SMARTBRIDGE
Let's Bridge the Gap

Smart
Internz

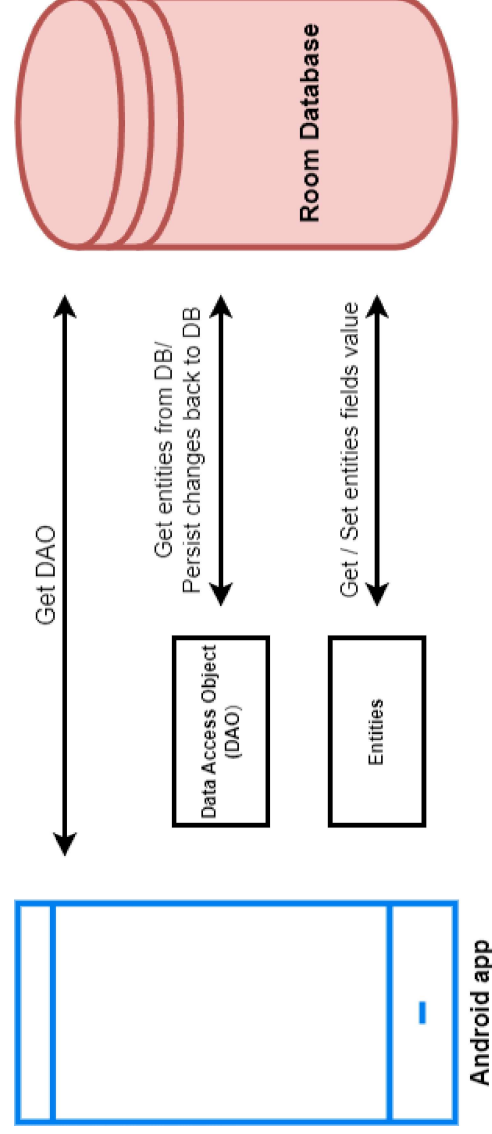# A Sleep Tracking App for a Better Night's Rest

Project Based Experiential Learning Program

A Sleep Tracking App for a Better Night's Rest

A project that demonstrates the use of Android Jetpack Compose to build a UI for a sleep tracking app. The app allows users to track their sleep. With the "Sleep Tracker" app, you can assess the quality of sleep they have had in a day. It has been time and again proven that a good quality sleep is pretty essential for effective functioning of both mind and body.

"Sleep Tracker" application enables you to start the timer when they are in the bed and about to fall asleep. The timer will keep running in the background until it is stopped, whenever the user wakes up. Based on the sleep experience, you can rate your sleep quality. Finally , the app will display an analysis of the kind of sleep , you had the previous night.

Architecture

Room Database

Get DAO

Get entities from DB/
Persist changes back to DB

Get / Set entities fields value

Data Access Object
(DAO)

Entities

Android app

Learning Outcomes :

By end of this project:

- You'll be able to work on Android studio and build an app.
- You'll be able to integrate the database accordingly.

Project Workflow:

- Users register into the application.
- After registration , user logins into the application.
- User enters into the main page
- User can track the sleep timing and he record the time

Tasks:

1.Required initial steps
2.Creating a new project.
3.Adding required dependencies.
4.Creating the database classes.
5.Building application UI and connecting to database.
6.Using AndroidManifest.xml
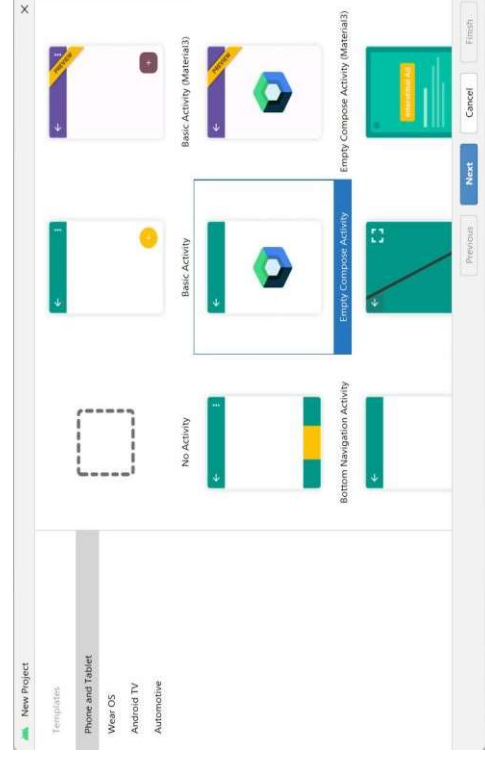7.Running the application.

Task 1:

Required initial steps :

https://developer.android.com/studio/install

Task 2 :

Creating a new project.
Step 1 : Android studio > File > New > New Project > Empty Compose Activity
Step 2 : Click on **Next** button.

Step 3 : Give name to the new project.

Step 4 : Give the Minimum SDK value
Step 5 : Click Finish

Main activity file

Task 3 :

Adding required dependencies.

Step 1 : Gradle scripts > build.gradle(Module :app)
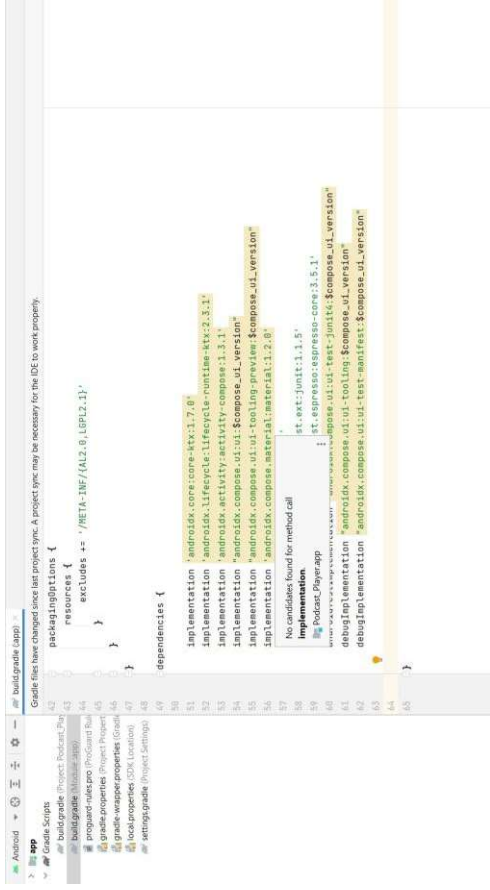
Step 2 : Adding room dependencies.

