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Online Quiz Application

Objective of Application

The main purpose of this online quiz application is to develop an intuitive system for creating, distributing, and taking quizzes. It offers a method by which users can log in and access the system in order to take participate in quiz.

Intended Users

- User

Data Flow Diagram

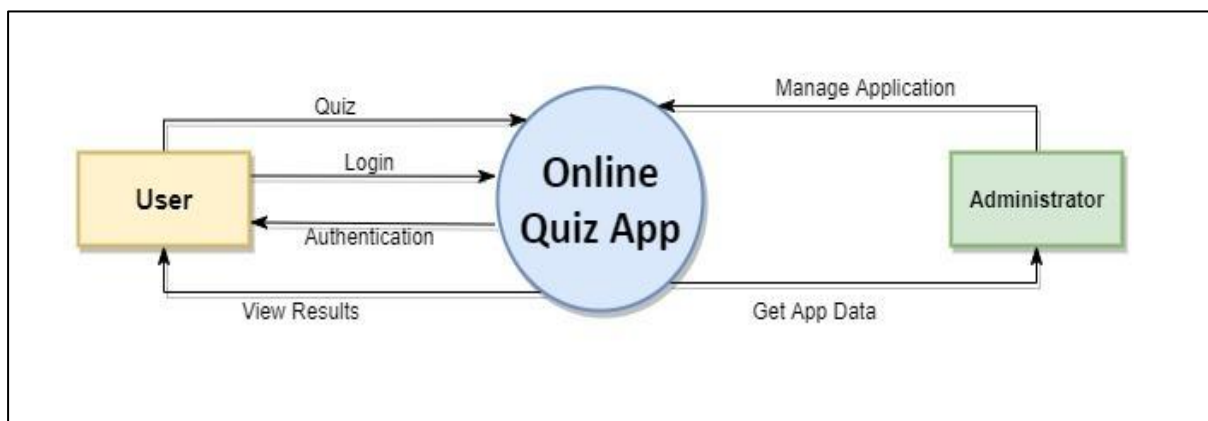


Figure 1. Data Flow Diagram-A

Sequence Diagram

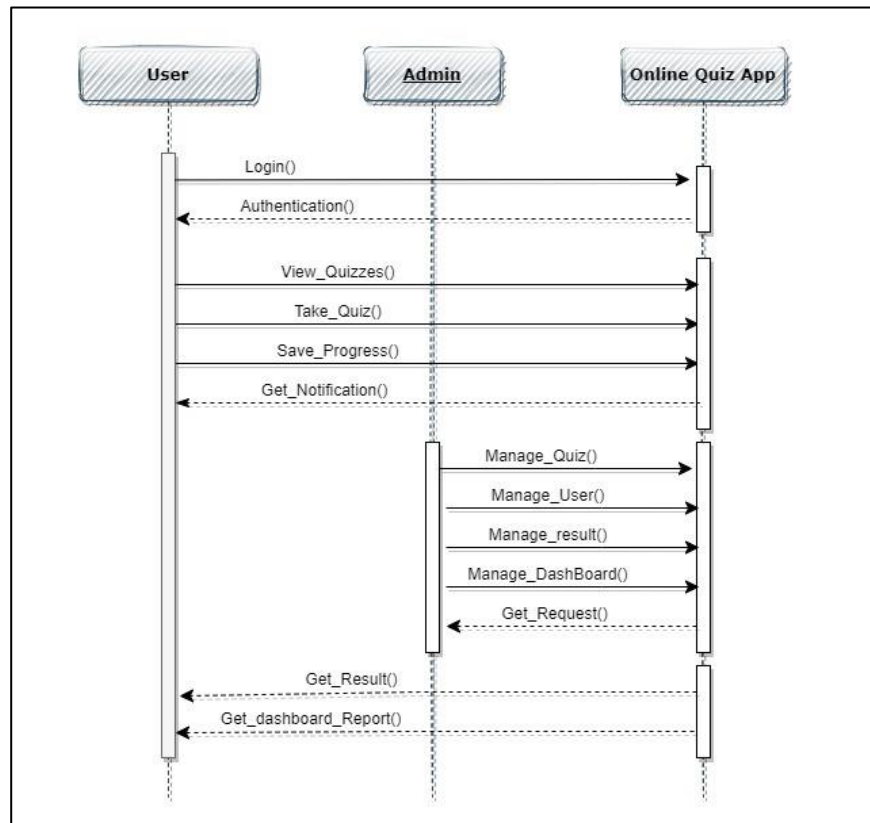


Figure 2. Sequence Diagram

Software Design Decisions

The application was crafted using Android Studio, then rigorously tested on an emulator. Java served as the cornerstone language for its development.

Design & Layout:

To account for varying screen sizes, the majority of app activities employ a scroll view with a linear layout within.

User Experience:

Since students needed a lot more features added to the software, I gave them priority over tutor users.

Libraries Used and Code

```
package com.quiz.application

import android.app.Application
import com.quiz.ui.model.OptionModel
import com.quiz.ui.model.QuizModel

class AppConfig : Application() {
    companion object{
        val quiz1 = arrayListOf<QuizModel>().apply {
            clear()
            add(
                QuizModel(
                    question = "The first search engine on the internet is",
                    answer = "Archie",
                    optionArrayList = ArrayList<OptionModel>().apply {
                        add(OptionModel(name = "Archie"))
                        add(OptionModel(name = "Google"))
                        add(OptionModel(name = "Bing"))
                        add(OptionModel(name = "Yahoo"))
                    }
                )
            )
            add(
                QuizModel(
                    question = "The number of bits used by IPv6 address is",
                    answer = "128",
                    optionArrayList = ArrayList<OptionModel>().apply {
                        add(OptionModel(name = "16"))
                        add(OptionModel(name = "32"))
                        add(OptionModel(name = "64"))
                        add(OptionModel(name = "128"))
                    }
                )
            )
            add(
                QuizModel(
                    question = "Which technology is used to record cryptocurrency transactions?",
                    answer = "Blockchain technology",
                    optionArrayList = ArrayList<OptionModel>().apply {
                        add(OptionModel(name = "Mining"))
                        add(OptionModel(name = "Digital wallet"))
                        add(OptionModel(name = "Blockchain technology"))
                        add(OptionModel(name = "Token"))
                    }
                )
            )
            add(
                QuizModel(
                    question = "The first computer virus was known as",
                    answer = "Blockchain technology",
                    optionArrayList = ArrayList<OptionModel>().apply {
                        add(OptionModel(name = "Rabbit"))
                        add(OptionModel(name = "Elk cloner"))
                        add(OptionModel(name = "SCA virus"))
                        add(OptionModel(name = "Creeper program"))
                    }
                )
            )
        }
    }
}
```

Figure 3 AppConfig Libraries and Used Code

```

package com.quiz.routing

import androidx.compose.material3.ExperimentalMaterial3Api
import androidx.compose.runtime.Composable
import androidx.navigation.compose.NavHost
import androidx.navigation.compose.composable
import androidx.navigation.compose.rememberNavController
import com.quiz.ui.login.LoginScreen
import com.quiz.ui.main.MainScreen
import com.quiz.ui.quiz.QuizScreen
import com.quiz.ui.register.RegisterScreen
import com.quiz.ui.result.ResultScreen
import com.quiz.ui.splash.SplashScreen

@OptIn(ExperimentalMaterial3Api::class)
@Composable
fun Navigation() {
    val navController = rememberNavController()

    NavHost(
        navController = navController,
        startDestination = Screen.SplashScreen.route
    ) {
        composable(route = Screen.SplashScreen.route) {
            SplashScreen(navController = navController)
        }
        composable(route = Screen.LoginScreen.route) {
            LoginScreen(navController = navController)
        }
        composable(route = Screen.RegisterScreen.route) {
            RegisterScreen(navController = navController)
        }
        composable(route = Screen.MainScreen.route + "/" + "{option}") {
            val option = it.arguments?.getString("option")
            if (option != null) {
                MainScreen(navController = navController, option = option)
            }
        }
        composable(route = Screen.ResultScreen.route + "/" + "{option}") {
            val option = it.arguments?.getString("option")
            if (option != null) {
                ResultScreen(navController = navController, option = option)
            }
        }
        composable(route = Screen.QuizScreen.route) {
            QuizScreen(navController = navController)
        }
    }
}

```

Figure 4 Navigation routing Libraries and Used Code

```

package com.quiz.routing

sealed class Screen(val route: String) {

    object SplashScreen: Screen("splash_screen")
    object LoginScreen: Screen("login_screen")
    object RegisterScreen: Screen("register_screen")
    object QuizScreen: Screen("quiz_screen")
    object MainScreen: Screen("main_screen")
    object ResultScreen: Screen("result_screen")

}

```

Figure 5 Screen Navigation Libraries and Used Code

```

package com.quiz.ui.localDatabase

import android.content.Context
import android.content.SharedPreferences

class PreferencesManager(context: Context) {
    private val sharedPreferences: SharedPreferences =
        context.getSharedPreferences("Preferences", Context.MODE_PRIVATE)

    fun saveData(key: String, value: Boolean) {
        val editor = sharedPreferences.edit()
        editor.putBoolean(key, value)
        editor.apply()
    }

    fun getData(key: String, defaultValue: Boolean = false): Boolean {
        return sharedPreferences.getBoolean(key, defaultValue) ?: defaultValue
    }
}

```

Figure 6 PreferencesManager localDatabase UI Libraries and Used Code

```

package com.quiz.ui.main

import android.annotation.SuppressLint
import androidx.compose.foundation.background
import androidx.compose.foundation.clickable
import androidx.compose.foundation.layout.*
import androidx.compose.foundation.rememberScrollState
import androidx.compose.foundation.shape.RoundedCornerShape
import androidx.compose.foundation.verticalScroll
import androidx.compose.material.icons.Icons
import androidx.compose.material.icons.rounded.ArrowBack
import androidx.compose.material.rememberScaffoldState
import androidx.compose.material3.*
import androidx.compose.runtime.*
import androidx.compose.ui.Alignment
import androidx.compose.ui.ExperimentalComposeUiApi
import androidx.compose.ui.Modifier
import androidx.compose.ui.graphics.Color
import androidx.compose.ui.platform.LocalContext
import androidx.compose.ui.res.stringResource
import androidx.compose.ui.text.TextStyle
import androidx.compose.ui.text.font.FontWeight
import androidx.compose.ui.text.style.TextAlign
import androidx.compose.ui.unit.dp
import androidx.compose.ui.unit.sp
import androidx.navigation.NavController
import com.quiz.R
import com.quiz.application.AppConfig
import com.quiz.routing.Screen
import com.quiz.ui.drawer.DrawerBody
import com.quiz.ui.drawer.DrawerHeader
import com.quiz.ui.drawer.TopBar
import com.quiz.ui.localDatabase.PreferencesManager
import com.quiz.ui.model.OptionModel
import com.quiz.ui.model.QuizModel
import com.quiz.ui.theme.QuizAppTheme
import com.quiz.ui.theme.appColor
import com.quiz.ui.theme.white
import com.quiz.utils.RoundedButton
import kotlinx.coroutines.delay
import kotlinx.coroutines.launch

@OptIn(ExperimentalMaterial3Api::class, ExperimentalComposeUiApi::class)
@SuppressLint("UnusedMaterial3ScaffoldPaddingParameter", "UnrememberedMutableState")
@Composable
fun MainScreen(navController: NavController, option : String) {
    val context = LocalContext.current
    val preferenceManager = remember {
        PreferencesManager(context)
    }
}

```

Figure 7 MainScreen UI Libraries and Used Code

```

package com.quiz.ui.result

import android.annotation.SuppressLint
import androidx.compose.foundation.*
import androidx.compose.foundation.layout.*
import androidx.compose.foundation.shape.RoundedCornerShape
import androidx.compose.material.icons.Icons
import androidx.compose.material.icons.rounded.ArrowBack
import androidx.compose.material3.*
import androidx.compose.runtime.*
import androidx.compose.ui.Alignment
import androidx.compose.ui.ExperimentalComposeUiApi
import androidx.compose.ui.Modifier
import androidx.compose.ui.graphics.Color
import androidx.compose.ui.layout.ContentScale
import androidx.compose.ui.platform.LocalContext
import androidx.compose.ui.res.painterResource
import androidx.compose.ui.text.TextStyle
import androidx.compose.ui.text.font.FontWeight
import androidx.compose.ui.text.style.TextAlign
import androidx.compose.ui.unit.dp
import androidx.compose.ui.unit.sp
import androidx.navigation.NavController
import com.quiz.R
import com.quiz.application.AppConfig
import com.quiz.ui.model.OptionModel
import com.quiz.ui.model.QuizModel
import com.quiz.ui.theme.QuizAppTheme
import com.quiz.ui.theme.appColor

@OptIn(ExperimentalMaterial3Api::class, ExperimentalComposeUiApi::class)
@SuppressLint("UnusedMaterial3ScaffoldPaddingParameter", "UnrememberedMutableState")
@Composable
fun ResultScreen(navController: NavController, option : String) {
    val context = LocalContext.current
    val checked = remember { mutableStateOf(false) }
    val scrollState = rememberScrollState()

    val list = arrayListOf<QuizModel>()
    when(option) {
        "Quiz 1" -> {
            list.addAll(AppConfig.quiz1)
        }
        "Quiz 2" -> {
            list.addAll(AppConfig.quiz2)
        }
        "Quiz 3" -> {
            list.addAll(AppConfig.quiz3)
        }
        "Quiz 4" -> {
            list.addAll(AppConfig.quiz4)
        }
    }
}

