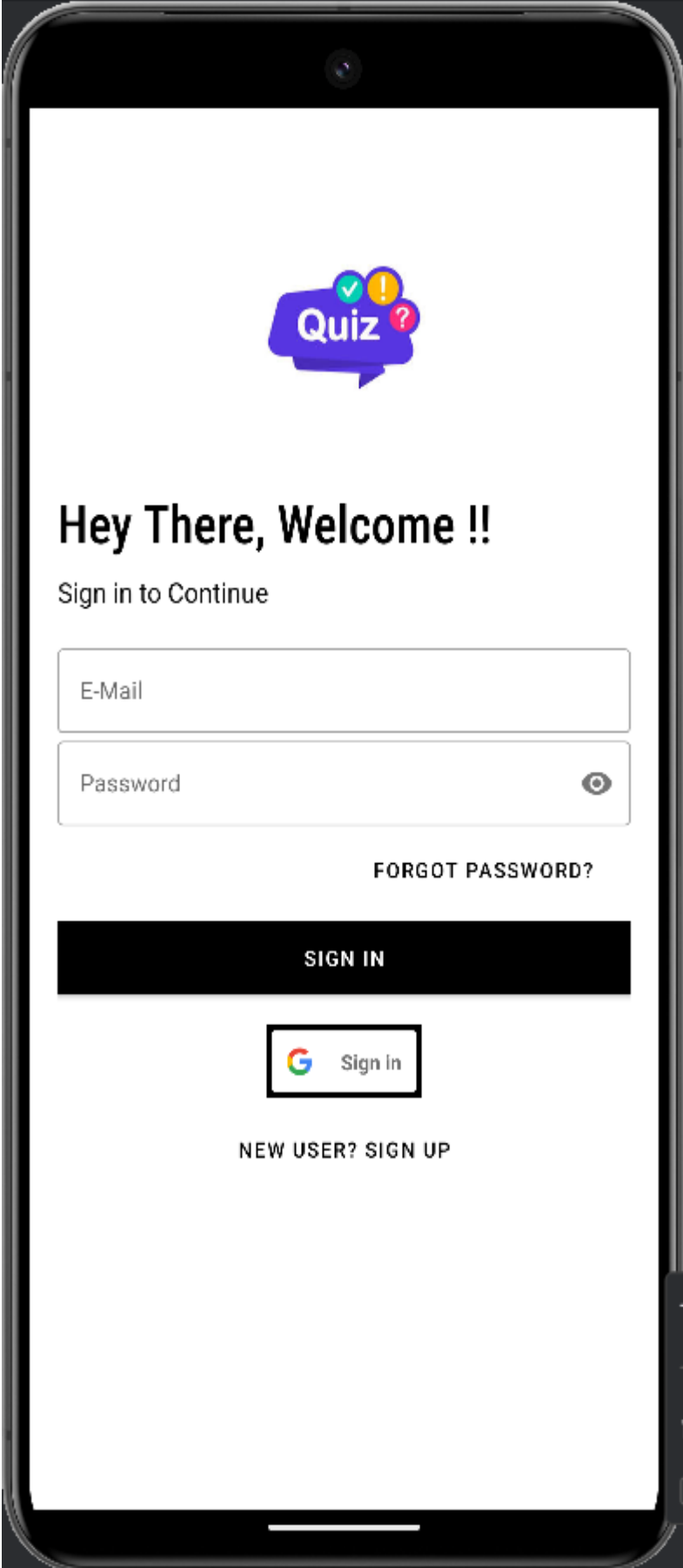
### 2.1 User Interface:


- Screenshots of the main screens of the application (e.g., Home, Login, Dashboard, etc.)  
Ans.

Splash screen:



Login Page:


A mobile app login screen for a quiz application. At the top center is a logo with the word "Quiz" in white on a purple speech bubble background, with three small circles (green checkmark, yellow exclamation mark, red question mark) above it. Below the logo is the text "Hey There, Welcome !!". Underneath is "Sign in to Continue". There are two input fields: "E-Mail" and "Password". The "Password" field has a toggle icon (an eye) to its right. Below the "Password" field is the text "FORGOT PASSWORD?". Below that is a black button with the text "SIGN IN" in white. Below the button is a Google sign-in button, which consists of the Google "G" logo and the text "Sign in". Below the Google button is the text "NEW USER? SIGN UP".



## Hey There, Welcome !!


Sign in to Continue

E-Mail

Password 

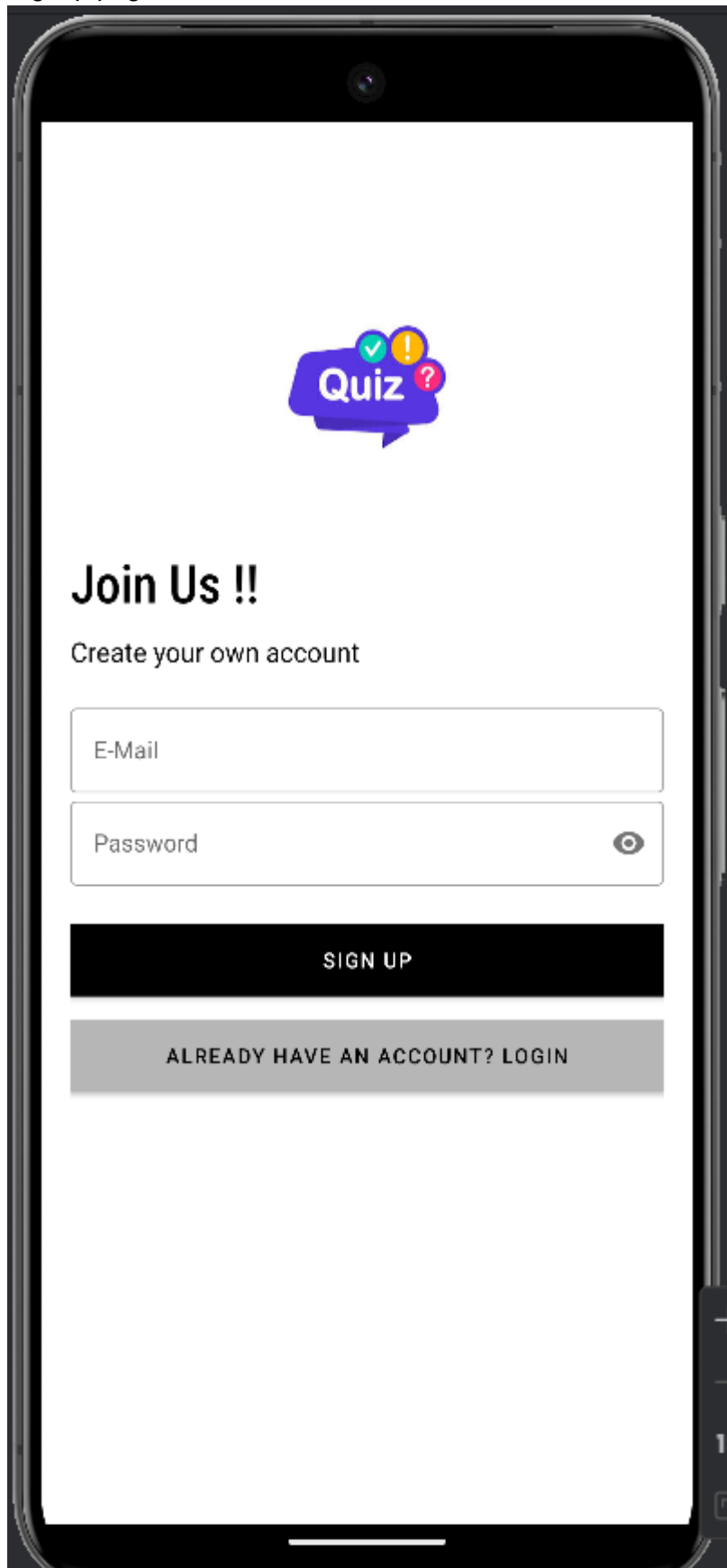
FORGOT PASSWORD?

**SIGN IN**

 Sign in

NEW USER? SIGN UP

Signup page:


A mobile app interface for a quiz application. At the top center is a logo with the word "Quiz" in white on a purple speech bubble, with three small circular icons (green checkmark, yellow exclamation mark, red question mark) above it. Below the logo is the heading "Join Us !!". Underneath is the text "Create your own account". There are two input fields: "E-Mail" and "Password". The "Password" field has a toggle icon (an eye) to its right. Below the input fields are two buttons: a black button labeled "SIGN UP" and a grey button labeled "ALREADY HAVE AN ACCOUNT? LOGIN".