Add the below code in dependencies

Step 3 : Click on Sync now

Task 4:

Creating the database classes.

In this project we will be having two databases, one is for user registration and login and other is for tracking the sleep of the user.

Database 1

Step 1 : Create User data class

New Kotlin Class/File

User|

- Class
- File
- Interface
- Sealed interface
- **Data class**
- Enum class
- Sealed class
- Annotation
- Object
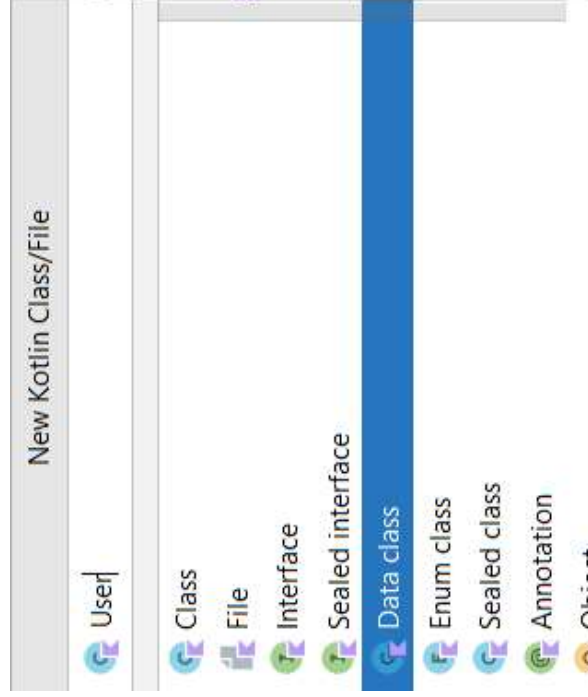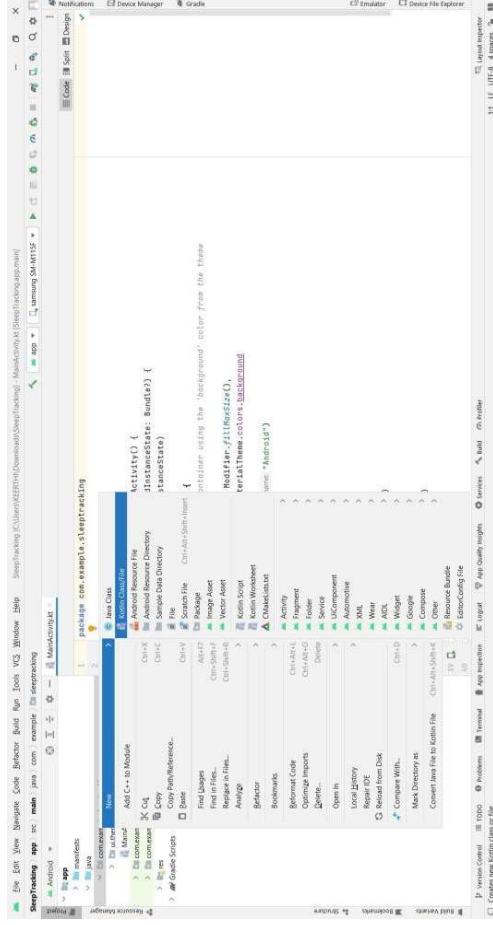
User class code:

Step 2 : Create an UserDao interface

New Kotlin Class/File

UserDao

Class

File

Interface

Sealed interface

Data class

Enum class

Sealed class

Annotation

UserDao interface code:

Step 3 : Create an UserDatabase class

New Kotlin Class/File

UserDatabase

Class
File
Interface
Sealed interface
Data class
Enum class
Sealed class
Annotation
Object

UserDatabase class code :

Step 4 : Create an UserDatabaseHelper class

New Kotlin Class/File

UserDatabaseHelper

- Class
- File
- Interface
- Sealed interface
- Data class
- Enum class
- Sealed class
- Annotation
- Object

UserDatabaseHelper class code :
https://github.com/usmanshaikusman/Sleep-Tracking-app-/blob/master/app/src/main/java/com/example/sleeptracking/UserDatabaseHelper.kt

Database 2

Step 1 : Create TimeLog data class

TimeLog data class code:

https://github.com/usmanshaikusman/Sleep-Tracking-app-/blob/master/app/src/main/java/com/example/sleeptracking/TimeLog.kt

Step 2 : Create an TimeLogDao interface

TimeLogDao interface code:
https://github.com/usmanshaikusman/Sleep-Tracking-app-/blob/master/app/src/main/java/com/example/sleeptracking/TimeLogDao.kt

Step 3 : Create an AppDatabase class

AppDatabase class code:
https://github.com/usmanshaikusman/Sleep-Tracking-app-/blob/master/app/src/main/java/com/example/sleeptracking/UserDatabase.kt