```

Figure 8 ResultScreen UI Libraries and Used Code

```

package com.quiz.ui.register

import android.annotation.SuppressLint
import android.widget.Toast
import androidx.compose.foundation.*
import androidx.compose.foundation.layout.*
import androidx.compose.foundation.shape.RoundedCornerShape
import androidx.compose.material3.*
import androidx.compose.runtime.*
import androidx.compose.ui.Alignment
import androidx.compose.ui.ExperimentalComposeUiApi
import androidx.compose.ui.Modifier
import androidx.compose.ui.draw.paint
import androidx.compose.ui.graphics.Color
import androidx.compose.ui.layout.ContentScale
import androidx.compose.ui.platform.LocalContext
import androidx.compose.ui.res.painterResource
import androidx.compose.ui.text.TextStyle
import androidx.compose.ui.text.font.FontWeight
import androidx.compose.ui.text.input.KeyboardType
import androidx.compose.ui.text.input.PasswordVisualTransformation
import androidx.compose.ui.text.style.TextAlign
import androidx.compose.ui.unit.dp
import androidx.compose.ui.unit.sp
import androidx.compose.ui.window.Dialog
import androidx.compose.ui.window.DialogProperties
import androidx.navigation.NavController
import com.google.firebase.auth.FirebaseAuth
import com.google.firebase.firestore.ktx.firestore
import com.google.firebase.ktx.Firebase
import com.quiz.R
import com.quiz.routing.Screen
import com.quiz.ui.localDatabase.PreferencesManager
import com.quiz.ui.theme.QuizAppTheme
import com.quiz.ui.theme.appColor
import com.quiz.ui.theme.white
import com.quiz.ui.theme.yellow
import com.quiz.utils.QuizField
import com.quiz.utils.RoundedButton
import com.quiz.utils.isValidEmail

@OptIn(ExperimentalMaterial3Api::class, ExperimentalComposeUiApi::class)
@SuppressLint("UnusedMaterial3ScaffoldPaddingParameter")
@Composable
fun RegisterScreen(navController: NavController) {
    val context = LocalContext.current
    val preferenceManager = remember {
        PreferencesManager(context)
    }
}

```

Figure 9 RegisterScreen UI Libraries and Used Code

```

package com.quiz.utils

import java.util.regex.Pattern

fun isValidEmail(s: String): Boolean {
    val emailPattern = ("^((\\w-|+|\\.)([a-zA-Z]{1}|[\\w-]{2,}))@"
        + "(((\\d-|+|\\.)([0-9]{1,2}|25[0-5]|2[0-4][0-9]))\\.((\\d-|+|\\.)([0-9]{1,2}|25[0-5]|2[0-4][0-9]))\\.((\\d-|+|\\.)([0-9]{1,2}|25[0-5]|2[0-4][0-9]))\\.((\\d-|+|\\.)([0-9]{1,2}|25[0-5]|2[0-4][0-9]))|([a-zA-Z-]+[\\w-|+|\\.)([a-zA-Z]{2,4}))$")
    val pattern = Pattern.compile(emailPattern)
    val matcher = pattern.matcher(s)

    return !matcher.matches()
}

```

Figure 10 Extension utils Libraries and Used Code

```

package com.quiz.utils

import androidx.compose.foundation.clickable
import androidx.compose.foundation.focusable
import androidx.compose.foundation.layout.fillMaxWidth
import androidx.compose.foundation.layout.padding
import androidx.compose.foundation.shape.RoundedCornerShape
import androidx.compose.foundation.text.KeyboardActions
import androidx.compose.foundation.text.KeyboardOptions
import androidx.compose.material3.*
import androidx.compose.runtime.Composable
import androidx.compose.ui.ExperimentalComposeUiApi
import androidx.compose.ui.Modifier
import androidx.compose.ui.graphics.Color
import androidx.compose.ui.platform.LocalSoftwareKeyboardController
import androidx.compose.ui.text.font.FontWeight
import androidx.compose.ui.text.input.KeyboardCapitalization
import androidx.compose.ui.text.input.KeyboardType
import androidx.compose.ui.text.input.VisualTransformation
import androidx.compose.ui.unit.Dp
import androidx.compose.ui.unit.dp
import androidx.compose.ui.unit.sp
import com.quiz.ui.theme.appColor

@OptIn(ExperimentalMaterial3Api::class, ExperimentalComposeUiApi::class)
@Composable
fun QuizField(
    value: String,
    placeholder: String,
    onChange: (String) -> Unit,
    onClick: () -> Unit = {},
    isEnabled: Boolean = true,
    readOnly: Boolean = false,
    keyboardType: KeyboardType = KeyboardType.Text,
    keyboardCapitalization: KeyboardCapitalization = KeyboardCapitalization.Sentences,
    visualTransformation: VisualTransformation = VisualTransformation.None,
    leadingIcon: @Composable (() -> Unit)? = null,
    trailingIcon: @Composable (() -> Unit)? = null,
    horizontalPadding : Dp = 0.dp,
    verticalPadding : Dp = 3.dp,
    colors : TextFieldColors? = null,
    label : @Composable (() -> Unit)? = null,
) {
    val keyboardController = LocalSoftwareKeyboardController.current

    OutlinedTextField(
        value = value,
        shape = RoundedCornerShape(10.dp),
        keyboardOptions = KeyboardOptions(keyboardType = keyboardType, capitalization = keyboardCapitalization),
        keyboardActions = KeyboardActions(
            onDone = {keyboardController?.hide()}),
    )
}

```

Figure 11 QuizField utils Libraries and Used Code

```

package com.quiz.utils

import androidx.compose.foundation.background
import androidx.compose.foundation.layout.Box
import androidx.compose.foundation.layout.PaddingValues
import androidx.compose.foundation.layout.fillMaxWidth
import androidx.compose.foundation.layout.padding
import androidx.compose.foundation.shape.RoundedCornerShape
import androidx.compose.material3.Button
import androidx.compose.material3.ButtonDefaults
import androidx.compose.material3.Text
import androidx.compose.runtime.Composable
import androidx.compose.ui.Alignment
import androidx.compose.ui.Modifier
import androidx.compose.ui.graphics.Brush
import androidx.compose.ui.graphics.Color
import androidx.compose.ui.text.font.FontWeight
import androidx.compose.ui.unit.dp
import androidx.compose.ui.unit.sp
import com.quiz.ui.theme.appColor

@Composable
fun RoundedButton(text: String, isEnabled : Boolean = true, onClick: () -> Unit, textColor : Color = Color.White) {
    GradientButton(
        onClick = onClick,
        modifier = Modifier.padding(vertical = 5.dp).fillMaxWidth(),
        textColor = textColor,
        isEnabled = isEnabled,
        gradient = Brush.horizontalGradient(listOf(appColor, appColor)),
        text = text
    )
}

@Composable
fun GradientButton(
    text: String,
    gradient : Brush,
    modifier: Modifier = Modifier,
    onClick: () -> Unit = { },
    textColor: Color,
    isEnabled: Boolean
) {
    Button(
        modifier = modifier,
        colors = ButtonDefaults.buttonColors(containerColor = Color.Transparent, contentColor = textColor),
        contentPadding = PaddingValues(),
        shape = RoundedCornerShape(30.dp),
        enabled = isEnabled,
        onClick = { onClick() },
    ) {
        Box(
            modifier = Modifier.background(gradient).then(modifier),
            contentAlignment = Alignment.Center,

```

Figure 12 RoundedButton utils Libraries and Used Code

Social, Legal, Ethical and Security Issue

Social Issues

1. **Educational Equity and Academic Integrity**→Offering quizzes that is inclusive and accessible to all learners, the Online Quiz mobile app needing to address gaps in access to educational opportunities and resources. Additionally, this app can be abused for cheating in educational context.
2. **Digital Gap in Society**→by offering help and tools to users who might not have as internet connection or technical literacy as others, the Online Quiz mobile app should be to mitigate the effects of the digital divide.
3. **Participation of the Community**→ Throughout the quiz platform, the Online Quiz mobile app should promote collaboration, peer learning, and conversation among users, thereby cultivate a sense of community.

Legal Issues

4. **Age Restrictions**→The Online Quiz mobile app should use age verification procedures and obtain parental agreement for users who are less than 18 in order to comply with laws like **COPPA (Children's Online Privacy Protection Act)** and **Broadcasting Act 2003 (as amended by the Communications Act 2003)**.
5. **Consent, Disclaimer and Permission**→As per the **Consumer Rights Act 2015 (CRA)**, the Online Quiz mobile app needs make an effort get to user's express agreement before gathering, using, and archiving storing their personal information for marketing and analytics purposes.
6. **Act of Data Privacy**→To secure user privacy and to protect their login credentials, quiz answers, and performance statistics, the Online Quiz mobile app must rules data protection abide in accordance to **Privacy and Electronic Communications Regulations (PECR)**

Ethical Issues

7. **User Empowerment**→Users must be allowed to make well-informed decisions about taking quizzes on the Online Quiz mobile app, involving the choice to opt-out or request adjustments for accessibility issues.

- 8. Mental Health**→The Online Quiz mobile app should strive to reduce the potential disadvantages of quizzes that prompt unhealthy competition or stress.
- 9. Fairness**→The Online Quiz mobile app must strive to deter cheating, unauthorized teamwork, and piracy among users to encourage truthfulness and integrity during quiz completion.

Security Issues

- 10.Content Safety**→Through the use of digital rights, encryption, and management techniques for access control, the Online Quiz mobile app must be aiming to avoid illegal access, the spread of quiz content, and alteration.
- 11.Data Guarding**→The Online Quiz mobile app is making an effort to establish strong security measures to protect against cyber-attacks, illegal access, and breaches of user personal and quiz-related information.
- 12.Secure and Safe Transactions**→ Payments made for premium quiz content and subscription services should be handled in a way that ensures the confidentiality of any sensitive communications or financial transactions within the Online Quiz mobile app program.

Development Strategy

Scrum-based Agile approach is used.

There will be one "sprint goal" and four "sprints" in the development strategy for this online quiz mobile application. Every sprint is utilized to guide the tasks in the form of cards.