**Quiz**

## Join Us !!

Create your own account

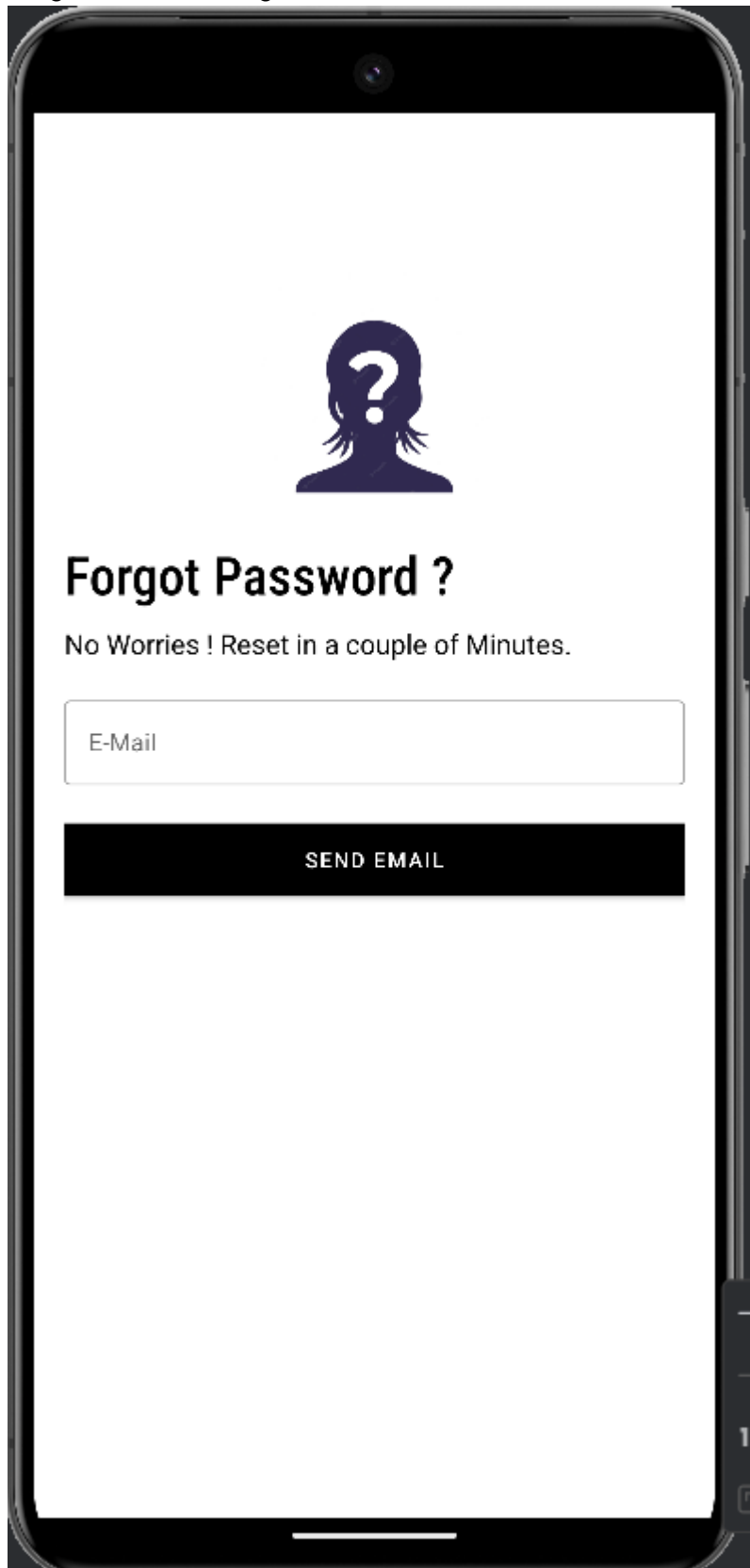
E-Mail


Password 

**SIGN UP**

ALREADY HAVE AN ACCOUNT? LOGIN

Forgot Password Page:

A mobile app mockup of a 'Forgot Password' page. The page features a purple silhouette of a person's head with a white question mark inside, centered at the top. Below this is the title 'Forgot Password ?' in bold black text, followed by the subtitle 'No Worries ! Reset in a couple of Minutes.' in a smaller black font. A white text input field with a light gray border contains the placeholder text 'E-Mail'. Below the input field is a solid black rectangular button with the text 'SEND EMAIL' in white, uppercase letters. The entire content is displayed on a white background within a black smartphone frame. On the right edge of the frame, there are some faint, partially visible UI elements: a plus sign, a horizontal line, the text '1:', and a square icon with a plus sign inside.

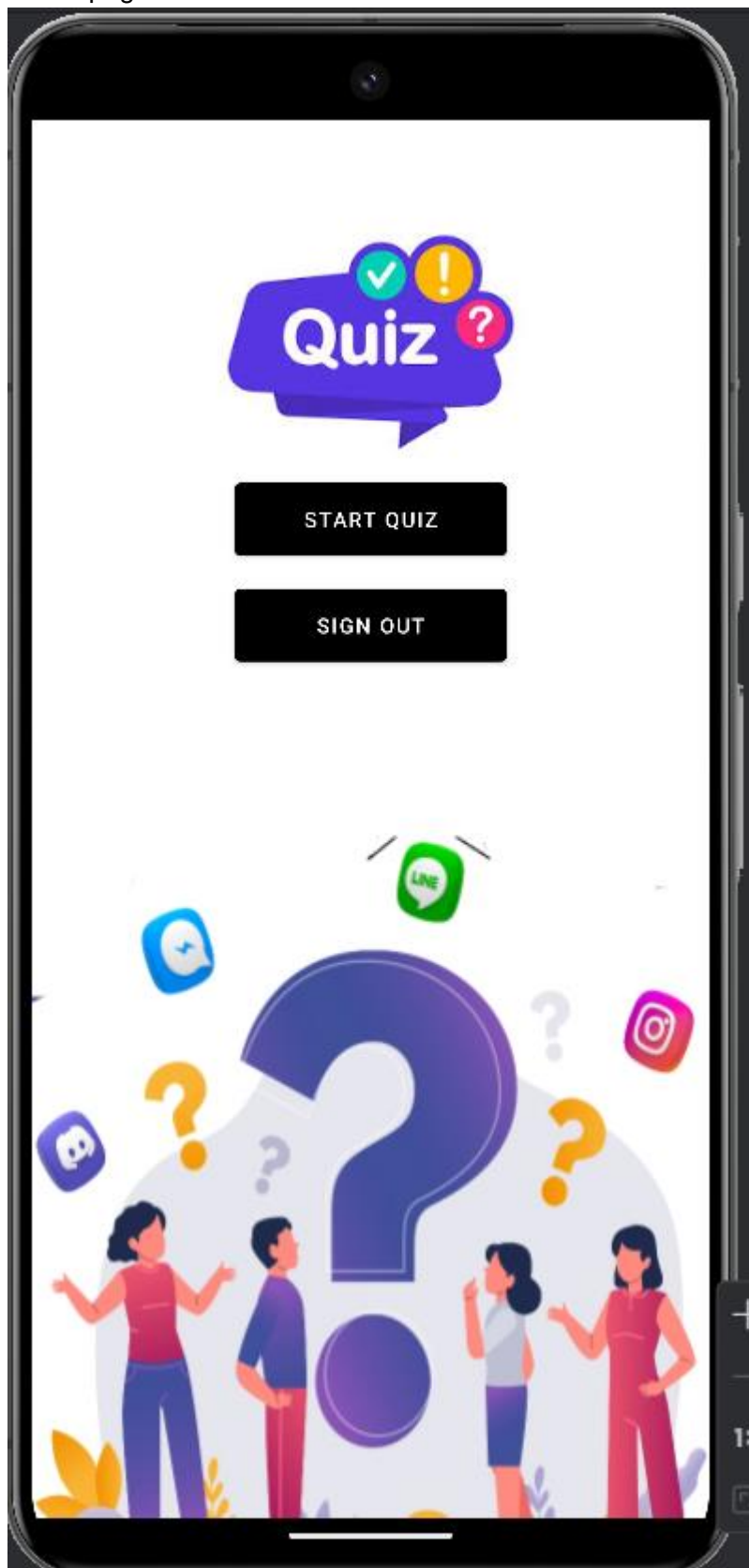


## Forgot Password ?

No Worries ! Reset in a couple of Minutes.