Step 4 : Create an TimeDatabaseHelper class
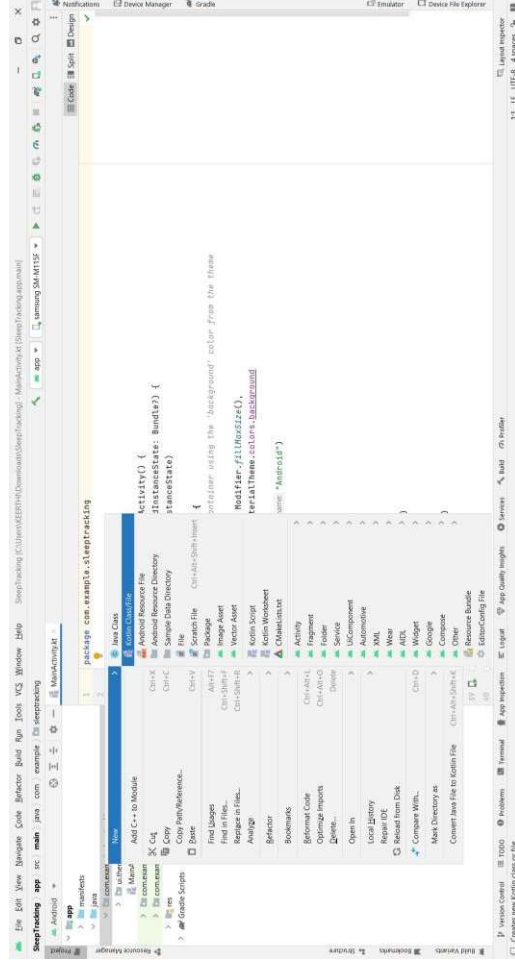
TimeDatabaseHelper class code:
https://github.com/usmanshaikusman/Sleep-Tracking-app-/blob/master/app/src/main/java/com/example/sleeptracking/UserDatabaseHelper.kt
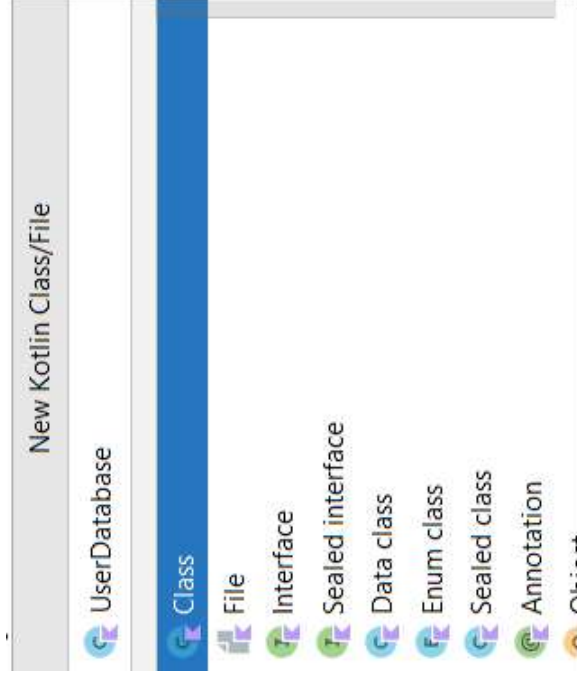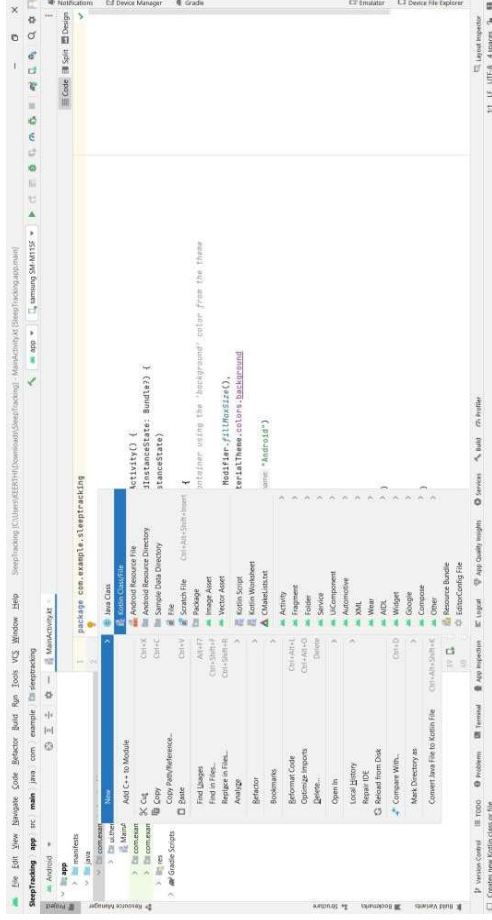