Phases

Sprint Goal

The Sprint Goals are the general ideology that need to implement in the whole process. The Sprint Goals for the development of the Online Quiz mobile applications are listed as-

1. Requirements for the Online Quiz Application
2. Development of Online Quiz Application
3. GIT Deployment, and Development of Code
4. Testing, UAT and Documentations



Figure 13. Phases

Phase 1

This phase comprises the facilitation of all four sprints. Each 'To Do' sprints has the following titles:

Title for Sprint 1:-Requirement Gathering

Title for Sprint 2:- Wire Frame with UI & UX

Title for Sprint 3:- Coding, Set up Version Control, and GIT Deployment of UI design

Title for Sprint 4:- Testing of mobile App, Deployment, UAT & Documentation

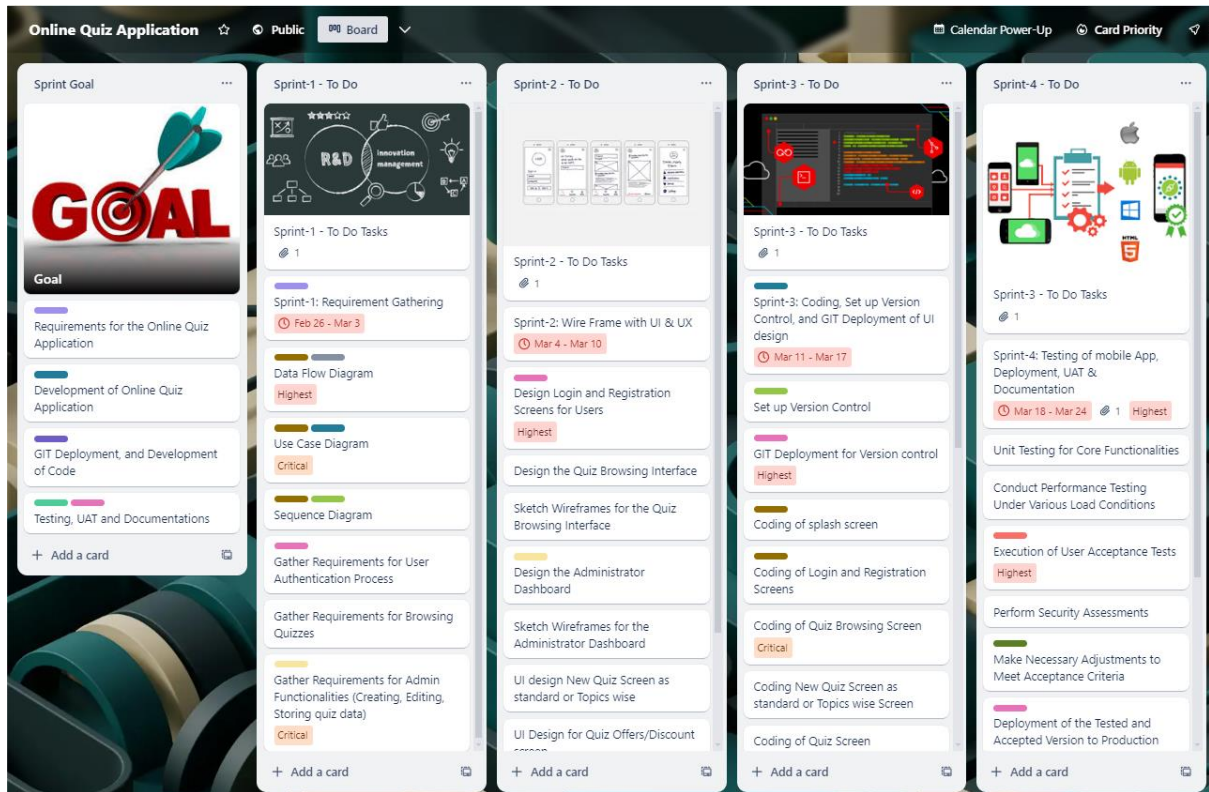


Figure 14. Phase 1(i)

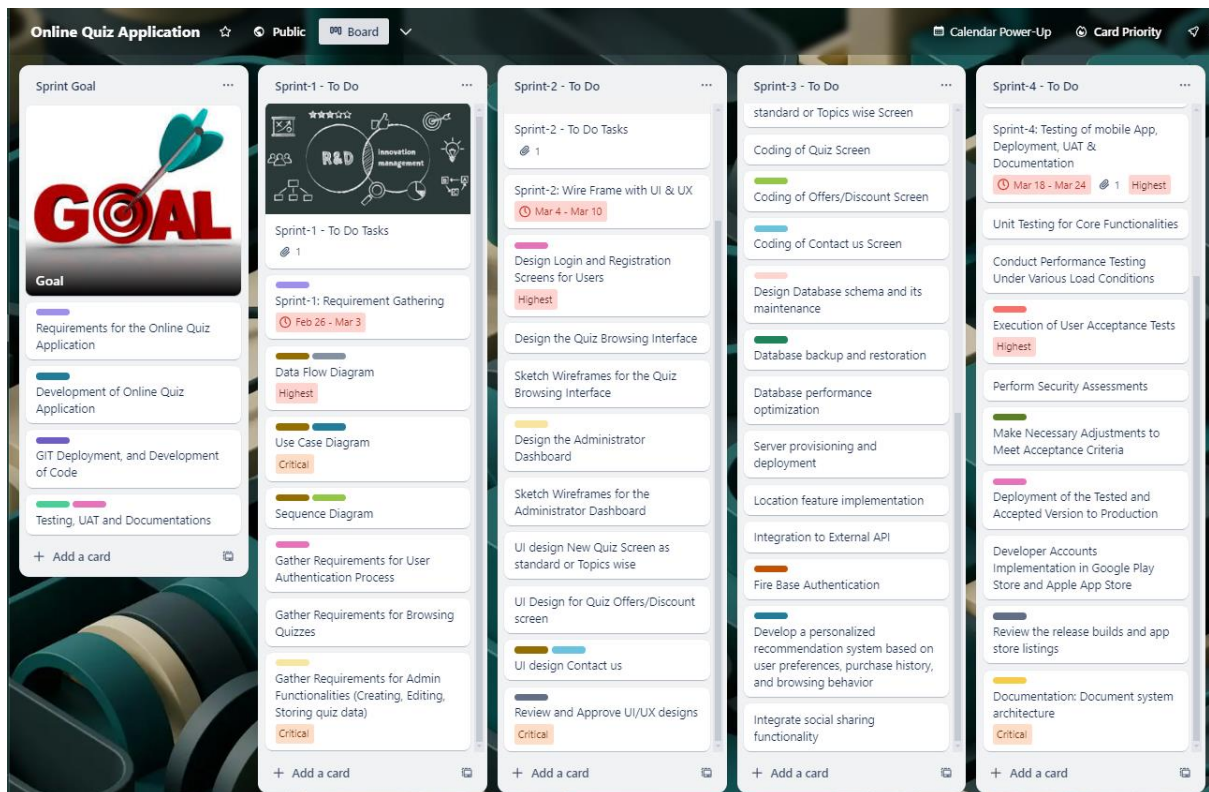


Figure 15. Phase 1(ii)

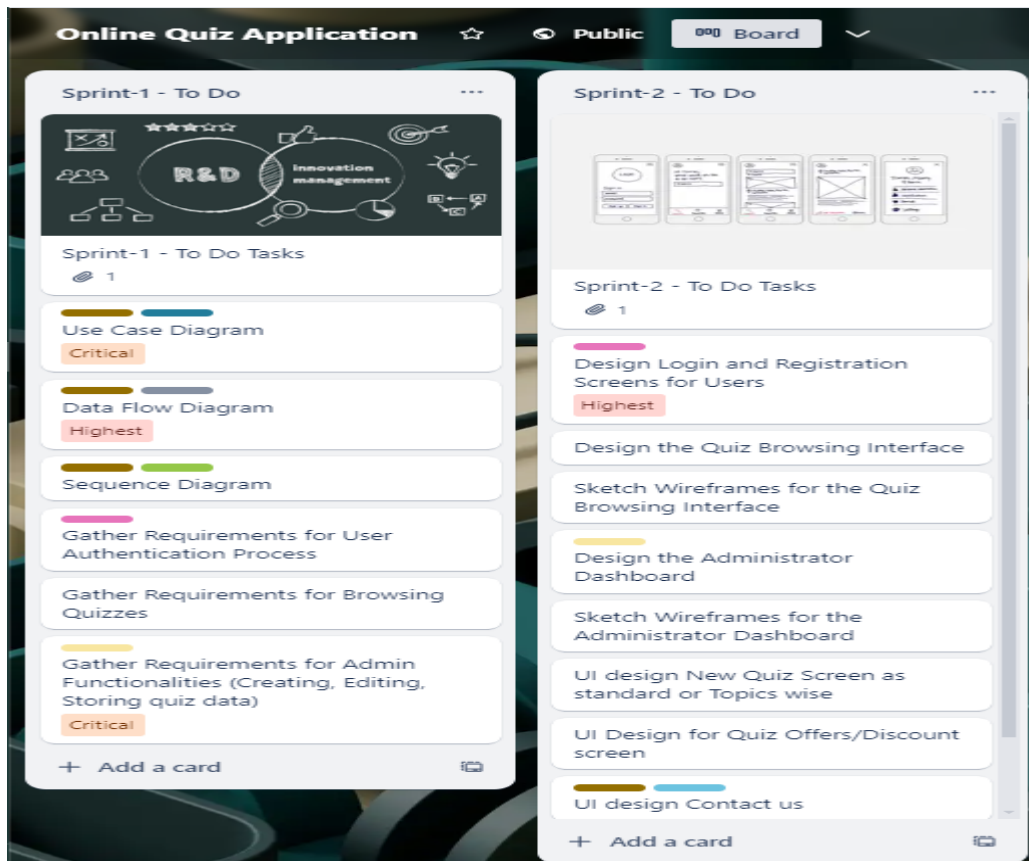


Figure 16. Phase 1(iii)



Figure 17. Phase 1(iv)

Phase-2

Phase 2 involves moving all sprint tasks that are in progress to the 'On Progression Tasks' list in order to continue developing the Online Quiz Mobile

Application. The cards are moved from sprints to the On Progression Tasks list. The list of "On Progression Tasks" is shown in the following image:

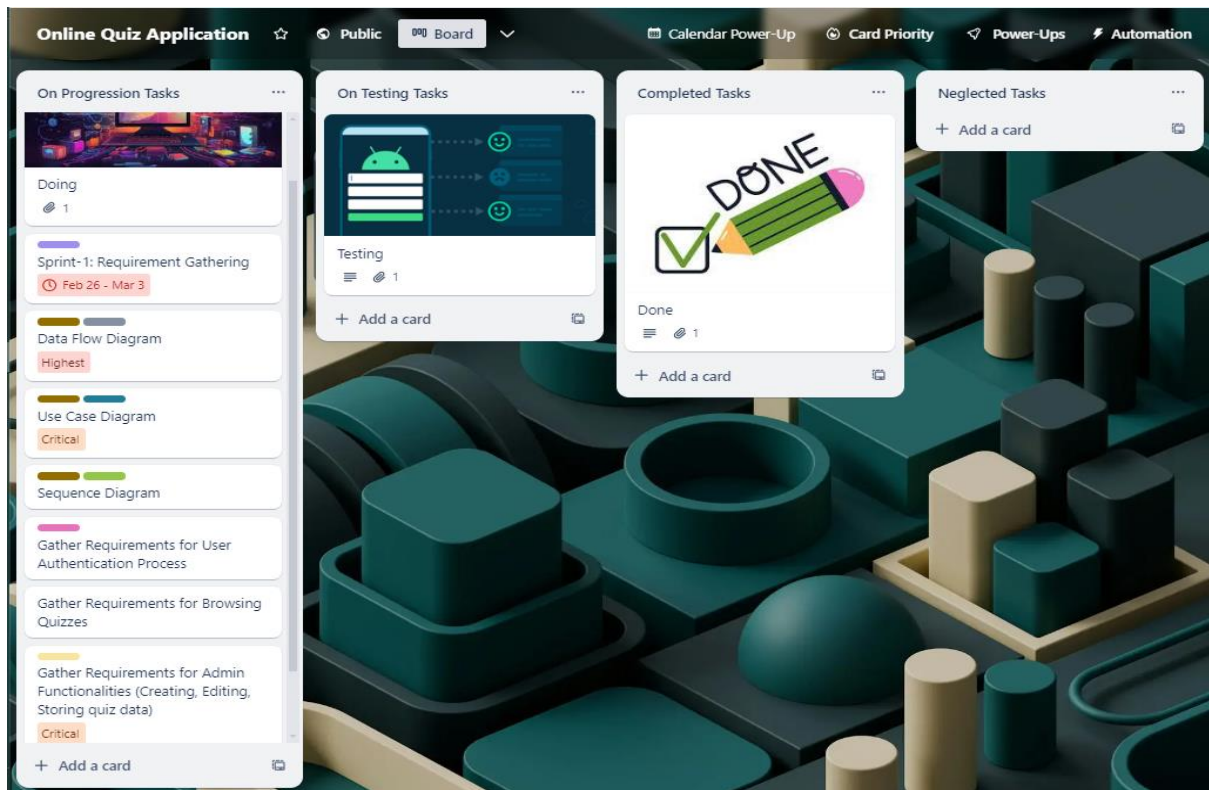


Figure 18. Phase 2

Phase-3

The On Progression Tasks cards are moved to the Completed Tasks list and the Testing preformation has been started in this phase-3.