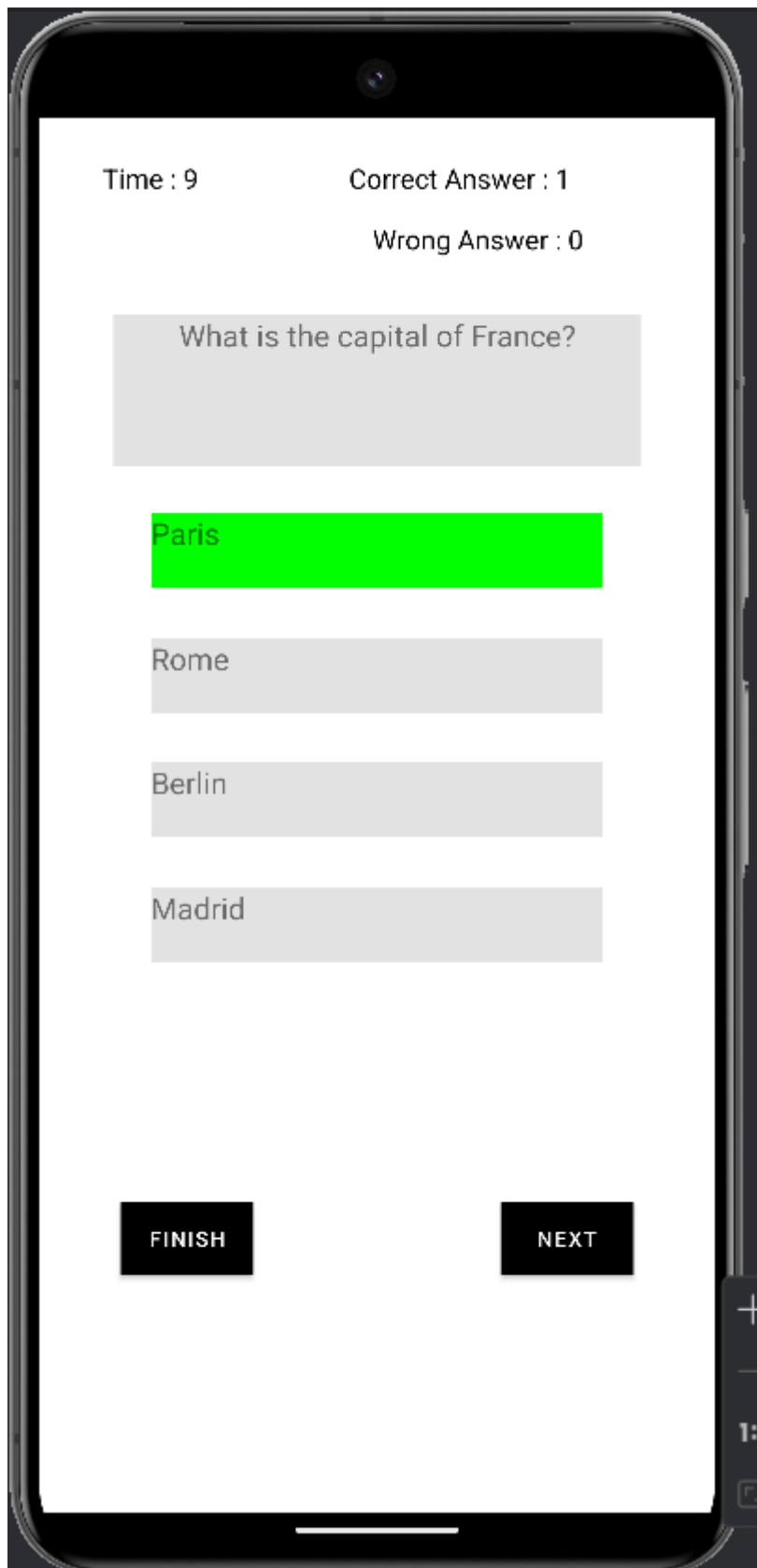
**SEND EMAIL**

Home page:

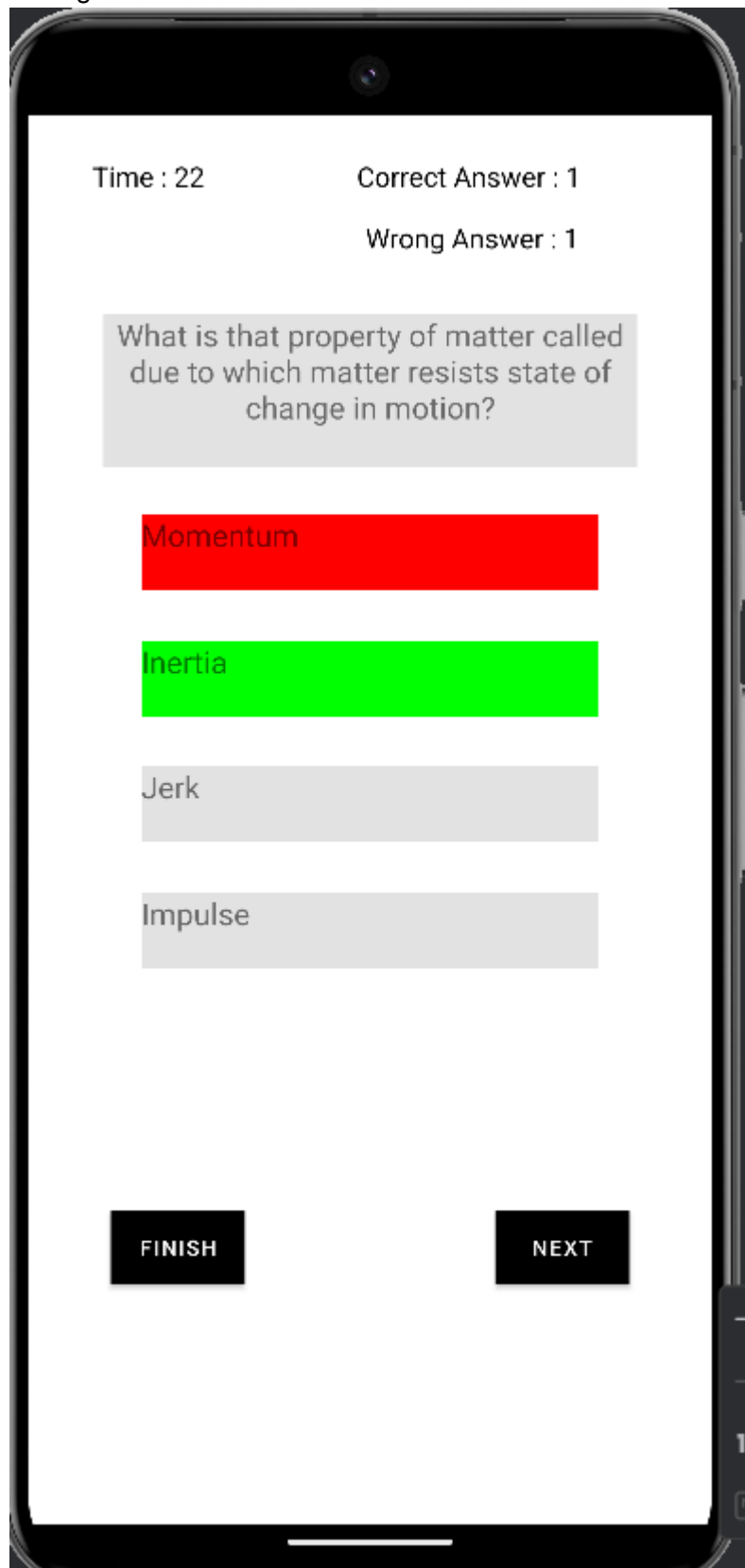


Quiz pages:

Correct answer:

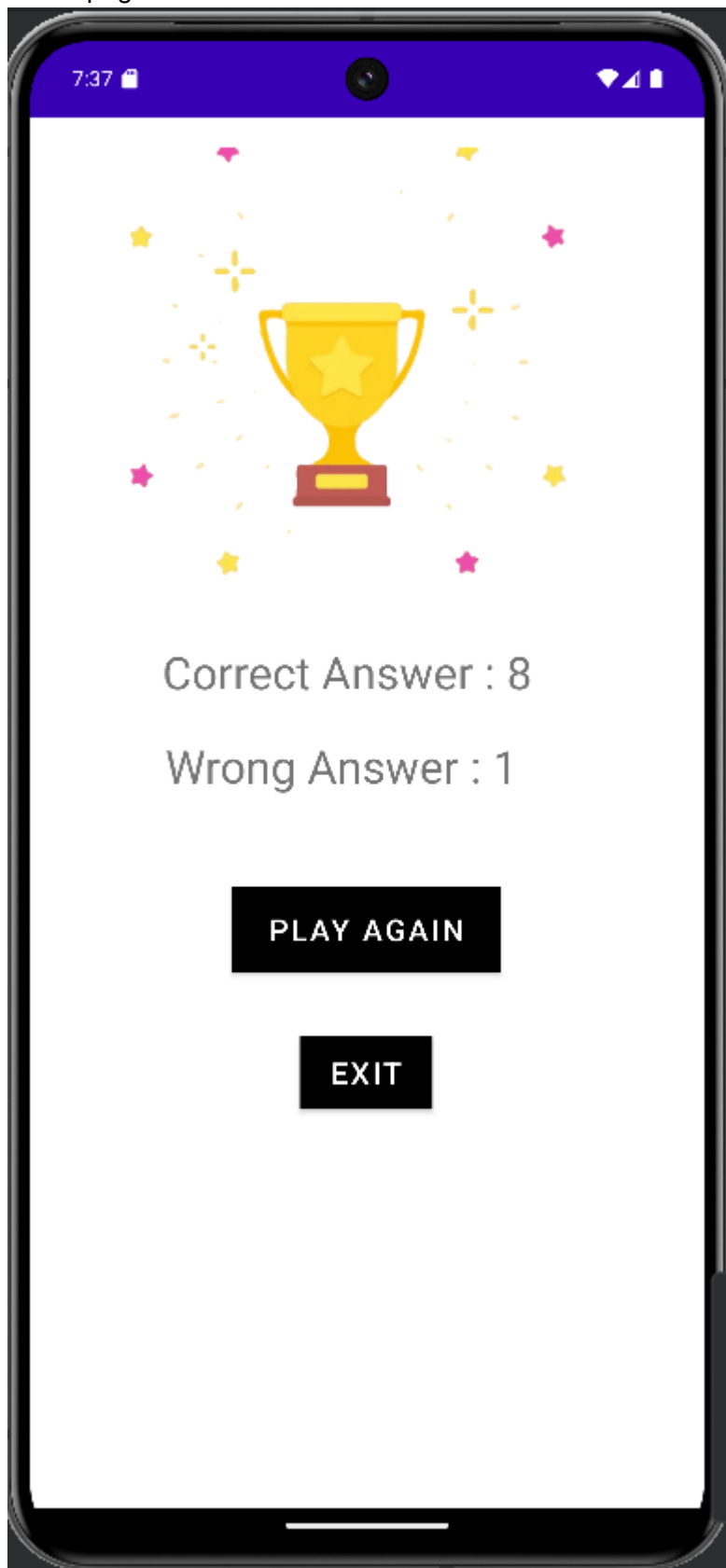


Wrong answer:

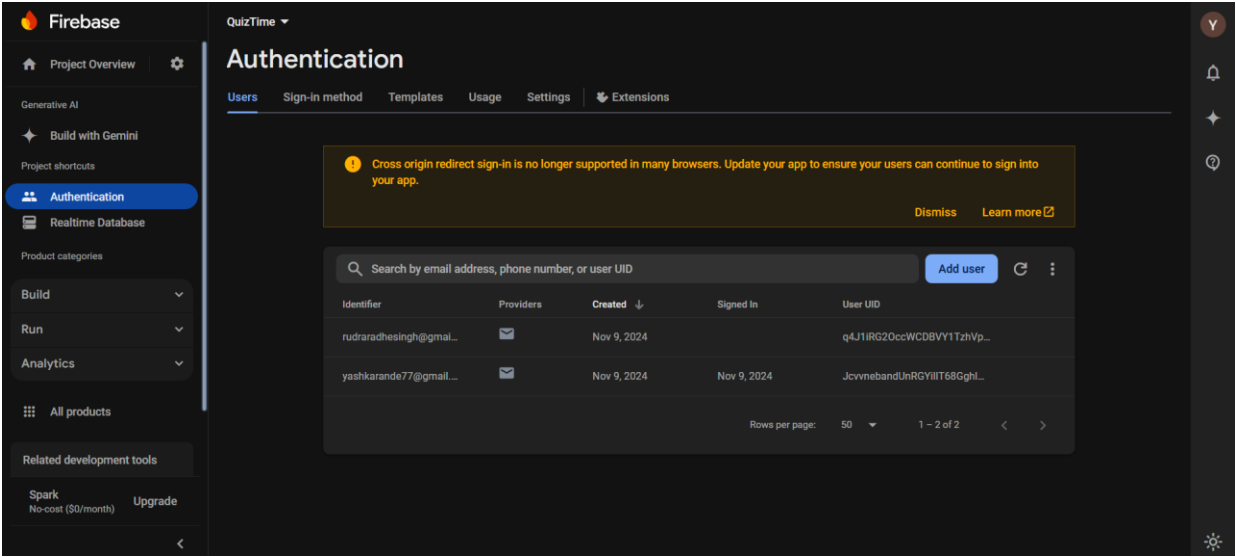




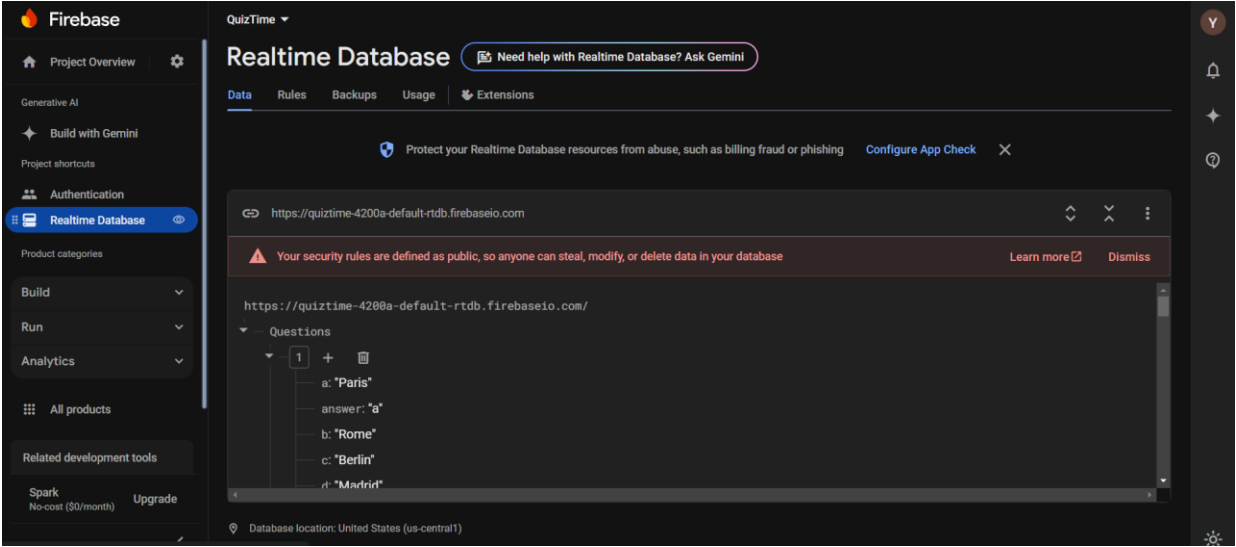
Score page:



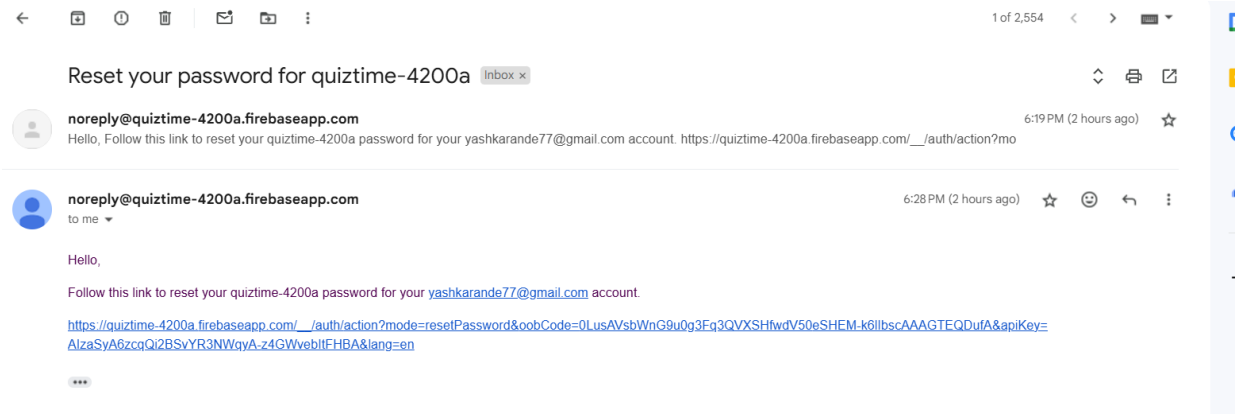
Firebase Authentication:



Firebase Realtime database:



Email for password reset:



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Password changed

You can now sign in with your new password

- Design considerations (e.g., color schemes, fonts, icons, layouts)

Ans. We mostly used a common color scheme of a white background throughout the app and have laid images and icons on it using the glide library. We have used the default font but have increased font size, to ensure user visibility of button. We have a total of 7 layouts namely:

- activity\_splash: Gives the splash screen of the app
- activity\_login: Login page of the app
- activity\_signup: Signup page of the app
- activity\_forgot\_password: Forgot password page of the app
- activity\_main: Gives the entry to quiz part of the app
- activity\_quiz\_page: Used to display the quiz question in app from realtime firebase database.
- activity\_score\_page: Gives the score of the user

- Discussion of user experience such as navigation and accessibility.