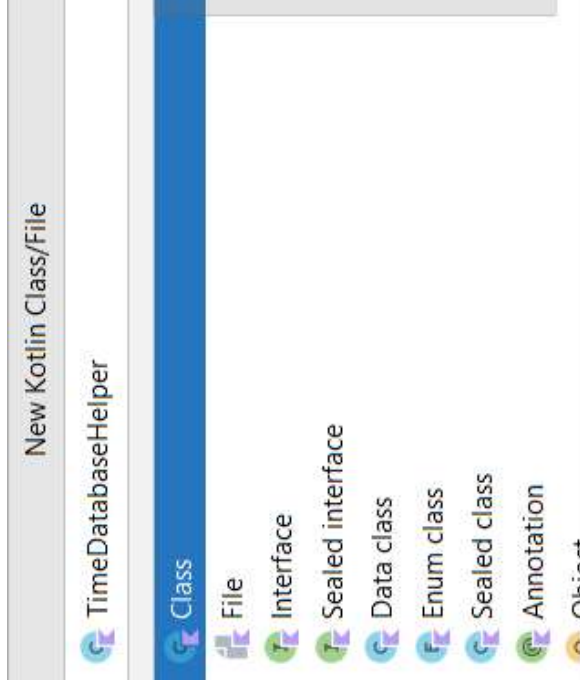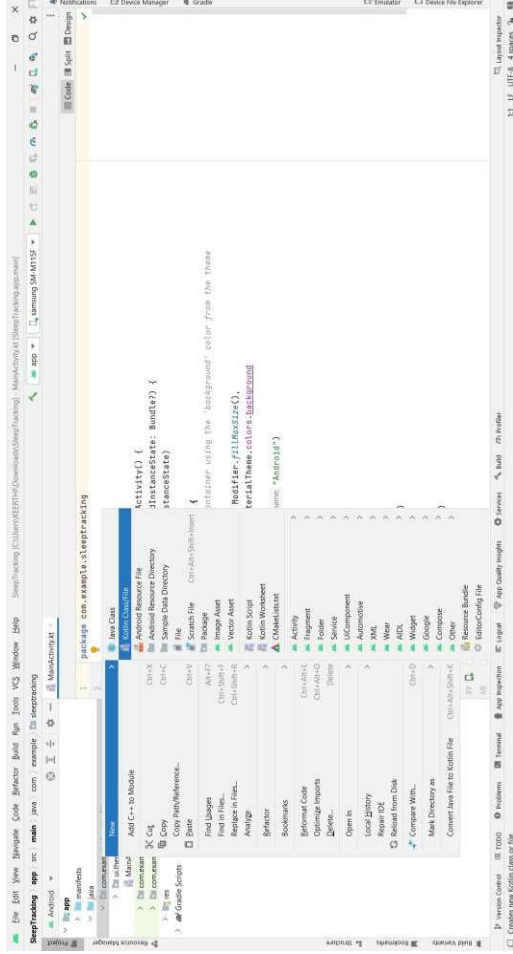
Task 5:
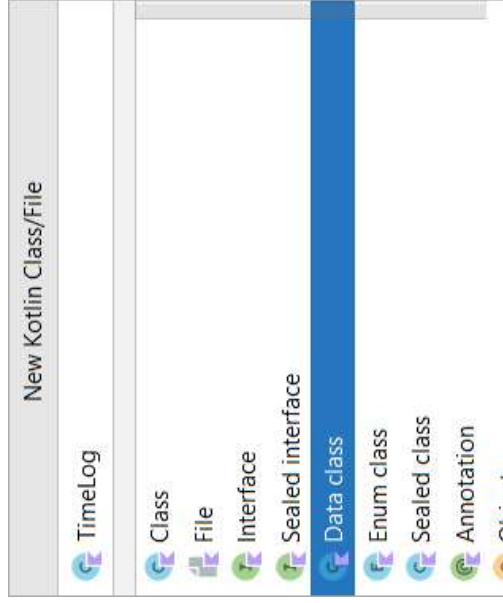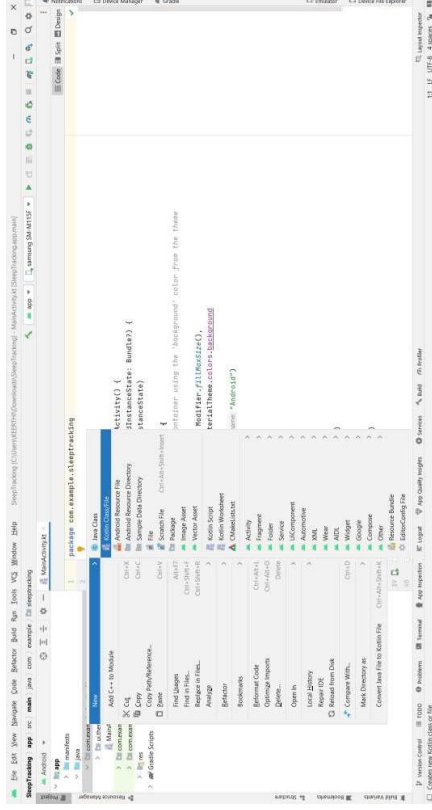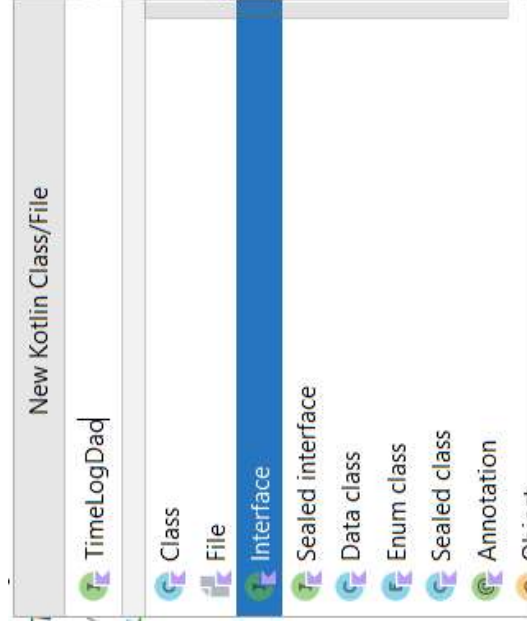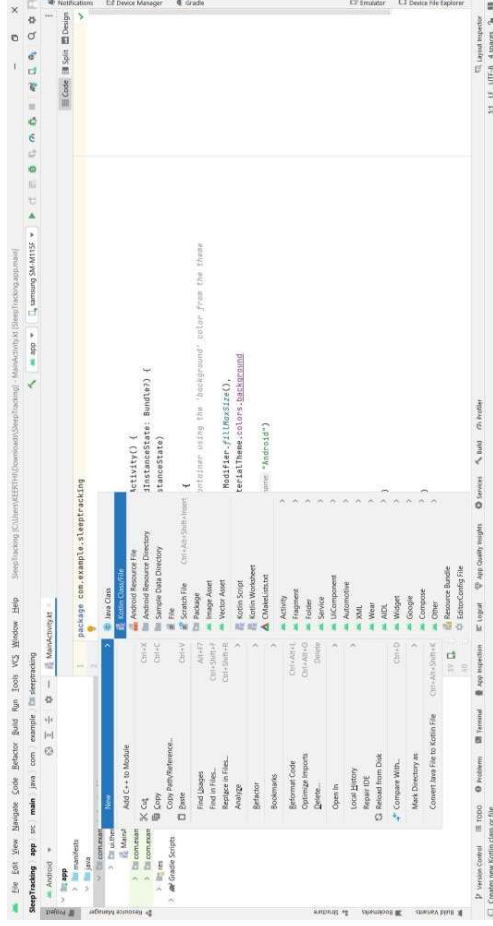
Building application UI and connecting to database.