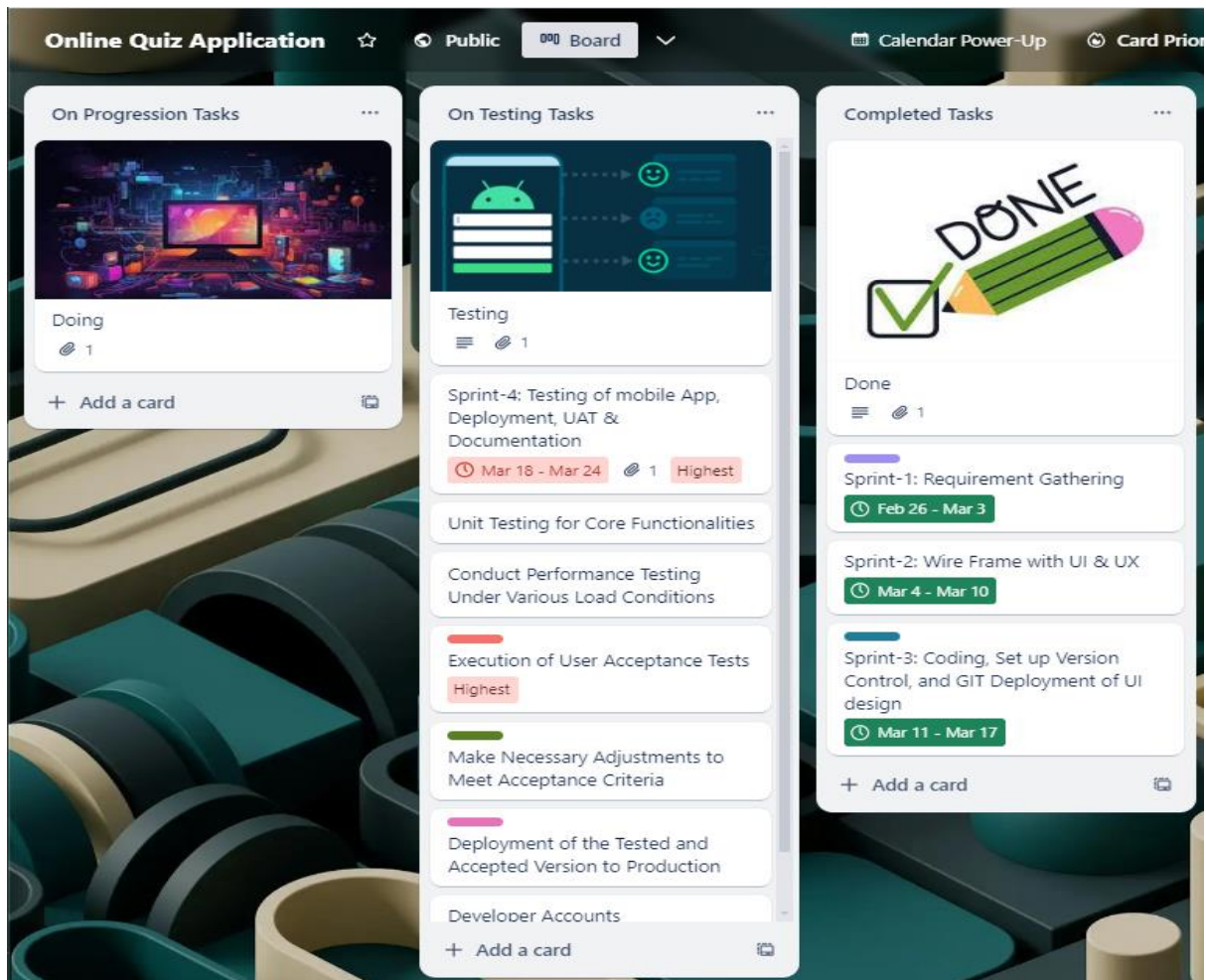


Figure 19. Phase 3

Phase-4

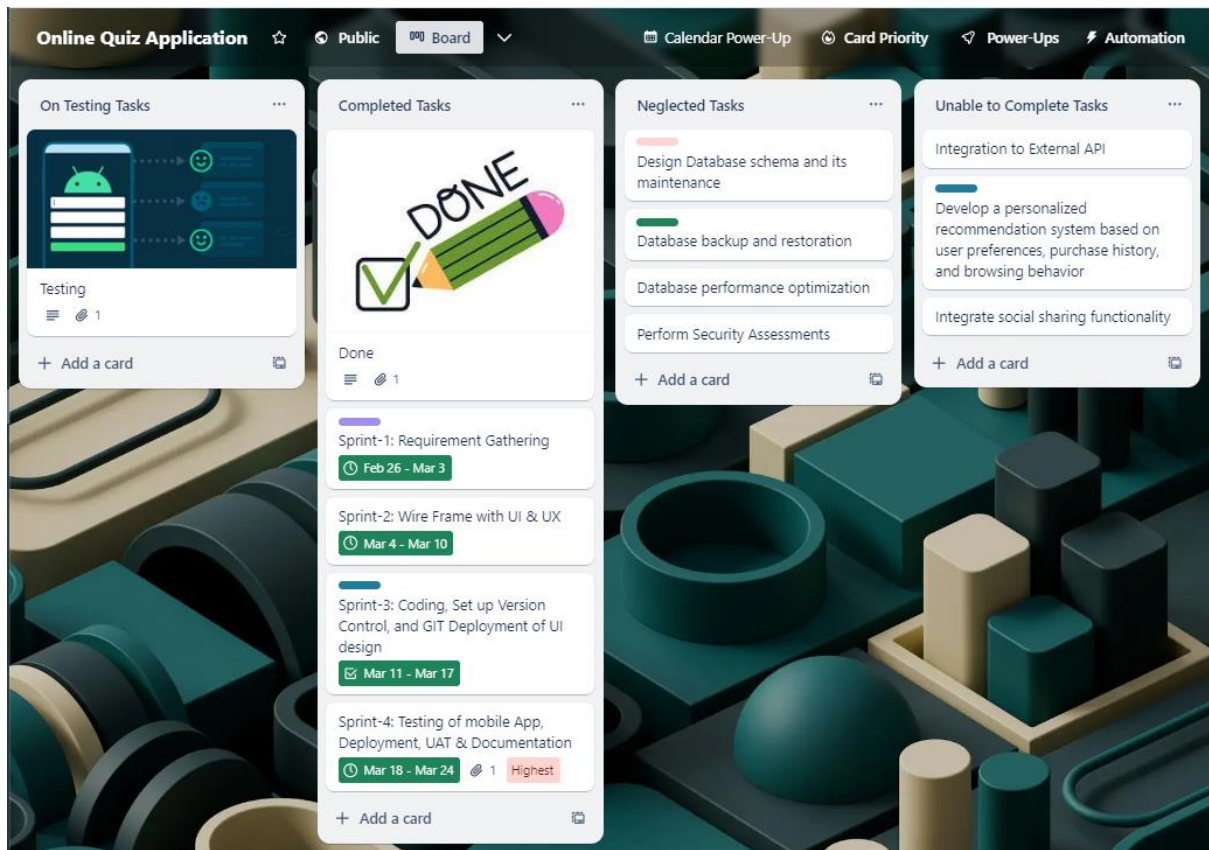


Figure 20. Phase 4 (i)

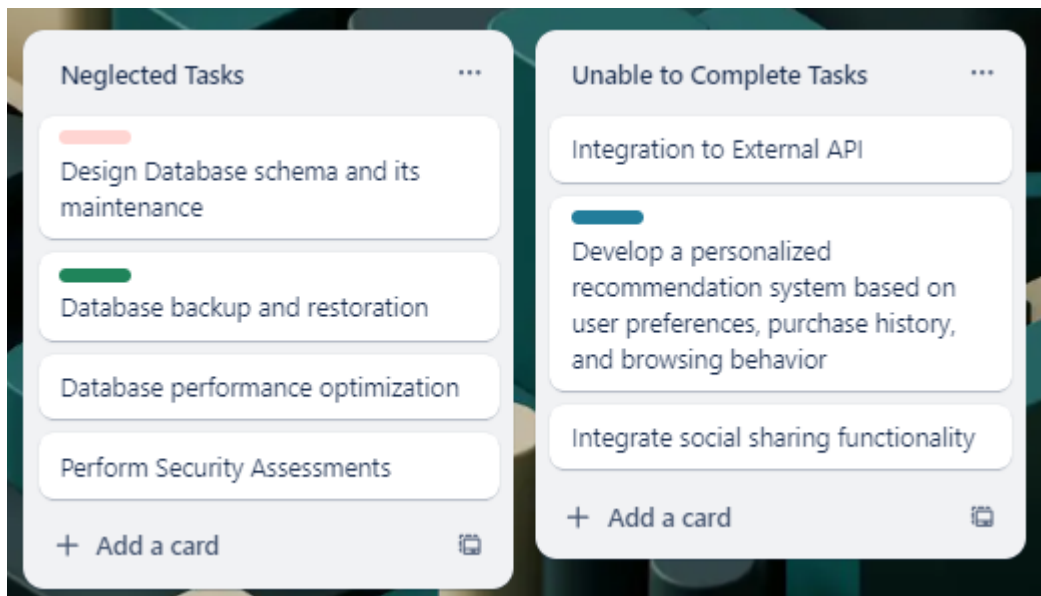


Figure 21. Phase 4 (ii)