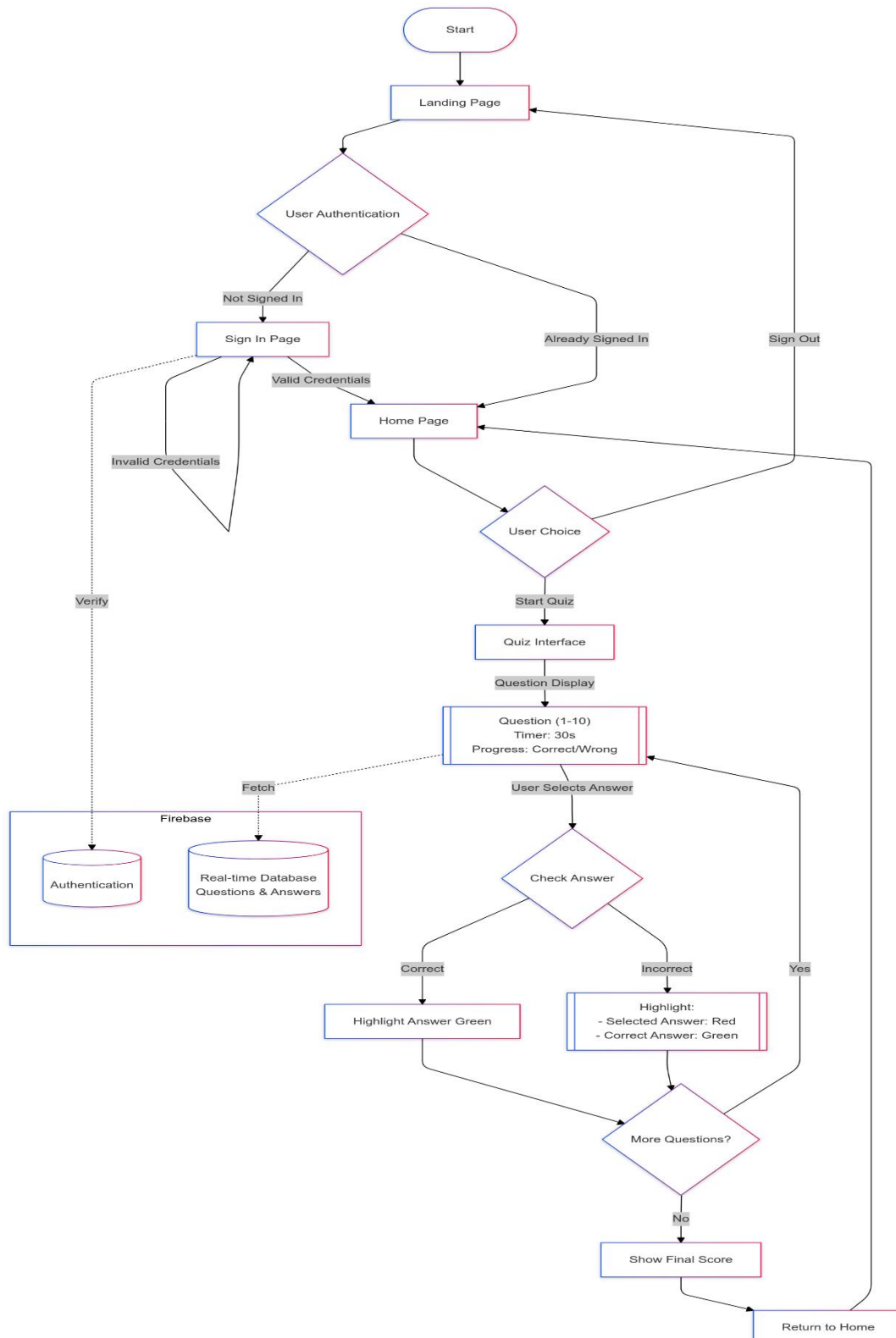
Ans. The user experience in this quiz app is designed to be intuitive and accessible, ensuring smooth navigation and ease of use. The app's layout is straightforward: after signing in, users arrive at a main menu where they can easily choose to either log out or start the quiz. This menu provides clear paths for the primary actions, minimizing confusion.

During the quiz, users can see real-time feedback on their answers, with correct and incorrect responses highlighted in colour. This immediate visual feedback enhances understanding and engagement without requiring additional steps. The 30-second timer for each question is prominently displayed, helping users manage their time and stay focused.

Accessibility is also considered, with high-contrast colours for correct (green) and incorrect (red) answers, aiding users with colour perception challenges. Button sizes and text are adequately sized for easy tapping, which is helpful for users on various device sizes and those with motor impairments. Overall, the app's clear navigation, real-time feedback, and accessibility features create an inclusive, engaging, and user-friendly experience.

## 2.2 User Flow:

- A diagram showing the flow between different screens and how users interact with the app.  
Ans.



## 3. Functionality (20%)

### 3.1 Core Features:

- **User Authentication:** Utilizing Firebase Authentication for users, ensuring secure access to the user interface.
- **Timed Quizzes:** Each question will have a time limit of 30 seconds, promoting quick thinking and decision-making among users.
- **Instant Feedback:** After completing a quiz, users receive their scores immediately and are given the option to retake the quiz or exit the app.

### 3.2 Additional Features:

- **Real-Time Data Synchronization:** Leveraging Firebase Realtime Database to ensure that quiz data is reflected in user accounts instantly.
- **Time Management:** A countdown timer is visible for each question to indicate time remaining, as soon as the countdown timer runs out, the user is then asked to navigate to the next question and any responses of the question in which time has run out is not considered. Hence question is considered skipped.

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## 4. Innovation & Creativity (10%)

### 4.1 Unique Features or Approaches:

The Quiz Application brings several innovative features to the users distinguishing it from traditional quiz systems. One key innovation is the integration of **real-time data synchronization** using Firebase, which ensures that user experience is seamless, up-to-the-minute updates on quiz performance. The app also offers **timed quizzes** with a countdown timer for each question, promoting quick thinking and enhancing the time management skills of users. The inclusion of **instant feedback** after quiz completion is another standout feature, allowing users to immediately see their scores and receive detailed feedback for improvement. Furthermore, the **retake option** gives users the opportunity to reassess their knowledge and enhance their understanding by retrying quizzes, promoting continuous learning.

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## 5. Technical Complexity (15%)

### 5.1 Technical Challenges:

- One of the most technically challenging aspects of the Interactive Quiz Application is the **real-time data synchronization** between the firebase database and the user accounts. The app relies heavily on Firebase's Realtime Database to ensure that quiz data—such as questions, answers, and scores—are updated instantly across all devices. This requires intricate handling of database synchronization, especially when multiple users are accessing the system simultaneously.
  - Another challenge lies in implementing **secure user authentication** via Firebase Authentication, ensuring that only authorized users can securely log in and take quizzes.
  - Lastly, **quiz timers** that enforce time limits for each question present an interesting challenge. The app needs to ensure that each question's countdown timer functions properly across all devices and updates in real time, regardless of network or device performance.
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## 6. Security and Data Management (10%)

### 6.1 Data Handling:

- Describe how data is managed, stored, and secured within the app (e.g., encryption, use of SQLite, Firebase, or other databases).
- Data management within the Quiz Application is handled securely using Firebase services. All user data, including quiz answers, scores, and personal information, is stored in Firebase's **Realtime Database**. This ensures that all data is synced instantly across devices in real-time, providing a seamless experience for all users. The app also uses **Firebase Authentication** to manage user logins and securely store authentication tokens, ensuring that only registered users can access the platform.

### 6.2 Security Measures:

- Provide details on how user data security is ensured (e.g., input validation, secure API calls, authentication).
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## 7. Testing and Debugging (10%)

### 7.1 Testing Strategy:

The testing strategy for the Interactive Quiz Application aimed to ensure the functionality, performance, and security of the app in different scenarios, covering both teacher and student user interfaces. The testing process involved various stages including unit testing, integration testing and system testing.