Step 1: Creating LoginActivity.kt with database
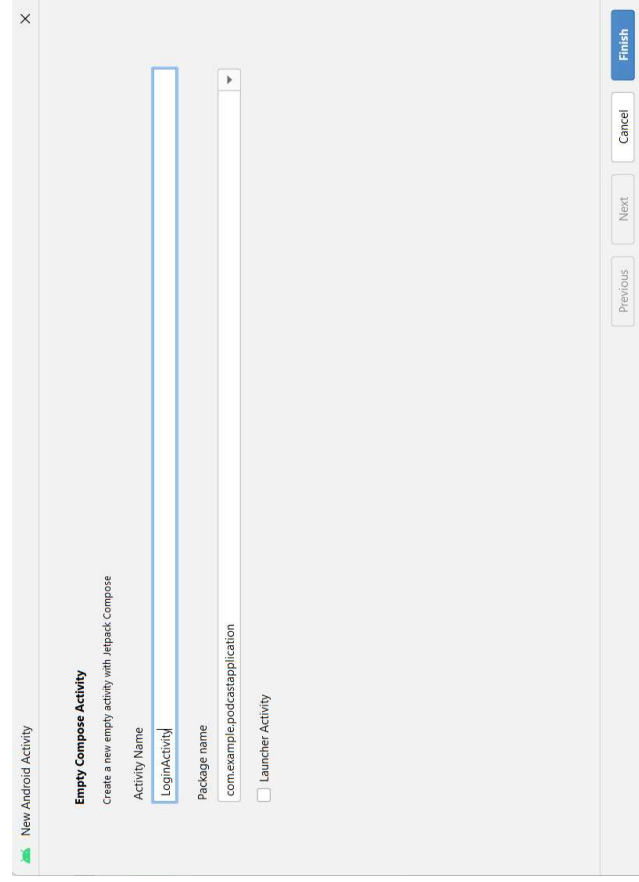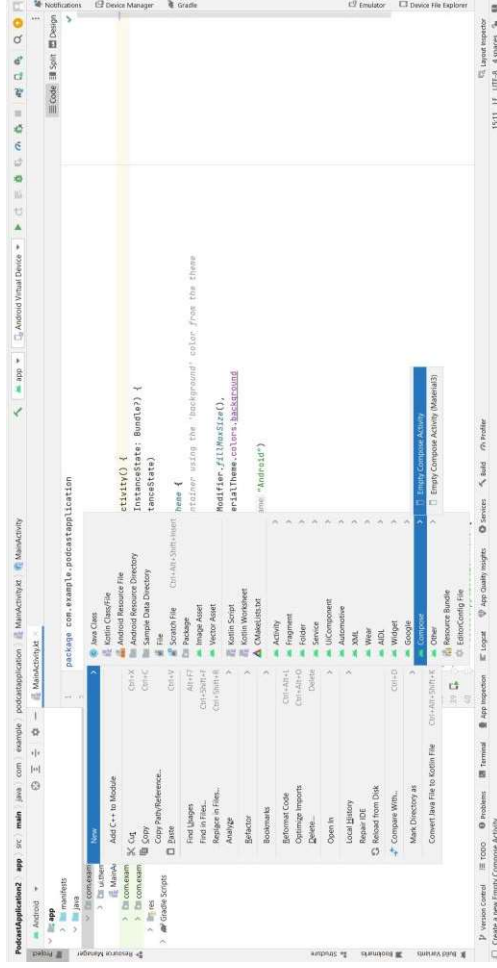
Database connection in LoginActivity.kt:

```kotlin
class LoginActivity : ComponentActivity() {

    private lateinit var databaseHelper: UserDatabaseHelper
    // Usman shaik
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        databaseHelper = UserDatabaseHelper( context: this)
        setContent {
            ProjectOneTheme {
                // A surface container using the 'background' color from the theme
                Surface(
                    modifier = Modifier.fillMaxSize(),
                    color = MaterialTheme.colors.background
                ) {
                    LoginScreen( context: this, databaseHelper)
                }
            }
        }
    }
}

// Usman shaik
@Composable
fun LoginScreen(context: Context, databaseHelper: UserDatabaseHelper) {
    var username by remember { mutableStateOf( value: "") }
    var password by remember { mutableStateOf( value: "") }
    var error by remember { mutableStateOf( value: "") }
    val imageModifier = Modifier
```