Burn Down Chart

Sprint-1

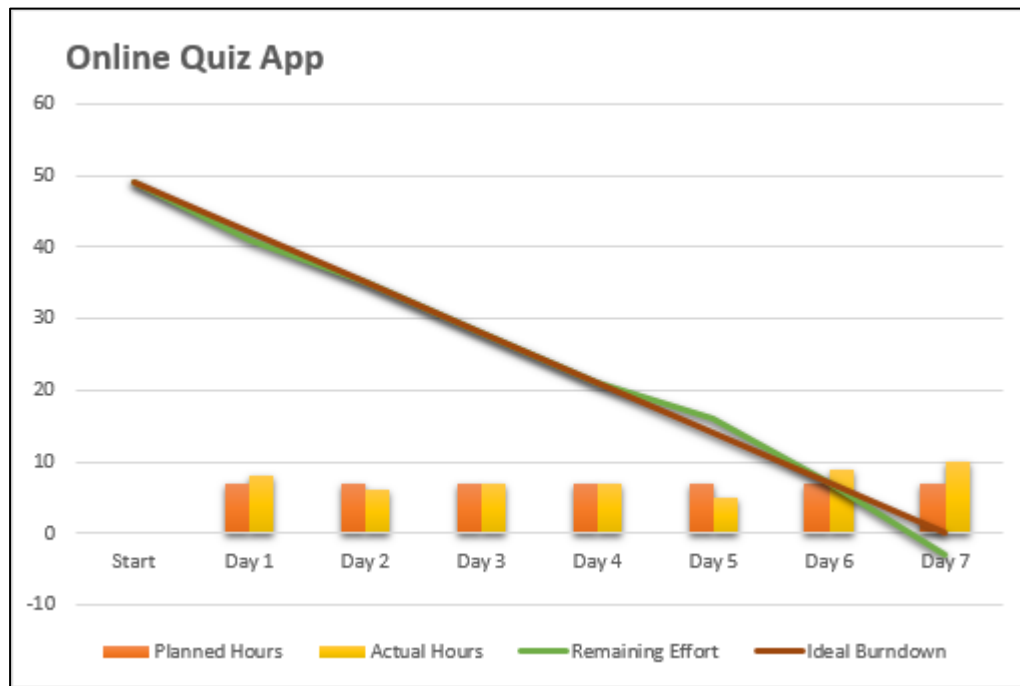


Figure 22. Burn Down Chart Sprint 1

Sprint-2

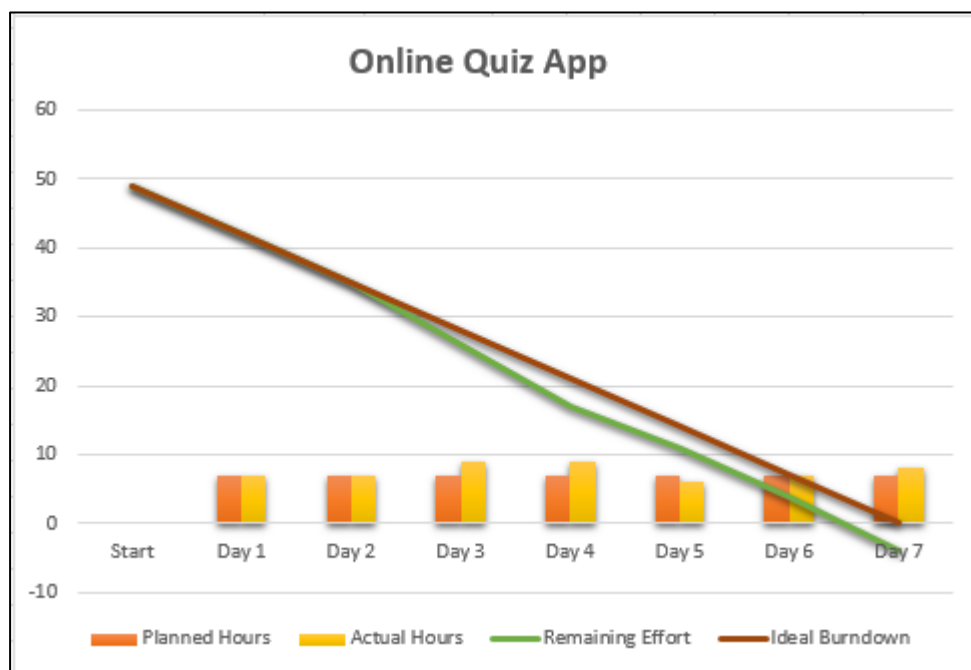


Figure 23. Burn Down Chart Sprint 2

Sprint-3

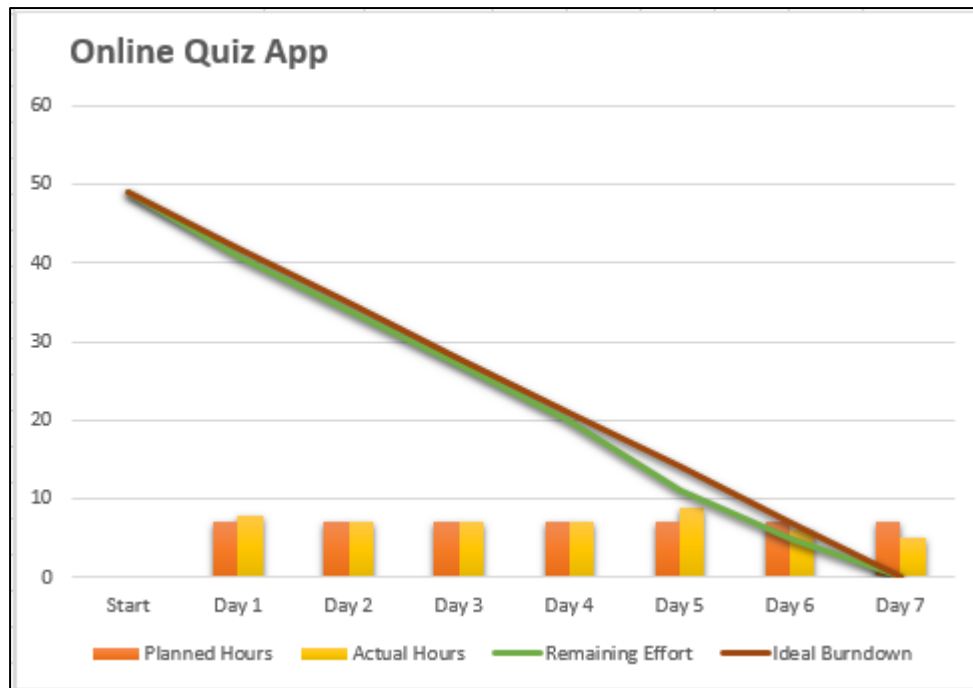


Figure 24. Burn Down Chart Sprint 3

Sprint-4

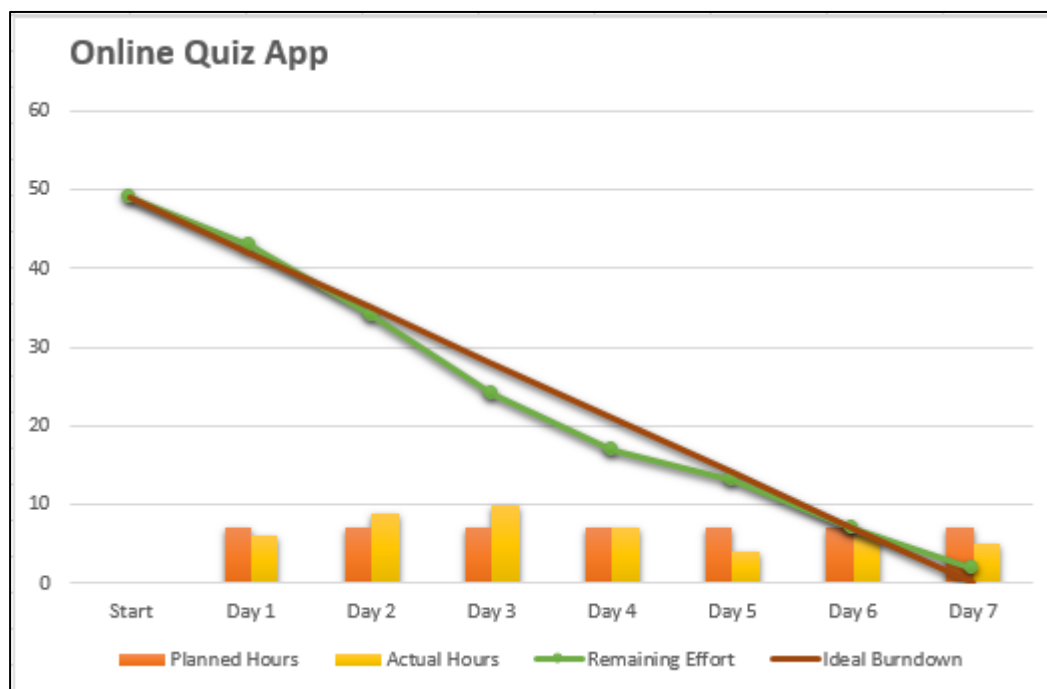


Figure 25. Burn Down Chart Sprint 4

Firebase DB at backend and regarding API authentication and searching

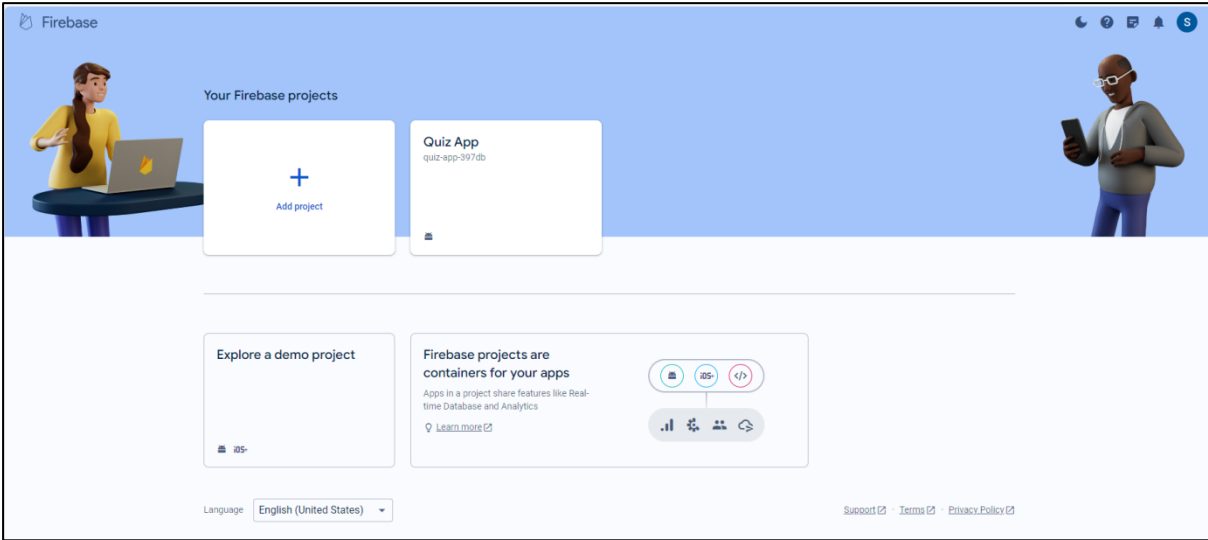


Figure 26 Project overview in firebase



Figure 27 Quiz app read write info

 This screenshot shows the 'Authentication' page in the Firebase console, specifically the 'Users' tab. It features a search bar at the top with the text 'Search by email address, phone number, or user UID' and an 'Add user' button. Below the search bar is a table listing users. The table has columns for 'Identifier', 'Providers', 'Created', 'Signed In', and 'User UID'. The bottom of the page shows pagination controls indicating '1 - 4 of 4' rows.

Identifier	Providers	Created	Signed In	User UID
sushil@gmail.com	📧	Apr 29, 2024	Apr 29, 2024	jv9qG0OU8h5zffjGDh9JDZJ...
naaveenharib14@gmail...	📧	Apr 29, 2024	Apr 29, 2024	mhw0QZeghZZMLM6G0grk9...
anshul@gmail.com	📧	Apr 28, 2024	Apr 28, 2024	nfmBSOdTdh5SwX6PeyX0tun...
ashu@gmail.com	📧	Apr 27, 2024	Apr 27, 2024	RVVdk8xv5k8f0fCn2yOBUg...