- **Unit Testing:** Focused on testing individual components, such as user authentication and quiz creation, to verify that each function performs as expected.
- **Integration Testing:** Ensured that different components (e.g., Firebase Authentication, real-time database synchronization, and quiz management) worked together seamlessly.
- **System Testing:** Conducted to verify that the overall system functions properly and meets the requirements outlined in the functional specifications, including login, quiz creation, participation, and real-time data updates.

### Tools Used for Testing:

- **Logcat:** Used for capturing logs during testing, enabling detailed inspection of the app's behavior and any potential errors that occurred during execution.
- **Android Studio Debugger:** Utilized for inspecting and debugging code, especially to track down issues related to UI rendering and real-time database synchronization.

### 7.2 Debugging Process:

- Describe common bugs encountered and how they were resolved.  
Ans. Common bugs encountered were:
  1. **Firebase Authentication Errors:** Occasionally, users encountered login or signup errors due to issues like weak passwords, duplicate emails, or internet connectivity problems. To handle this, error messages were customized to provide specific feedback. This was achieved by using `Task<AuthResult>` and `onActivityResult` in Firebase Authentication to capture and display precise error details to users.
  2. **UI Freezing on Answer Selection:** When selecting answers, users occasionally experienced UI lag, especially if multiple UI updates (like highlighting answers and updating scores) happened simultaneously. The solution involved optimizing the answer feedback code, using `onDataChanged()` and event listener to manage Firebase data updates, and updating UI elements after data processing completed.
  3. **Timer Malfunctions:** The 30-second timer sometimes failed to reset or stop between questions, causing synchronization issues. This was resolved by implementing a separate timer instance for each question and ensuring each timer was properly canceled upon moving to the next question. This way, timers reset smoothly without overlap or delay.



- Provide evidence of testing through screenshots/logs. (Logcat Screenshots)  
Ans.

Logcat of Splash\_Screen:

2024-11-09 20:30:20.284	8397-8397	ziparchive	com.example.quiztime	W	Unable to open '/data/app/~~N2FQtY0X9WCFH0-6LoCuw==/com.example.quiztime-1
2024-11-09 20:30:20.284	8397-8397	ziparchive	com.example.quiztime	W	Unable to open '/data/app/~~N2FQtY0X9WCFH0-6LoCuw==/com.example.quiztime-1
2024-11-09 20:30:20.455	8397-8397	native-loader	com.example.quiztime	D	Configuring clns-7 for other apk /data/app/~~N2FQtY0X9WCFH0-6LoCuw==/com.e
2024-11-09 20:30:20.491	8397-8397	GraphicsEnvironment	com.example.quiztime	V	Currently set values for:
2024-11-09 20:30:20.491	8397-8397	GraphicsEnvironment	com.example.quiztime	V	angle_gl_driver_selection_pkgs=[]
2024-11-09 20:30:20.491	8397-8397	GraphicsEnvironment	com.example.quiztime	V	angle_gl_driver_selection_values=[]
2024-11-09 20:30:20.491	8397-8397	GraphicsEnvironment	com.example.quiztime	V	Global.Settings values are invalid: number of packages: 0, number of values
2024-11-09 20:30:20.499	8397-8397	GraphicsEnvironment	com.example.quiztime	V	Neither updatable production driver nor prerelease driver is supported.
2024-11-09 20:30:20.572	8397-8397	FirebaseApp	com.example.quiztime	I	Device unlocked: initializing all Firebase APIs for app [DEFAULT]
2024-11-09 20:30:20.584	8397-8397	FirebaseInitProvider	com.example.quiztime	I	FirebaseApp initialization successful
2024-11-09 20:30:20.712	8397-8397	AppCompatDelegate	com.example.quiztime	D	Checking for metadata for AppLocalesMetadataHolderService : Service not fou
2024-11-09 20:30:20.836	8397-8397	xample.quiztime	com.example.quiztime	W	Accessing hidden method Landroid/view/ViewGroup; ->makeOptionalFitsSystemWid
2024-11-09 20:30:20.938	8397-8397	HWUI	com.example.quiztime	W	Unknown datasource 0
2024-11-09 20:30:21.002	8397-8415	EGL_emulation	com.example.quiztime	I	Opening libGLESv1_CM_emulation.so
2024-11-09 20:30:21.005	8397-8415	EGL_emulation	com.example.quiztime	I	Opening libGLESv2_emulation.so
2024-11-09 20:30:21.043	8397-8415	HWUI	com.example.quiztime	W	Failed to choose config with EGL_SWAP_BEHAVIOR_PRESERVED, retrying without.
2024-11-09 20:30:21.044	8397-8415	HWUI	com.example.quiztime	W	Failed to initialize 101010-2 format, error = EGL_SUCCESS
2024-11-09 20:30:21.137	8397-8415	Gralloc4	com.example.quiztime	I	Mapper 4.x is not supported
2024-11-09 20:30:21.543	8397-8401	xample.quiztime	com.example.quiztime	I	Compiler allocated 5174KB to compile void android.view.ViewRootImpl.perform
2024-11-09 20:30:21.699	8397-8422	InteractionJankMonitor	com.example.quiztime	W	Initializing without READ_DEVICE_CONFIG permission. enabled=false, interval
2024-11-09 20:30:22.329	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=7.52ms min=1.92ms max=50.58ms count=59
2024-11-09 20:30:23.346	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=4.99ms min=1.71ms max=28.83ms count=57
2024-11-09 20:30:24.351	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=5.09ms min=1.72ms max=17.10ms count=61

Logcat of Login:

2024-11-09 20:31:26.340	8397-8397	FirebaseAuth	com.example.quiztime	I	Logging in as yashkarande77@gmail.com with empty reCAPTCHA token
2024-11-09 20:31:26.394	8397-8453	System	com.example.quiztime	W	Ignoring header X-Firebase-Locale because its value was null.
2024-11-09 20:31:26.401	8397-8397	WindowOnBackDispatcher	com.example.quiztime	W	OnBackInvokedCallback is not enabled for the application.
2024-11-09 20:31:26.467	8397-8453	TrafficStats	com.example.quiztime	D	tagSocket(124) with statsTags=0xffffffff, statsUid=-1
2024-11-09 20:31:26.618	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=45.10ms min=3.32ms max=495.99ms count=19
2024-11-09 20:31:26.985	8397-8453	System	com.example.quiztime	W	Ignoring header X-Firebase-Locale because its value was null.
2024-11-09 20:31:27.386	8397-8453	FirebaseAuth	com.example.quiztime	D	Notifying id token listeners about user ( jcvnebandUnRGYill768ghLnb2 ).
2024-11-09 20:31:27.387	8397-8453	FirebaseAuth	com.example.quiztime	D	Notifying auth state listeners about user ( jcvnebandUnRGYill768ghLnb2 ).
2024-11-09 20:31:27.734	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=17.91ms min=2.59ms max=287.16ms count=48
2024-11-09 20:31:28.104	8397-8397	RemoteInput...ectionImpl	com.example.quiztime	W	requestCursorUpdates on inactive InputConnection
2024-11-09 20:31:28.106	8397-8397	InsetsController	com.example.quiztime	D	hide(lme(), fromIme=true)
2024-11-09 20:31:28.148	8397-8397	ImeTracker	com.example.quiztime	I	com.example.quiztime:13fb5516: onCancelled at PHASE_CLIENT_ANIMATION_CANCEL
2024-11-09 20:31:28.150	8397-8397	ImeTracker	com.example.quiztime	I	com.example.quiztime:d6864061: onRequestHide at ORIGIN_CLIENT reason HIDE_S
2024-11-09 20:31:28.153	8397-8397	ImeTracker	com.example.quiztime	I	com.example.quiztime:d6864061: onFailed at PHASE_CLIENT_VIEW_SERVED
2024-11-09 20:31:28.445	8397-8397	VR[Login_Page]	com.example.quiztime	D	visibilityChanged oldVisibility=true newVisibility=false
2024-11-09 20:31:28.496	8397-8397	WindowOnBackDispatcher	com.example.quiztime	W	sendCancelIfRunning: isInProgress=false callback=android.view.ViewRootImpl\$

Logcat of attempting quiz:

2024-11-09 20:31:28.496	8397-8397	WindowOnBackDispatcher	com.example.quiztime	W	sendCancelIfRunning: isInProgress=false callback=android.view.ViewRootImpl\$
2024-11-09 20:31:59.202	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=2420.26ms min=3.68ms max=30989.80ms count=13
2024-11-09 20:32:00.110	8397-8476	TrafficStats	com.example.quiztime	D	tagSocket(107) with statsTags=0xffffffff, statsUid=-1
2024-11-09 20:32:00.417	8397-8397	VR[MainActivity]	com.example.quiztime	D	visibilityChanged oldVisibility=true newVisibility=false
2024-11-09 20:32:00.438	8397-8397	WindowOnBackDispatcher	com.example.quiztime	W	sendCancelIfRunning: isInProgress=false callback=android.view.ViewRootImpl\$
2024-11-09 20:32:01.775	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=677.82ms min=27.78ms max=1009.83ms count=3
2024-11-09 20:32:02.778	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=501.42ms min=216.73ms max=1019.91ms count=2
2024-11-09 20:32:04.794	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=1008.01ms min=997.56ms max=1018.46ms count=2
2024-11-09 20:32:05.813	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=1018.11ms min=1018.11ms max=1018.11ms count=1
2024-11-09 20:32:06.817	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=1004.61ms min=1004.61ms max=1004.61ms count=1
2024-11-09 20:32:08.794	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=988.44ms min=956.98ms max=1019.91ms count=2
2024-11-09 20:32:10.820	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=1012.57ms min=994.60ms max=1030.54ms count=2
2024-11-09 20:32:12.791	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=976.78ms min=953.34ms max=1080.21ms count=2
2024-11-09 20:32:13.795	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=1004.22ms min=1004.22ms max=1004.22ms count=1
2024-11-09 20:32:14.809	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=1013.92ms min=1013.92ms max=1013.92ms count=1
2024-11-09 20:32:16.814	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=1001.39ms min=996.17ms max=1006.62ms count=2
2024-11-09 20:32:25.023	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=4104.16ms min=572.91ms max=7635.42ms count=2
2024-11-09 20:32:26.168	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=94.64ms min=4.98ms max=875.11ms count=11
2024-11-09 20:32:28.159	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=995.31ms min=988.85ms max=1001.78ms count=2
2024-11-09 20:32:30.180	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=1010.21ms min=999.08ms max=1021.34ms count=2
2024-11-09 20:32:31.208	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=513.83ms min=46.90ms max=980.76ms count=2
2024-11-09 20:32:33.725	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=2516.72ms min=2516.72ms max=2516.72ms count=1
2024-11-09 20:32:34.857	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=92.86ms min=4.34ms max=873.97ms count=11
2024-11-09 20:32:35.874	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=1016.43ms min=1016.43ms max=1016.43ms count=1
2024-11-09 20:32:36.874	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=1000.22ms min=1000.22ms max=1000.22ms count=1
2024-11-09 20:32:37.896	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=1016.43ms min=1016.43ms max=1016.43ms count=1

Logcat of Score:

2024-11-09 20:33:36.189	8397-8397	Glide	com.example.quiztime	W	Failed to find GeneratedAppGlideModule. You should include an annotationProc
2024-11-09 20:33:36.723	8397-8402	xample.quiztime	com.example.quiztime	I	Background concurrent mark compact GC freed 1870KB AllocSpace bytes, 8(2080)
2024-11-09 20:33:37.086	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=520.19ms min=51.15ms max=989.23ms count=2
2024-11-09 20:33:37.466	8397-8397	VR[Quiz_Page]	com.example.quiztime	D	visibilityChanged oldVisibility=true newVisibility=false
2024-11-09 20:33:37.484	8397-8397	WindowOnBackDispatcher	com.example.quiztime	W	sendCancelIfRunning: isInProgress=false callback=android.view.ViewRootImpl\$
2024-11-09 20:33:37.976	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=53.16ms min=25.92ms max=241.30ms count=24
2024-11-09 20:33:38.992	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=42.21ms min=27.79ms max=54.04ms count=24
2024-11-09 20:33:40.014	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=41.98ms min=25.56ms max=65.12ms count=24
2024-11-09 20:33:41.041	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=38.40ms min=26.07ms max=63.77ms count=25
2024-11-09 20:33:42.049	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=41.61ms min=30.19ms max=53.94ms count=24
2024-11-09 20:33:43.058	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=41.89ms min=30.50ms max=55.48ms count=24
2024-11-09 20:33:44.080	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=44.32ms min=25.74ms max=99.96ms count=23
2024-11-09 20:33:45.126	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=41.22ms min=29.44ms max=65.13ms count=25
2024-11-09 20:33:46.161	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=41.18ms min=30.34ms max=52.32ms count=25
2024-11-09 20:33:47.207	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=41.71ms min=27.92ms max=54.70ms count=25
2024-11-09 20:33:48.209	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=40.53ms min=25.36ms max=49.97ms count=24
2024-11-09 20:33:49.209	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=41.26ms min=25.50ms max=59.46ms count=24
2024-11-09 20:33:50.210	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=41.40ms min=30.17ms max=54.17ms count=24
2024-11-09 20:33:51.228	8397-8415	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=42.31ms min=26.66ms max=54.42ms count=24



## Logcat Exit system:

2024-11-09 20:34:20.386	8397-8397	xample.quiztime	com.example.quiztime	I	System.exit called, status: 0
2024-11-09 20:34:20.386	8397-8397	AndroidRuntime	com.example.quiztime	I	VM exiting with result code 0, cleanup skipped.
----- PROCESS ENDED (8397) for package com.example.quiztime -----					

## Logcat of system restart:

----- PROCESS STARTED (8521) for package com.example.quiztime -----					
2024-11-09 20:34:51.291	8521-8521	ziparchive	com.example.quiztime	W	Unable to open '/data/app/~~N2FQty0X9WCFfH0-GloCuw==/com.example.quiztime-Y
2024-11-09 20:34:51.292	8521-8521	ziparchive	com.example.quiztime	W	Unable to open '/data/app/~~N2FQty0X9WCFfH0-GloCuw==/com.example.quiztime-Y
2024-11-09 20:34:51.491	8521-8521	nativeloader	com.example.quiztime	D	Configuring clns-7 for other apk /data/app/~~N2FQty0X9WCFfH0-GloCuw==/com.e
2024-11-09 20:34:51.518	8521-8521	GraphicsEnvironment	com.example.quiztime	V	Currently set values for:
2024-11-09 20:34:51.518	8521-8521	GraphicsEnvironment	com.example.quiztime	V	angle_gl_driver_selection_pkgs=[]
2024-11-09 20:34:51.518	8521-8521	GraphicsEnvironment	com.example.quiztime	V	angle_gl_driver_selection_values=[]
2024-11-09 20:34:51.519	8521-8521	GraphicsEnvironment	com.example.quiztime	V	Global.Settings values are invalid: number of packages: 0, number of values
2024-11-09 20:34:51.519	8521-8521	GraphicsEnvironment	com.example.quiztime	V	Neither updatable production driver nor prerelease driver is supported.
2024-11-09 20:34:51.613	8521-8521	FirebaseApp	com.example.quiztime	I	Device unlocked: initializing all Firebase APIs for app [DEFAULT]
2024-11-09 20:34:51.629	8521-8521	FirebaseInitProvider	com.example.quiztime	I	FirebaseApp initialization successful
2024-11-09 20:34:51.798	8521-8521	AppCompatDelegate	com.example.quiztime	D	Checking for metadata for AppLocalesMetadataHolderService : Service not fou
2024-11-09 20:34:51.915	8521-8521	xample.quiztime	com.example.quiztime	W	Accessing hidden method Landroid/view/ViewGroup->makeOptionalFitsSystemWin
2024-11-09 20:34:52.028	8521-8521	HWUI	com.example.quiztime	W	Unknown dataspace 0
2024-11-09 20:34:52.101	8521-8538	EGL_emulation	com.example.quiztime	I	Opening libGLESv1_CM_emulation.so
2024-11-09 20:34:52.110	8521-8538	EGL_emulation	com.example.quiztime	I	Opening libGLESv2_emulation.so
2024-11-09 20:34:52.130	8521-8538	HWUI	com.example.quiztime	W	Failed to choose config with EGL_SWAP_BEHAVIOR_PRESERVED, retrying without.
2024-11-09 20:34:52.131	8521-8538	HWUI	com.example.quiztime	W	Failed to initialize 101010-2 format, error = EGL_SUCCESS
2024-11-09 20:34:52.221	8521-8538	Gralloc4	com.example.quiztime	I	Mapper 4.x is not supported
2024-11-09 20:34:52.699	8521-8545	InteractionJankMonitor	com.example.quiztime	W	Initializing without READ_DEVICE_CONFIG permission. enabled=false, interval
2024-11-09 20:34:53.213	8521-8525	xample.quiztime	com.example.quiztime	I	Compiler allocated 5174KB to compile void android.view.ViewRootImpl.perform
2024-11-09 20:34:53.351	8521-8538	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=11.46ms min=2.46ms max=38.92ms count=57
2024-11-09 20:34:54.363	8521-8538	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=5.36ms min=1.63ms max=14.61ms count=61
2024-11-09 20:34:55.363	8521-8538	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=5.10ms min=1.38ms max=10.62ms count=58
2024-11-09 20:34:56.364	8521-8538	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=4.81ms min=1.86ms max=10.80ms count=60
2024-11-09 20:34:56.856	8521-8551	ProfileInstaller	com.example.quiztime	D	Installing profile for com.example.quiztime
2024-11-09 20:34:58.185	8521-8521	CompatChangeReporter	com.example.quiztime	D	Compat change id reported: 3408644; UID 10200; state: ENABLED