Complete code in below link:

https://github.com/usmanshaikusman/Sleep-Tracking-app-
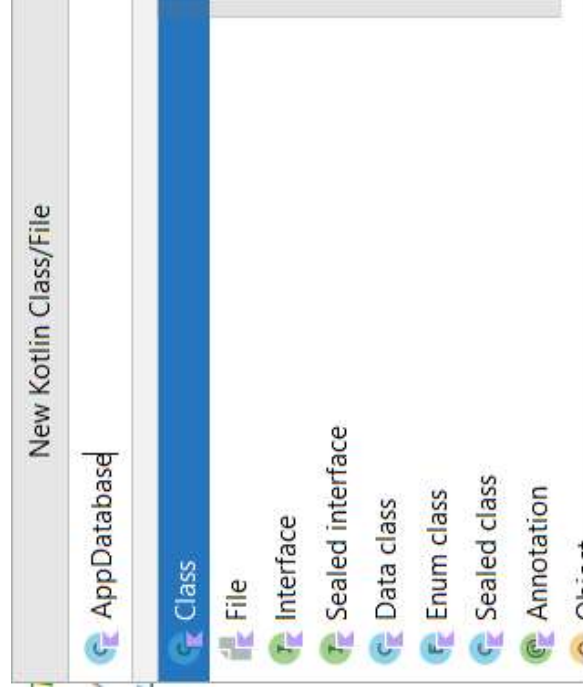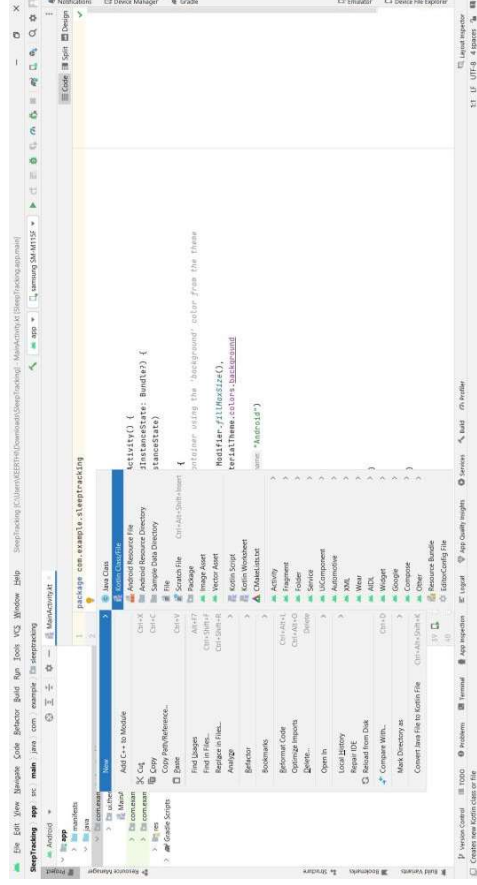/blob/master/app/src/main/java/com/example/sleeptracking/LoginActivity.kt

Step 2 : Creating RegistrationActivity.kt with database

Database connection in RegistrationActivity.kt

```kotlin
class MainActivity2 : ComponentActivity() {
    private lateinit var databaseHelper: UserDatabaseHelper
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        databaseHelper = UserDatabaseHelper(this)
        setContent {
            ProjectOneTheme {
                // A surface container using the 'background' color from the theme
                Surface(
                    modifier = Modifier.fillMaxSize(),
                    color = MaterialTheme.colors.background
                ) {
                    RegistrationScreen(this,databaseHelper)
                }
            }
        }
    }
}

@Composable
fun RegistrationScreen(context: Context, databaseHelper: UserDatabaseHelper) {
    var username by remember { mutableStateOf("") }
    var password by remember { mutableStateOf("") }
    var email by remember { mutableStateOf("") }
    var error by remember { mutableStateOf("") }

    val imageModifier = Modifier
    Image(
        painterResource(id = R.drawable.sleeptracking),
        contentScale = ContentScale.FillHeight,
        contentDescription = "",
```
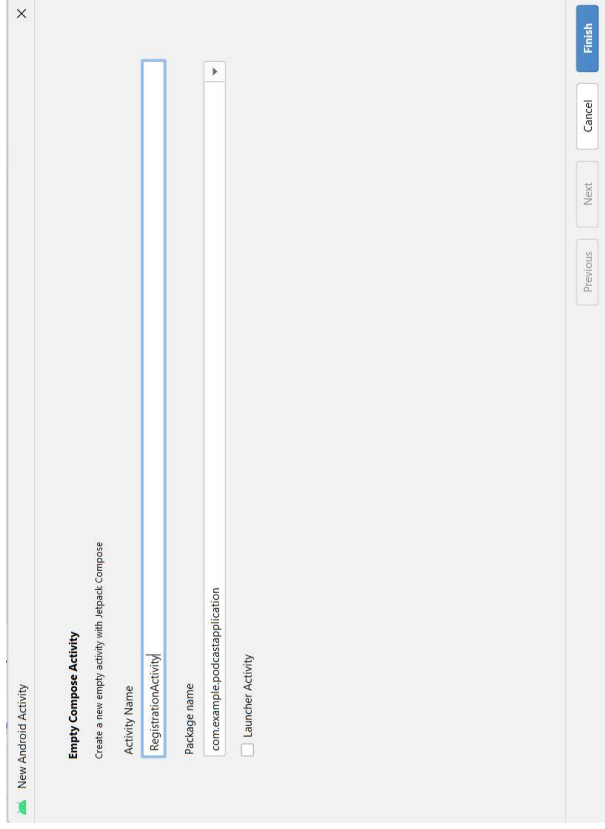
Complete code in below link:

Step 3 : Creating MainActivity.kt file

In MainActivity.kt file the main application is developed

• Before creating UI we need to add some images in drawables which are in res
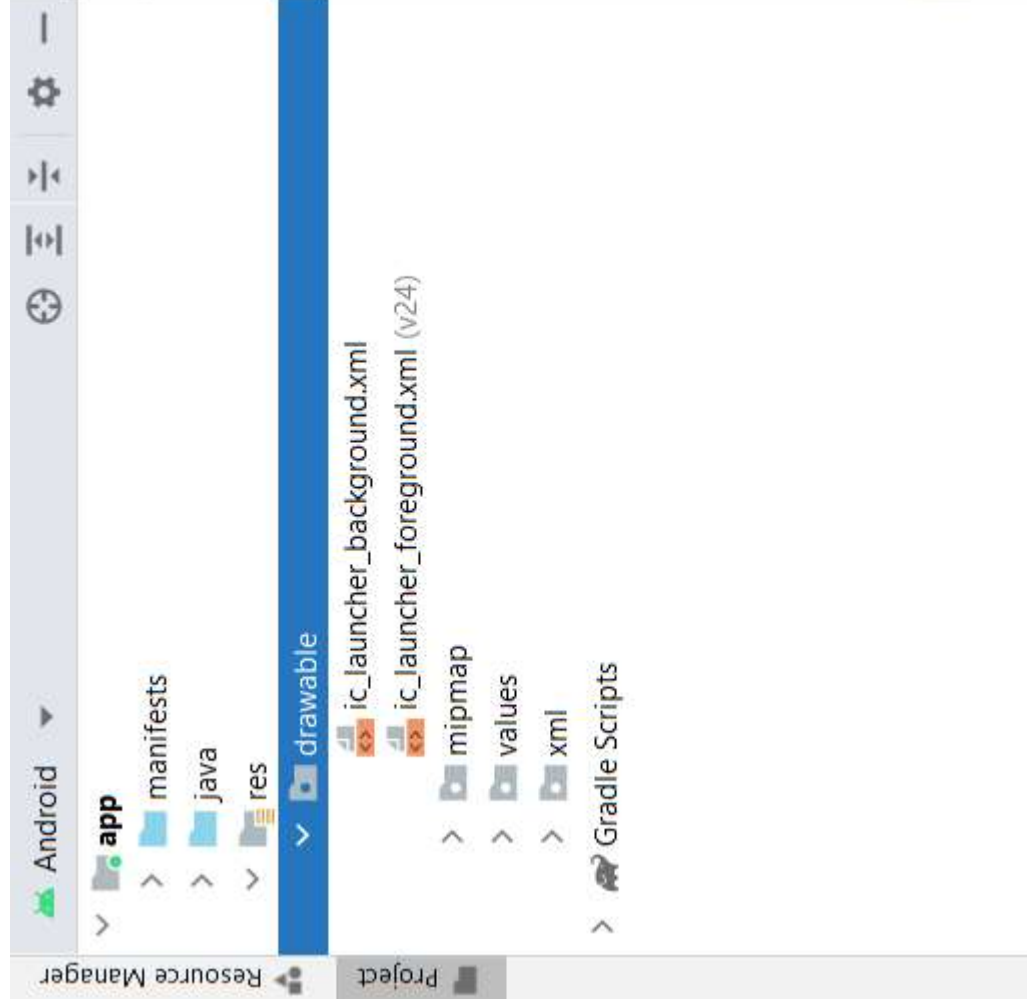
Download the required drawable from the code:
https://github.com/usmanshaikusman/Sleep-Tracking-app-/tree/master/app/src/main/res/drawable

Required drawables

res
- drawable
  - ic_launcher_background.xml
  - ic_launcher_foreground.xml (v24)
  - sleep.png (nodpi)
  - sleepicon.png (nodpi)
  - sleeptracking.jpg (nodpi)
- mipmap
- values
- xml

MainActivity.kt

```kotlin
class MainActivity : ComponentActivity() {

    private lateinit var databaseHelper: TimeLogDatabaseHelper

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        databaseHelper = TimeLogDatabaseHelper(this)
        databaseHelper.deleteAllData()
        setContent {
            ProjectOneTheme {
                // A surface container using the 'background' color from the theme
                Surface(
                    modifier = Modifier.fillMaxSize(),
                    color = MaterialTheme.colors.background
                ) {
                    MyScreen(this,databaseHelper)
                }
            }
        }
    }
}

@Composable
fun MyScreen(context: Context, databaseHelper: TimeLogDatabaseHelper) {
    var startTime by remember { mutableStateOf(0L) }
    var elapsedTime by remember { mutableStateOf(0L) }
    var isRunning by remember { mutableStateOf(false) }
    val imageModifier = Modifier
    Image(
        painterResource(id = R.drawable.sleeptracking),
        contentScale = ContentScale.FillHeight,
        contentDescription = "",
        modifier = imageModifier
            .alpha(0.3F)
```

Complete code in below link:
https://github.com/usmanshaikusman/Sleep-Tracking-app-/blob/master/app/src/main/java/com/example/sleeptracking/MainActivity.kt