Figure 28 Authentication in firebase

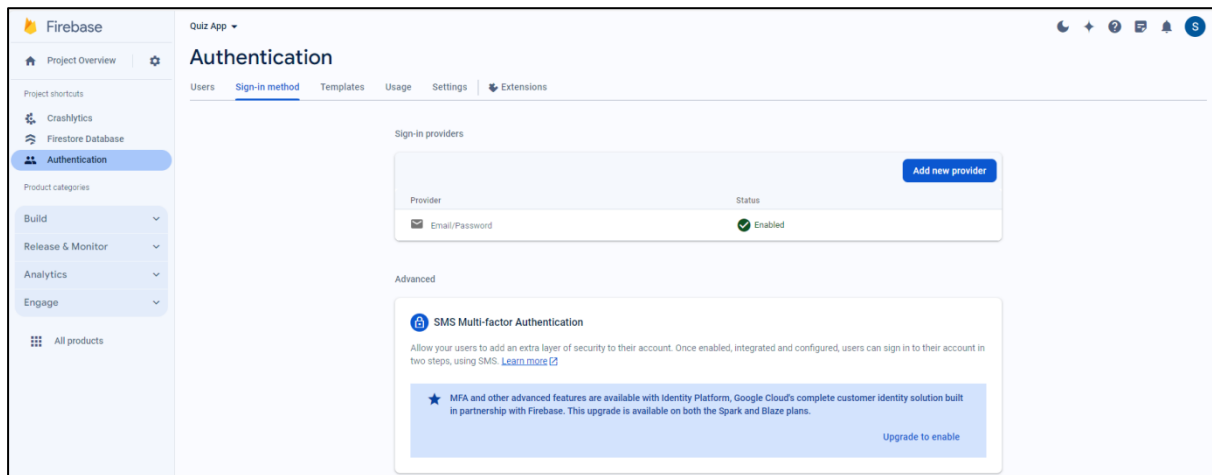


Figure 29 Sign in method in firebase

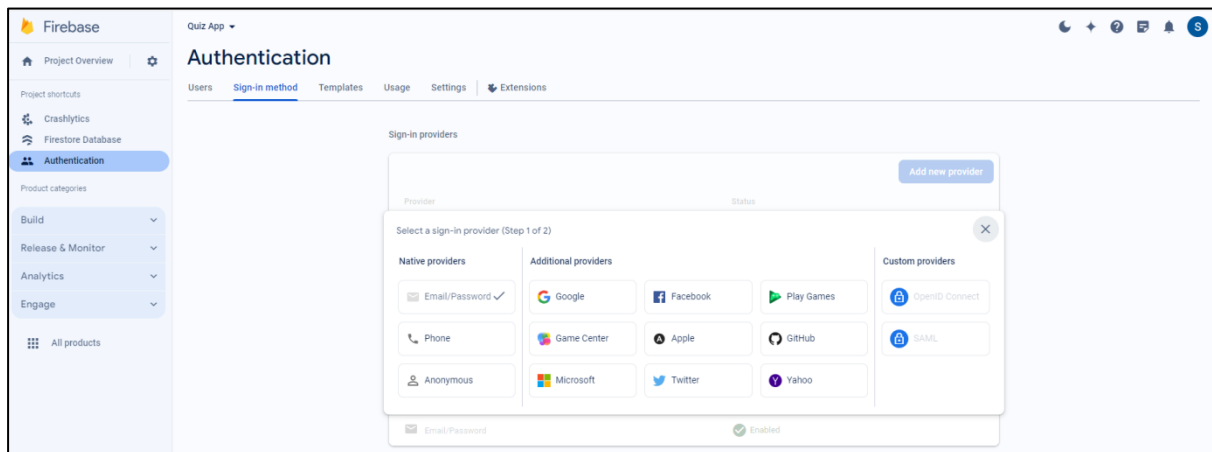


Figure 30 Gmail sign in option in firebase

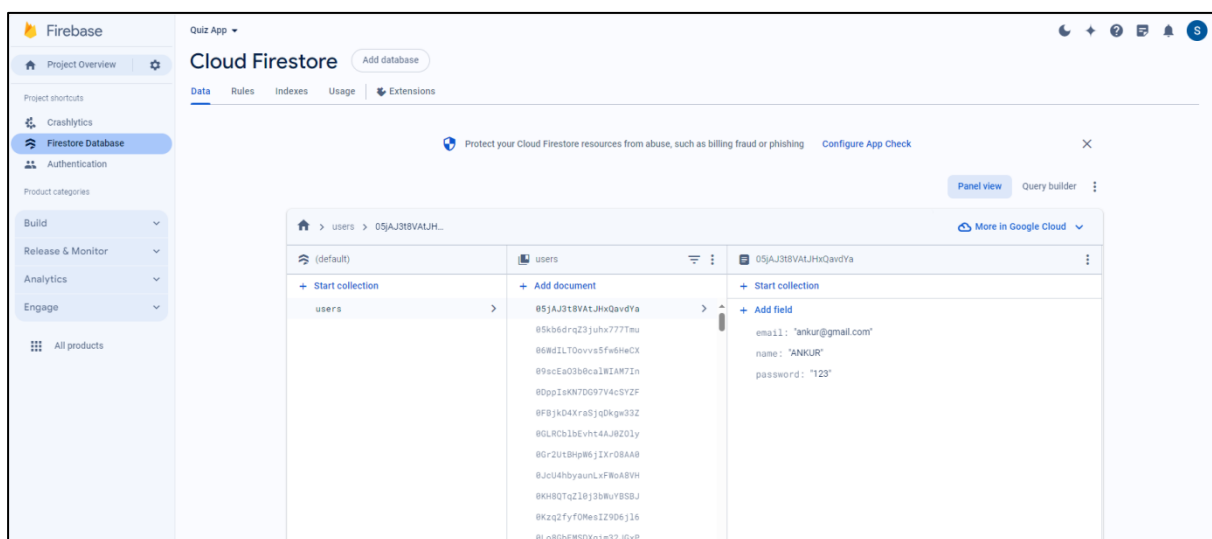


Figure 31 Cloud firestore

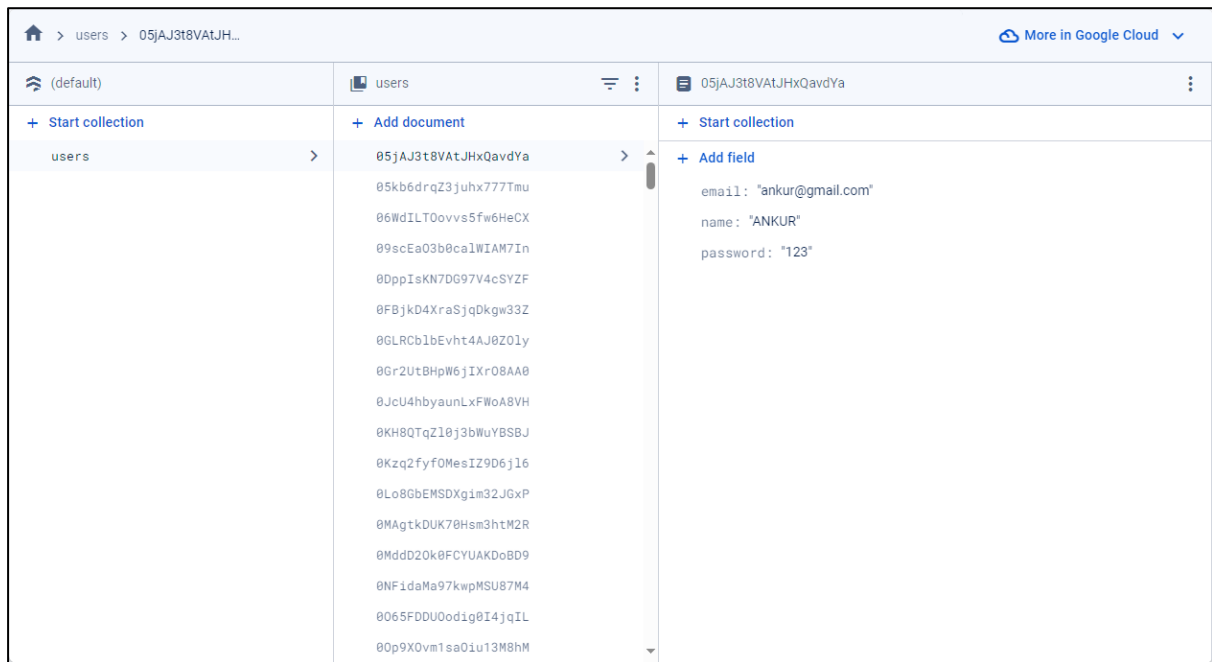


Figure 32 Collection list in firestore DB

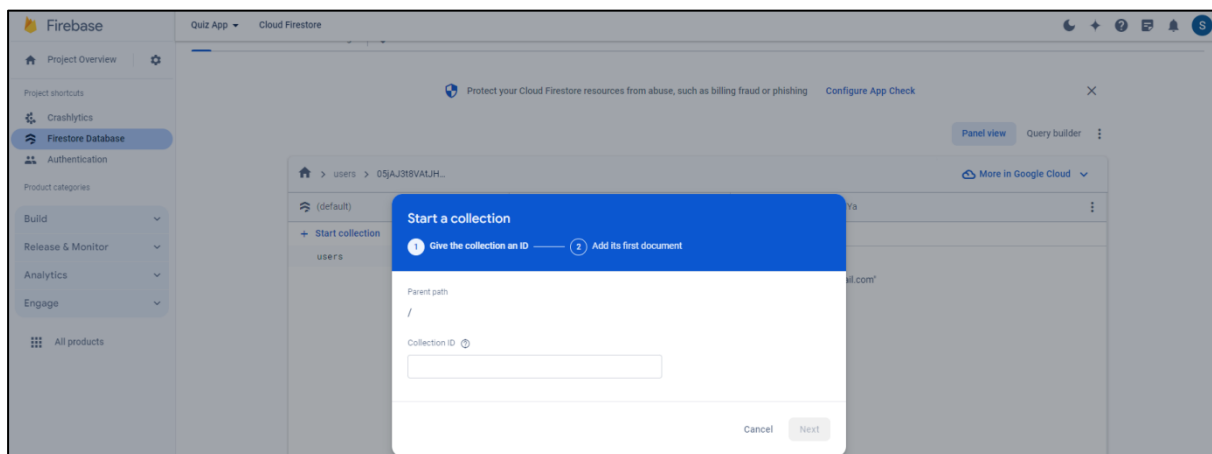


Figure 33 Start a collection in firestore

Online Quiz Application (UI)

1. Welcome Page –



Figure 34. Welcome Page

2. Registration Page –

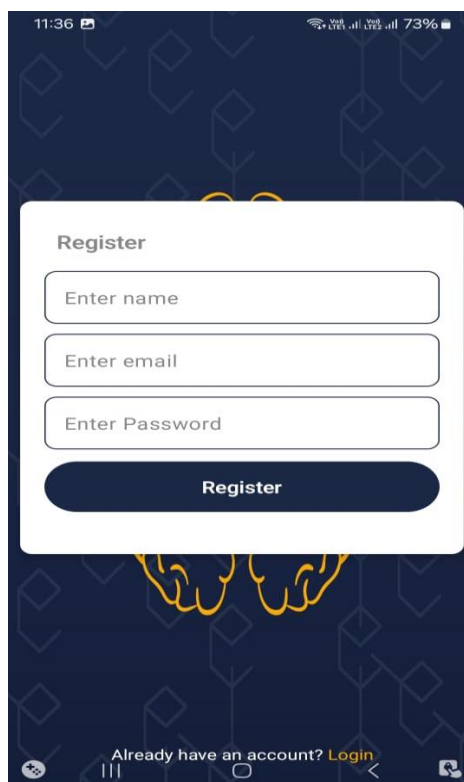


Figure 35. Registration Page

3. Login Page –

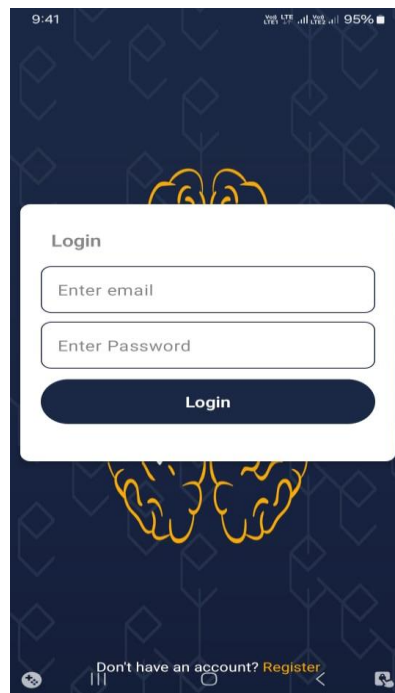


Figure 36. Login Page

4. Home Page –

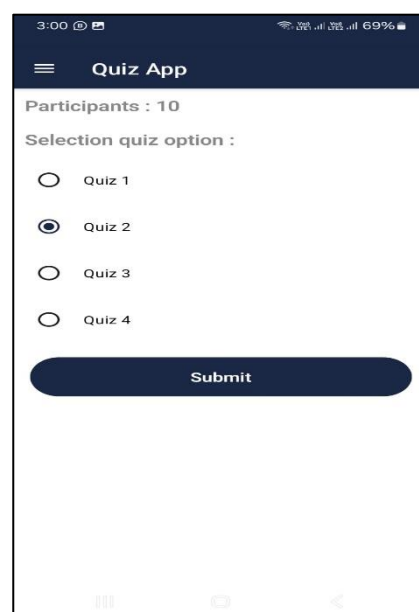


Figure 37. Home Page

5. Quiz Page –

The screenshot shows a mobile application interface for a quiz. At the top, there is a status bar with the time 3:00, battery level 69%, and signal strength indicators. Below the status bar is a dark blue header with a back arrow and the word "Quiz". The main content area has a white background with rounded corners. It contains two question cards. The first card has the text "External entities in DFD are shown by:-" and "Marks : 1" with a timer "00:51". It lists four options: "Ellipse", "Rectangle", "Circle", and "Hexagon". The second card has the text "What is the time complexity of Floyd-Warshall algorithm to calculate all pair shortest path in a graph with n vertices?" and "Marks : 1" with a timer "00:51". It lists four options: " $O(n^2 \log(n))$ ", " $\Theta(n^2 \log(n))$ ", " $\Theta(n^4)$ ", and " $\Theta(n^3)$ ". At the bottom, there are three navigation icons: a home icon, a back icon, and a forward icon.

3:00 69%

← Quiz

External entities in DFD are shown by:- Marks : 1 00:51

☐ Ellipse

☐ Rectangle

☐ Circle

☐ Hexagon

What is the time complexity of Floyd-Warshall algorithm to calculate all pair shortest path in a graph with n vertices? Marks : 1 00:51

☐ $O(n^2 \log(n))$

☐ $\Theta(n^2 \log(n))$

☐ $\Theta(n^4)$

☐ $\Theta(n^3)$

Figure 38. Quiz Page

The screenshot shows a mobile application interface for a quiz. At the top, there is a status bar with the time 3:00, battery level 69%, and signal strength indicators. Below the status bar is a dark blue header with a back arrow and the word "Quiz". The main content area has a white background with rounded corners. It contains two question cards. The first card has the text "Which of the following is not $O(n^2)$?" and "Marks : 1" with a timer "00:47". It lists four options: " $(15) * n^2$ ", " $n^{1.98}$ ", " $n^3 / (\sqrt{n})$ ", and " $(20) * n^2$ ". The second card has the text "Which of the following algorithms sort n integers, having the range 0 to $(n^2 - 1)$, in ascending order in $O(n)$ time ?" and "Marks : 1" with a timer "00:47". It lists four options: "Selection sort", "Bubble sort", "Radix sort", and "Insertion sort". At the bottom, there is a dark blue button with the text "Submit & Show Result". At the very bottom, there are three navigation icons: a home icon, a back icon, and a forward icon.