## System logout logcat:

2024-11-09 20:34:58.185	8521-8521	CompatChangeReporter	com.example.quiztime	D	Compat change id reported: 3408644; UID 10200; state: ENABLED
2024-11-09 20:34:58.341	8521-8525	xample.quiztime	com.example.quiztime	I	Compiler allocated 4219KB to compile void android.widget.TextView.<init>(an
2024-11-09 20:34:58.357	8521-8525	xample.quiztime	com.example.quiztime	I	Compiler allocated 4221KB to compile void android.widget.TextView.<init>(an
2024-11-09 20:34:58.562	8521-8521	ApplicationLoaders	com.example.quiztime	D	Returning zygote-cached class loader: /system/framework/org.apache.http.leg
2024-11-09 20:34:58.570	8521-8521	nativeloader	com.example.quiztime	D	Configuring clns-8 for other apk /system/framework/com.android.media.remote
2024-11-09 20:34:58.604	8521-8521	nativeloader	com.example.quiztime	D	Configuring clns-9 for other apk /system/framework/com.android.location.pro
2024-11-09 20:34:58.605	8521-8521	ApplicationLoaders	com.example.quiztime	D	Returning zygote-cached class loader: /system_ext/framework/androidx.window
2024-11-09 20:34:58.605	8521-8521	ApplicationLoaders	com.example.quiztime	D	Returning zygote-cached class loader: /system_ext/framework/androidx.window
2024-11-09 20:34:58.607	8521-8521	xample.quiztime	com.example.quiztime	W	Loading /data/app/~~wz0Iu446GZbGlttvNXI3tw==/com.google.android.gms-0Jk68mH
2024-11-09 20:34:58.609	8521-8521	nativeloader	com.example.quiztime	D	Configuring clns-10 for other apk /data/app/~~wz0Iu446GZbGlttvNXI3tw==/com.
2024-11-09 20:34:58.644	8521-8521	DynamiteModule	com.example.quiztime	I	Considering local module com.google.android.gms.signinbutton_dynamite:0 and
2024-11-09 20:34:58.645	8521-8521	DynamiteModule	com.example.quiztime	I	Selected remote version of com.google.android.gms.signinbutton_dynamite, ve
2024-11-09 20:34:58.672	8521-8521	System	com.example.quiztime	W	ClassLoader referenced unknown path:
2024-11-09 20:34:58.674	8521-8521	nativeloader	com.example.quiztime	D	Configuring clns-11 for other apk . target_sdk_version=35, uses_libraries=
2024-11-09 20:34:58.697	8521-8521	xample.quiztime	com.example.quiztime	W	ClassLoaderContext classpath element checksum mismatch. expected=513088818,
2024-11-09 20:34:59.747	8521-8521	VRI[Splash_Screen]	com.example.quiztime	D	visibilityChanged oldVisibility=true newVisibility=false
2024-11-09 20:34:59.787	8521-8521	WindowOnBackDispatcher	com.example.quiztime	W	sendCancelIfRunning: isInProgress=false callback=android.view.ViewRootImpl\$
2024-11-09 20:35:01.638	8521-8526	xample.quiztime	com.example.quiztime	W	Cleared Reference was only reachable from finalizer (only reported once)
2024-11-09 20:35:01.714	8521-8538	EGL_emulation	com.example.quiztime	D	app_time_stats: avg=182.92ms min=4.67ms max=2203.85ms count=14
2024-11-09 20:35:01.757	8521-8521	FirebaseAuth	com.example.quiztime	D	Notifying id token listeners about a sign-out event.
2024-11-09 20:35:01.758	8521-8521	FirebaseAuth	com.example.quiztime	D	Notifying auth state listeners about a sign-out event.
2024-11-09 20:35:02.323	8521-8521	AssistStructure	com.example.quiztime	I	Flattened final assist data: 2868 bytes, containing 1 windows, 20 views
2024-11-09 20:35:02.963	8521-8521	VRI[MainActivity]	com.example.quiztime	D	visibilityChanged oldVisibility=true newVisibility=false
2024-11-09 20:35:02.990	8521-8521	WindowOnBackDispatcher	com.example.quiztime	W	sendCancelIfRunning: isInProgress=false callback=android.view.ViewRootImpl\$

## 8. Team Collaboration (5%)

### 8.1 Contribution Breakdown:

- Yash Karande B157: Designed 4/7 java files used in application and also designed 3/7 xml files used in application. Also added gradle dependencies and set up firebase connection to authentication and real time database to store questions. Tested for features such as login and logout and Firebase connection with logcat. Also did documentation and set Github repository.
- Rudra Singh B158: Designed 4/7 xml files used in application and 3.7 java files designed in application. Also tested for Splash screen and quiz working did documentation as well.

## 8.2 Tools for Collaboration:

- Mention tools used for collaboration (e.g., GitHub for version control, Slack for communication, etc.).

Ans. GitHub (Version Control): GitHub was used as the primary tool for version control, enabling both team members to work on different parts of the project simultaneously without overwriting each other's code. Git branching and pull requests were employed to manage updates and changes, allowing each member to review code before merging it into the main branch. GitHub also provided a central repository where all code versions were stored, making it easy to track changes, revert to previous versions if necessary, and document the project's progress.

Google Drive (File Sharing and Documentation): Google Drive was used to share larger files, documentation, and resources related to the project. This included app design drafts, Firebase configuration files, and project documentation. Google Docs allowed both members to edit and comment on shared files simultaneously, making it easy to collaborate on planning documents and maintain project records.

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## 9. Documentation (5%)

Submission of this document.

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## 10. Demo & Viva (10%)

Prepare a demonstration video showing your app in action / Give demo on emulator in front of faculty, highlighting its main features, functionality, and how it meets the project requirements. Additionally, be prepared for viva questions regarding your project's technical aspects, teamwork, and decision-making process.

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## 11. Conclusion:

The development process for this quiz app was a comprehensive journey, involving initial planning, Firebase integration, UI design, real-time feedback implementation, and rigorous testing. We began by setting up Firebase for user authentication and database storage, ensuring that only authenticated users could access the quiz. Then, we focused on developing a user-friendly interface with a simple navigation flow and real-time answer feedback. Each feature was carefully tested and refined to create an engaging, intuitive experience.

Throughout the project, we encountered challenges with data synchronization, UI responsiveness, and timer functionality. Firebase integration issues were initially time-consuming, as real-time data retrieval occasionally caused delays in loading quiz questions. Timer management was also complex, as each question required precise time tracking, and we had to resolve issues with timers resetting accurately between questions. Through persistence, careful debugging, and optimizing asynchronous tasks, we overcame these obstacles.

The outcome was a fully functional, engaging quiz app that provides real-time answer feedback, score tracking, and a countdown timer for each question. Users can see their final score summary and a breakdown of correct and incorrect answers, making the app both educational and interactive.

Reflecting on the project, we learned the importance of thorough planning, effective communication, and the use of collaborative tools. Additionally, we gained experience with Firebase, enhancing our skills in managing real-time data. For future projects, we could improve by setting up more automated tests early on to catch bugs sooner and by refining our task management to better prioritize key features and potential issues. Overall, the project was a valuable learning experience that has prepared us for more complex app development in the future.

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## 12. Appendix:

- **12.1 Full Code Repository:**

- <https://github.com/YKCodeKnight/QuizAppMADProject>

- **12.2 References:**

- [https://www.freepik.com/premium-vector/quiz-logo-quiz-time-label-with-question-mark\\_135003225.htm](https://www.freepik.com/premium-vector/quiz-logo-quiz-time-label-with-question-mark_135003225.htm)

- <https://github.com/bumptechnology/glide>

- <https://github.com/hdodenhof/CircleImageView>

- <https://developer.android.com/develop>

- <https://mermaid.js.org/>

- <https://console.firebase.google.com/>

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## Grading Criteria:

- **Design and UI:** 15 marks
- **Functionality:** 20 marks
- **Innovation & Creativity:** 10 marks
- **Technical Complexity:** 15 marks
- **Security and Data Management:** 10 marks
- **Testing and Debugging:** 10 marks
- **Team Collaboration:** 5 marks
- **Documentation:** 5 marks
- **Demo & Viva:** 10 marks