3:00 69%

← Quiz

Which of the following is not $O(n^2)$? Marks : 1 00:47

☐ $(15) * n^2$

☐ $n^{1.98}$

☐ $n^3 / (\sqrt{n})$

☐ $(20) * n^2$

Which of the following algorithms sort n integers, having the range 0 to $(n^2 - 1)$, in ascending order in $O(n)$ time ? Marks : 1 00:47

☐ Selection sort

☐ Bubble sort

☐ Radix sort

☐ Insertion sort

Submit & Show Result

Figure 39. Quiz Page ii

6. Quiz Submission –

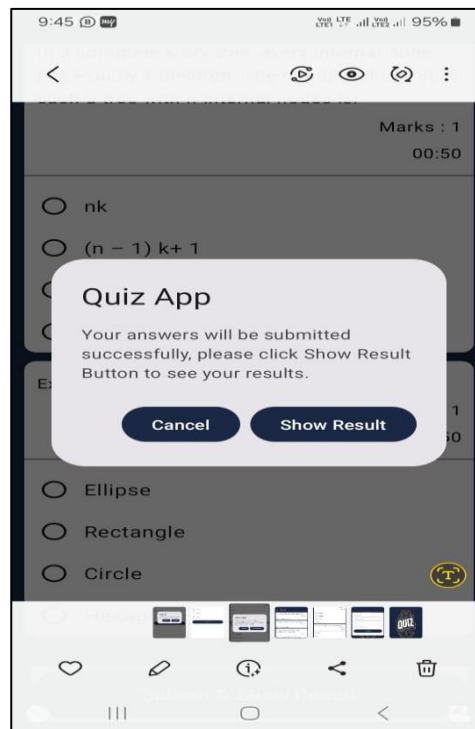


Figure 40. Quiz Submission

7. Result Page –

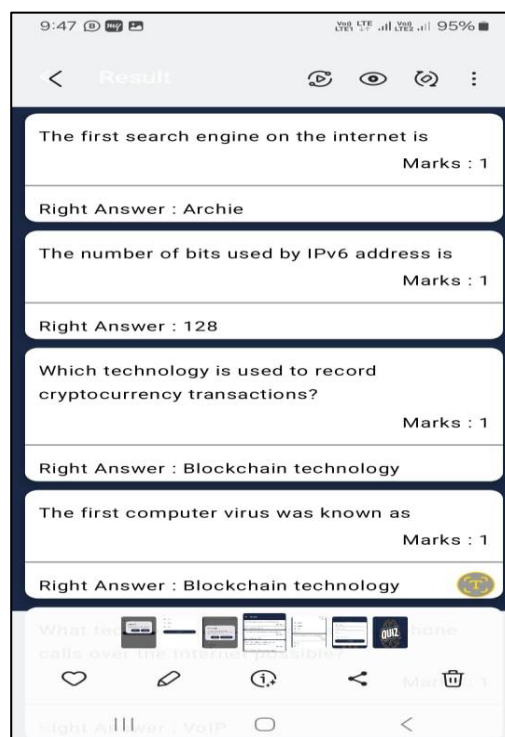


Figure 41. Result Page

8. Log out Page –

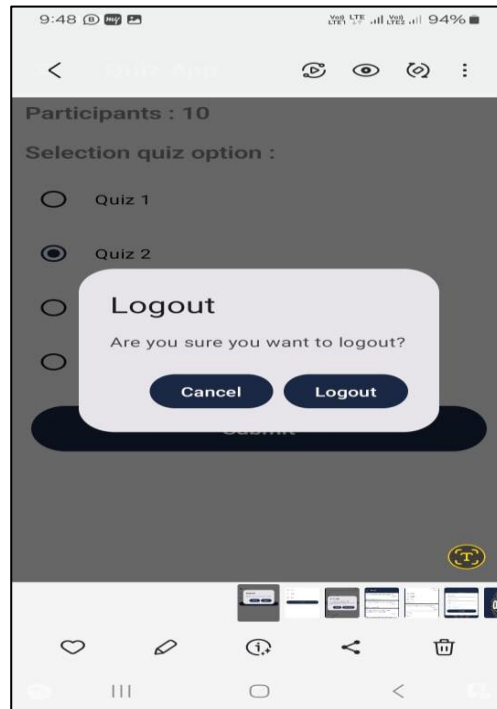


Figure 42. Log Out Page

GIT

1st commit

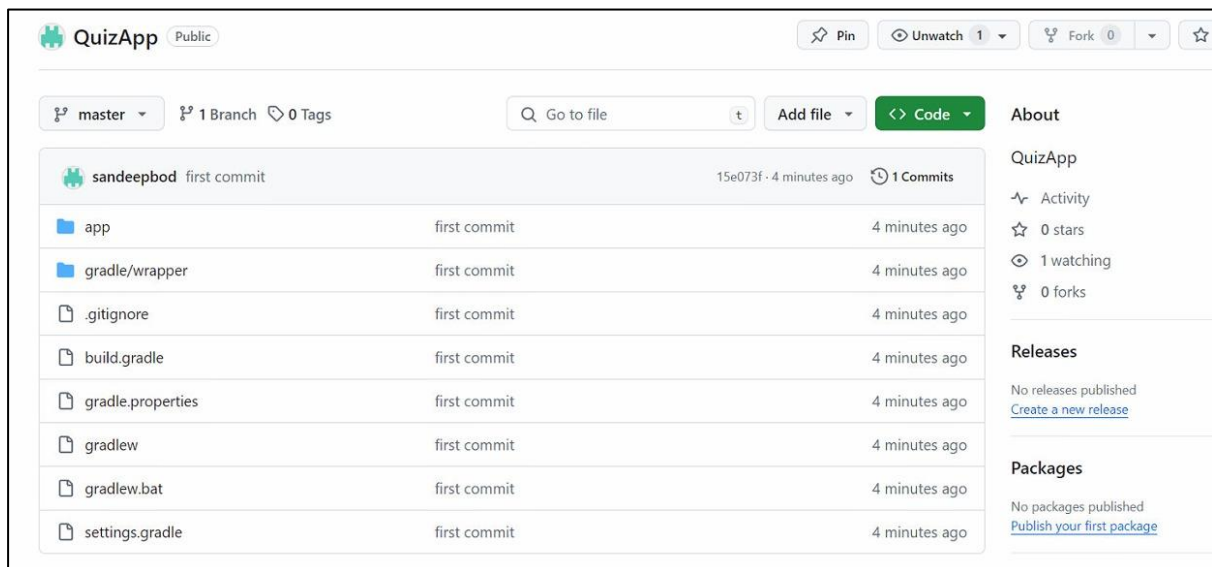


Figure 43. Ist Commit (i)

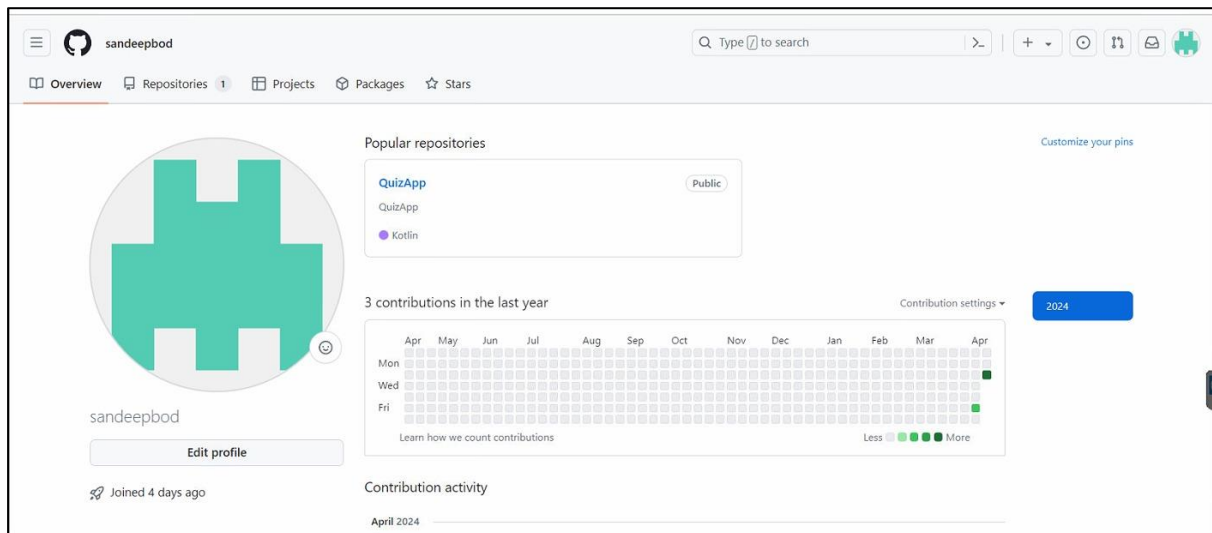


Figure 44. Ist Commit (ii)

```

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 /C/Users/SAMARA SIMHA REDDY/Downloads/Quiz App/QuizApp (master)
$ git commit -m "first commit"
[master (root-commit) 15e073f] first commit
51 files changed, 2079 insertions(+)
create mode 100644 .gitignore
create mode 100644 app/.gitignore
create mode 100644 app/build.gradle
create mode 100644 app/google-services.json
create mode 100644 app/proguard-rules.pro
create mode 100644 app/src/androidTest/java/com/quiz/ExampleInstrumentedTest.kt
create mode 100644 app/src/main/AndroidManifest.xml
create mode 100644 app/src/main/java/com/quiz/MainActivity.kt
create mode 100644 app/src/main/java/com/quiz/routing/Navigation.kt
create mode 100644 app/src/main/java/com/quiz/routing/Screen.kt
create mode 100644 app/src/main/java/com/quiz/ui/Login/LoginScreen.kt
create mode 100644 app/src/main/java/com/quiz/ui/main/MainScreen.kt
create mode 100644 app/src/main/java/com/quiz/ui/model/OptionModel.kt
create mode 100644 app/src/main/java/com/quiz/ui/model/QuizModel.kt
create mode 100644 app/src/main/java/com/quiz/ui/register/RegisterScreen.kt
create mode 100644 app/src/main/java/com/quiz/ui/result/ResultsScreen.kt
create mode 100644 app/src/main/java/com/quiz/ui/splash/SplashScreen.kt
create mode 100644 app/src/main/java/com/quiz/ui/theme/Color.kt
create mode 100644 app/src/main/java/com/quiz/ui/theme/Theme.kt
create mode 100644 app/src/main/java/com/quiz/ui/theme/Type.kt
create mode 100644 app/src/main/java/com/quiz/utils/OutlineFormField.kt
create mode 100644 app/src/main/java/com/quiz/utils/RoundedButton.kt
create mode 100644 app/src/main/res/drawable-v24/ic_launcher_foreground.xml
create mode 100644 app/src/main/res/drawable/ic_launcher_background.xml
create mode 100644 app/src/main/res/drawable/ic_quiz.jpg
create mode 100644 app/src/main/res/mipmap-anydpi-v26/ic_launcher.xml
create mode 100644 app/src/main/res/mipmap-anydpi-v26/ic_launcher_round.xml
create mode 100644 app/src/main/res/mipmap-anydpi-v33/ic_launcher.xml
create mode 100644 app/src/main/res/mipmap-hdpi/ic_launcher.webp
create mode 100644 app/src/main/res/mipmap-hdpi/ic_launcher_round.webp

```

Figure 45. Ist Commit (iii)

```

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 /C/Users/SAMARA SIMHA REDDY/Downloads/Quiz App/QuizApp (master)
$ git add .
warning: in the working copy of '.gitignore', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/build.gradle', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/google-services.json', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/proguard-rules.pro', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/androidTest/java/com/quiz/ExampleInstrumentedTest.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/com/quiz/MainActivity.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/com/quiz/ui/theme/Color.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/com/quiz/ui/theme/Theme.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/com/quiz/ui/theme/Type.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/com/quiz/utils/RoundedButton.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/drawable-v24/ic_launcher_foreground.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/drawable/ic_launcher_background.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/mipmap-anydpi-v26/ic_launcher.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/mipmap-anydpi-v26/ic_launcher_round.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/mipmap-anydpi-v33/ic_launcher.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/values/colors.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/values/strings.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/values/themes.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/xml/backup_rules.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/xml/data_extraction_rules.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/test/java/com/quiz/ExampleUnitTest.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'build.gradle', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'gradle.properties', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'gradlew', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'settings.gradle', LF will be replaced by CRLF the next time Git touches it

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 /C/Users/SAMARA SIMHA REDDY/Downloads/Quiz App/QuizApp (master)
$ git commit -m "first commit"
[master f8c0c commit] 126027361 first commit

```

Figure 46. Ist Commit (iv)

```

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 /C/Users/SAMARA SIMHA REDDY/Downloads/Quiz App/QuizApp (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        .gitignore
        app/
        build.gradle
        gradle.properties
        gradle/
        gradlew
        gradlew.bat
        settings.gradle

nothing added to commit but untracked files present (use "git add" to track)

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 /C/Users/SAMARA SIMHA REDDY/Downloads/Quiz App/QuizApp (master)
$ git add .
warning: in the working copy of '.gitignore', LF will be replaced by CRLF the next time Git touches it

```

Figure 47. Ist Commit (v)

```

/C/Users/SAMARA SIMHA REDDY/Downloads/Quiz App/QuizApp

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 /C/Users/SAMARA SIMHA REDDY/Downloads/Quiz App/QuizApp (master)
$ git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:   git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:   git branch -m <name>
Initialized empty Git repository in C:/Users/SAMARA SIMHA REDDY/Downloads/Quiz App/QuizApp/.git/

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 /C/Users/SAMARA SIMHA REDDY/Downloads/Quiz App/QuizApp (master)
$ git status
On branch master

No commits yet

```

Figure 48. Ist Commit (vi)

```

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 /C/Users/SAMARA SIMHA REDDY/Downloads/Quiz App/QuizApp (master)
$ git config --global user.name "sandeepbod"

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 /C/Users/SAMARA SIMHA REDDY/Downloads/Quiz App/QuizApp (master)
$ git config --global user.email "bodiresandeep2782@gmail.com"

```

Figure 49. Ist Commit (vii)

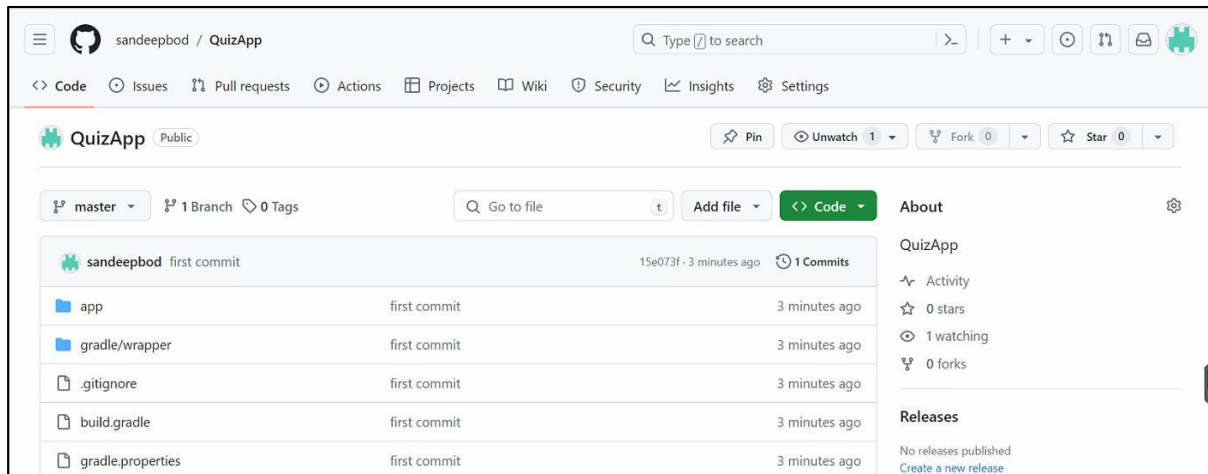


Figure 50. Ist Commit (viii)

2nd commit

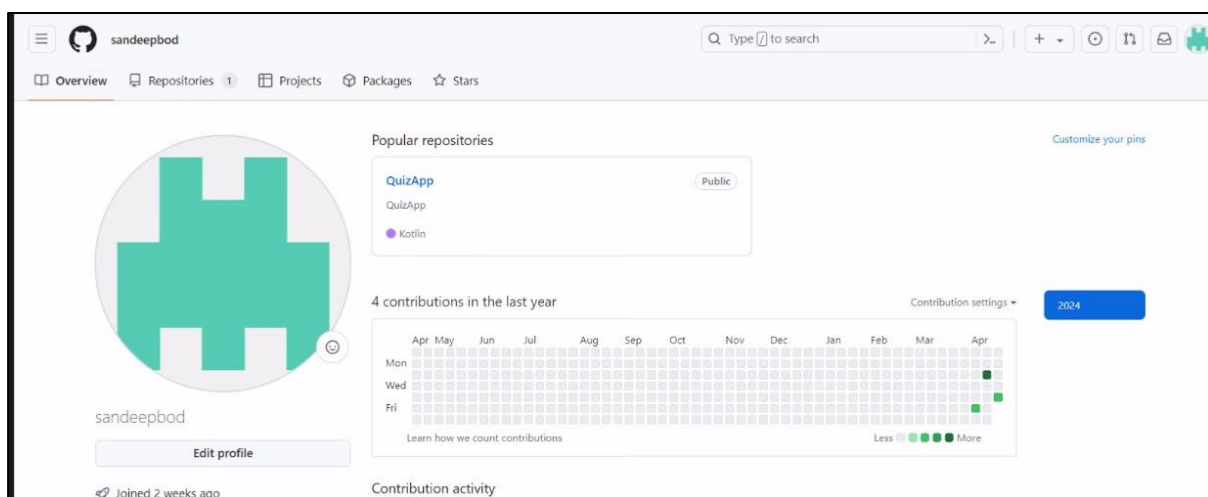


Figure 51. IInd Commit

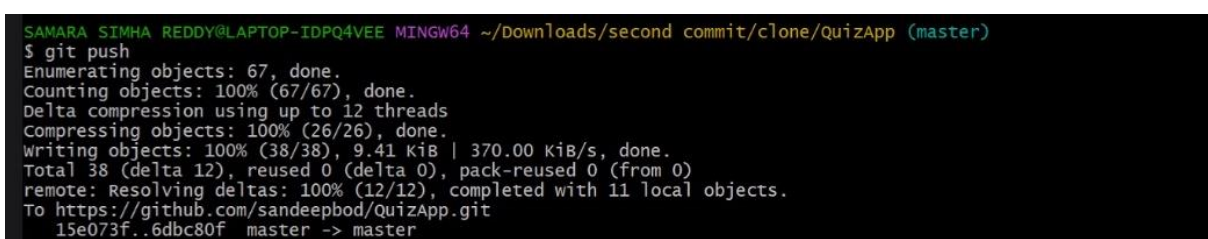


Figure 52. IInd Commit (i)

```

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 ~/Downloads/second commit/clone/QuizApp (master)
$ git commit -m "second commit"
[master 6dbc80f] second commit
15 files changed, 745 insertions(+), 143 deletions(-)
create mode 100644 app/src/main/java/com/quiz/ui/drawer/NavDrawer.kt
create mode 100644 app/src/main/java/com/quiz/ui/drawer/TopBar.kt
create mode 100644 app/src/main/java/com/quiz/ui/localDatabase/PreferencesManager.kt
create mode 100644 app/src/main/java/com/quiz/ui/quiz/QuizScreen.kt
create mode 100644 app/src/main/java/com/quiz/Utils/Extension.kt

```

Figure 53. IInd Commit (ii)

```

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 ~/Downloads/second commit/clone/QuizApp (master)
$ git add .
warning: in the working copy of '.gitignore', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/build.gradle', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/google-services.json', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/proguard-rules.pro', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/androidTest/java/com/quiz/ExampleInstrumentedTest.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/com/quiz/MainActivity.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/com/quiz/ui/theme/color.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/com/quiz/ui/theme/Theme.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/com/quiz/ui/theme/Type.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/com/quiz/Utils/RoundedButton.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/drawable-v24/ic_launcher_foreground.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/drawable/ic_launcher_background.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/mipmap-anydpi-v26/ic_launcher.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/mipmap-anydpi-v26/ic_launcher_round.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/mipmap-anydpi-v33/ic_launcher.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/values/colors.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/values/strings.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/values/themes.xml', LF will be replaced by CRLF the next time Git touches it

```

Figure 54. IInd Commit (iii)

The screenshot displays the GitHub interface for the 'QuizApp' repository. The main content area shows a table of files and their commit history:

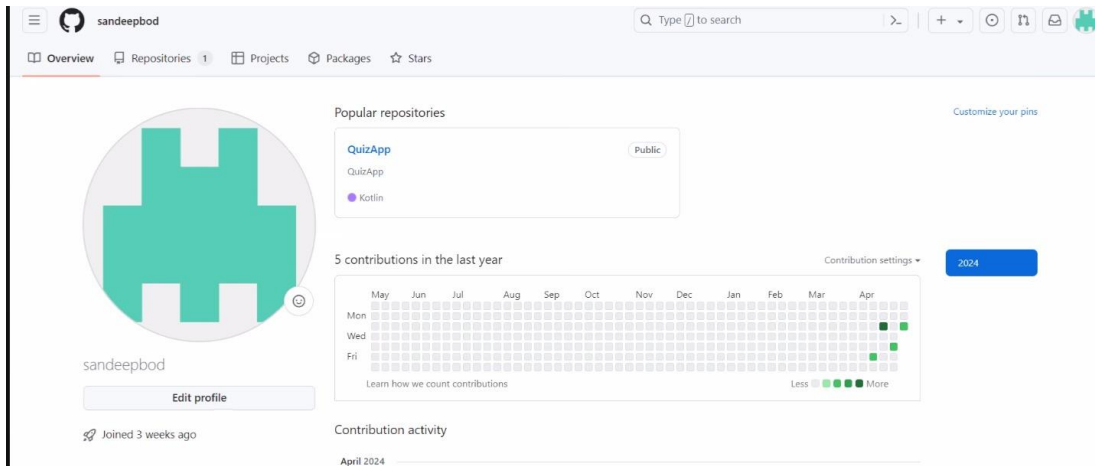
File	Commit	Time
app	second commit	now
gradle/wrapper	first commit	last week
.gitignore	first commit	last week
build.gradle	first commit	last week
gradle.properties	first commit	last week
gradlew	first commit	last week
gradlew.bat	first commit	last week

The right sidebar provides additional information about the repository:

- About:** QuizApp
- Activity:** 0 stars, 1 watching, 0 forks
- Releases:** No releases published. [Create a new release](#)
- Packages:** No packages published. [Publish your first package](#)

Figure 55. IInd Commit (iv)

3rd commit



sandeepbod

Overview Repositories 1 Projects Packages Stars

Popular repositories

QuizApp Public

5 contributions in the last year

Contribution settings 2024

Contribution activity

April 2024

```
SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 ~/Downloads/third commit/Quiz App/clone/QuizApp (master)
$ git push
Enumerating objects: 79, done.
Counting objects: 100% (79/79), done.
Delta compression using up to 12 threads
Compressing objects: 100% (42/42), done.
Writing objects: 100% (69/69), 18.93 KiB | 510.00 KiB/s, done.
Total 69 (delta 10), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (10/10), completed with 5 local objects.
To https://github.com/sandeepbod/QuizApp.git
6dbc80f..658a26a master -> master

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 ~/Downloads/third commit/Quiz App/clone/QuizApp (master)
$ |
```

```
SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 ~/Downloads/third commit/Quiz App/clone/QuizApp (master)
$ git commit -m "third commit"
[master 658a26a] third commit
26 files changed, 2057 insertions(+), 4 deletions(-)
create mode 100644 app/src/androidTest/uk/ac/tees/mad/p3662700/java/mad/p3662700/ExampleInstrumentedTest.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/MainActivity.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/application/AppConfig.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/routing/Navigation.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/routing/Screen.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/drawer/NavDrawer.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/drawer/TopBar.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/LocalDatabase/PreferencesManager.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/login/LoginScreen.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/main/MainScreen.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/model/OptionModel.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/model/QuizModel.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/quiz/QuizScreen.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/register/RegisterScreen.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/result/ResultScreen.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/splash/SplashScreen.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/theme/Color.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/theme/Theme.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/ui/theme/Type.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/Utils/Extension.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/Utils/QuizField.kt
create mode 100644 app/src/main/java/uk/ac/tees/mad/p3662700/Utils/RoundedButton.kt
create mode 100644 app/src/test/uk/ac/tees/mad/p3662700/java/mad/p3662700/ExampleUnitTest.kt

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 ~/Downloads/third commit/Quiz App/clone/QuizApp (master)
```

```

SAMARA SIMHA REDDY@LAPTOP-IDPQ4VEE MINGW64 ~/downloads/third commit/Quiz App/clone/QuizApp (master)
$ git add .
warning: in the working copy of '.gitignore', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/build.gradle', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/google-services.json', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/proguard-rules.pro', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/drawable-v24/ic_launcher_foreground.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/drawable/ic_launcher_background.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/mipmap-anydpi-v26/ic_launcher.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/mipmap-anydpi-v26/ic_launcher_round.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/mipmap-anydpi-v33/ic_launcher.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/values/colors.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/values/strings.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/values/themes.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/xml/backup_rules.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/res/xml/data_extraction_rules.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'build.gradle', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'gradle.properties', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'gradlew', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'settings.gradle', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/androidTest/uk/ac/tees/mad/D3662700/java/mad/D3662700/ExampleInstrumentedTest.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/uk/ac/tees/mad/D3662700/MainActivity.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/uk/ac/tees/mad/D3662700/ui/drawer/NavDrawer.kt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'app/src/main/java/uk/ac/tees/mad/D3662700/ui/theme/color.kt', LF will be replaced by CRLF the next time Git touches it

```

The screenshot shows the GitHub interface for the 'QuizApp' repository. The repository is owned by 'sandeepbod' and is public. It has 1 branch (master) and 0 tags. The repository contains several files and folders, including 'app', 'gradle/wrapper', '.gitignore', 'build.gradle', 'gradle.properties', 'gradlew', 'gradlew.bat', and 'settings.gradle'. The commit history shows that the 'app' folder was committed for the first time, while the other files were committed 2 weeks ago. The repository has 0 stars, 1 watcher, and 0 forks. There are no releases or packages published yet.

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