Step 4 : Creating TrackActivity.kt file

Database connection and fetching in TrackActivity.kt

```kotlin
class TrackActivity : ComponentActivity() {

    private lateinit var databaseHelper: TimeLogDatabaseHelper

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)

        databaseHelper = TimeLogDatabaseHelper(this)
        setContent {
            ProjectOneTheme {
                // A surface container using the 'background' color from the theme
                Surface(
                    modifier = Modifier.fillMaxSize(),
                    color = MaterialTheme.colors.background
                ) {
                    //ListlistScopeSample(timeLogs)

                    val data=databaseHelper.getTimeLogs();
                    Log.d("Sandeep" ,data.toString())
                    val timeLogs = databaseHelper.getTimeLogs()
                    ListlistScopeSample(timeLogs)
                }
            }
        }
    }
}

@Composable
fun ListlistScopeSample(timeLogs: List<TimeLogDatabaseHelper.TimeLog>) {

    val imageModifier = Modifier
    Image(
```
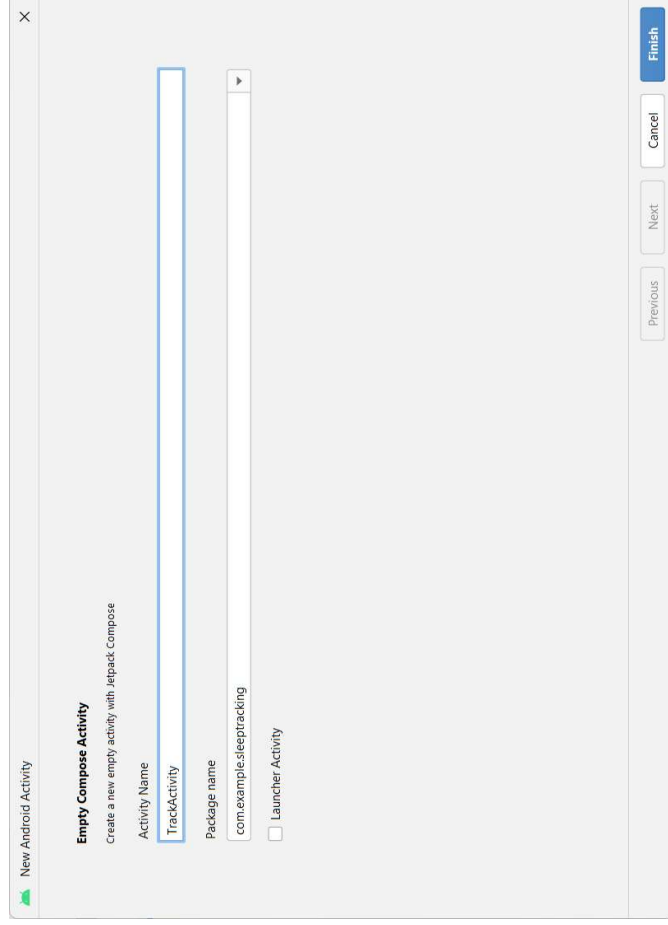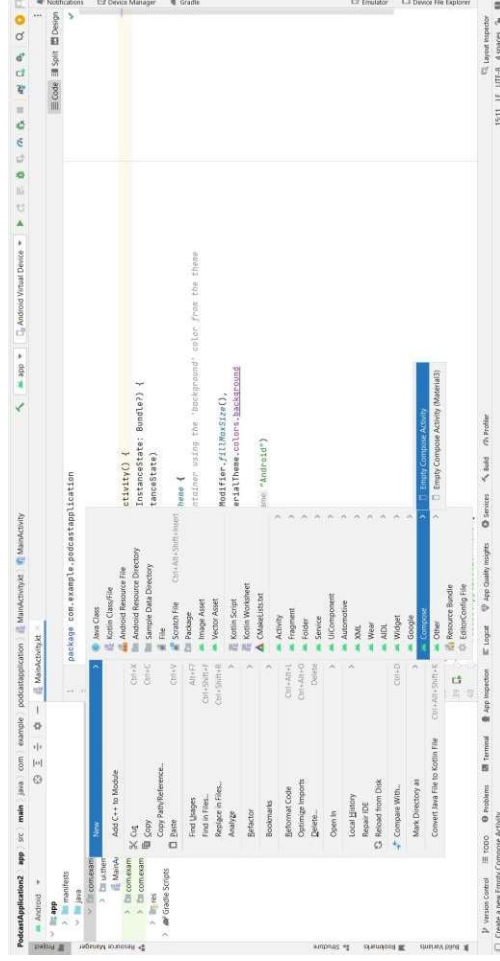
Complete code in below link:

Task 6:
Modifying AndroidManifest.xml

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

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:supportsRtl="true"
        android:theme="@style/Theme.SleepTracking"
        tools:targetApi="31">
        <activity
            android:name=".TrackActivity"
            android:exported="false"
            android:label="@string/title_activity_track"
            android:theme="@style/Theme.SleepTracking" />
        <activity
            android:name=".MainActivity"
            android:exported="false"
            android:label="@string/app_name"
            android:theme="@style/Theme.SleepTracking" />
        <activity
            android:name=".MainActivity2"
            android:exported="false"
            android:label="RegistrationActivity"
            android:theme="@style/Theme.SleepTracking" />
        <activity
```

When we run the app we will get the MainActivity.kt file as our first screen , but we want LoginActivity.kt , So we need to change in AndroidManifest.xml.

Changed AndroidManifest.xml.

```xml
<activity
    android:name=".TrackActivity"
    android:exported="false"
    android:label="@string/title_activity_track"
    android:theme="@style/Theme.SleepTracking" />
<activity
    android:name=".MainActivity"
    android:exported="false"
    android:label="@string/app_name"
    android:theme="@style/Theme.SleepTracking" />
<activity
    android:name=".MainActivity2"
    android:exported="false"
    android:label="RegistrationActivity"
    android:theme="@style/Theme.SleepTracking" />
<activity
    android:name=".LoginActivity"
    android:exported="true"
    android:label="@string/app_name"
    android:theme="@style/Theme.SleepTracking">
    <intent-filter>
        <action android:name="android.intent.action.MAIN" />

        <category android:name="android.intent.category.LAUNCHER" />
    </intent-filter>
</activity>
</application>
```

Complete AndroidManifest.xml code:
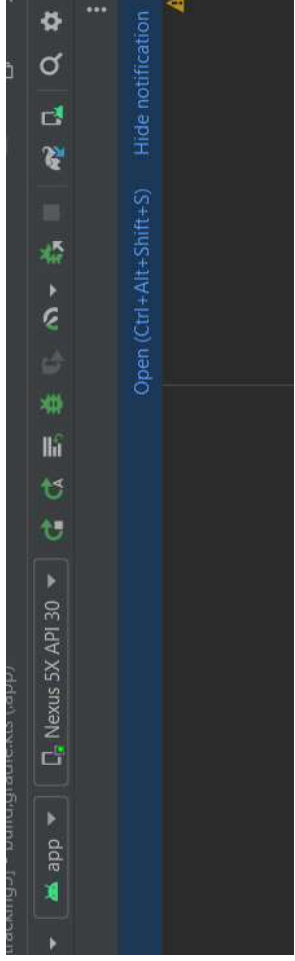https://github.com/usmanshaikusman/Sleep-Tracking-app-/blob/master/app/src/main/AndroidManifest.xml

Task 7:
Running the application.
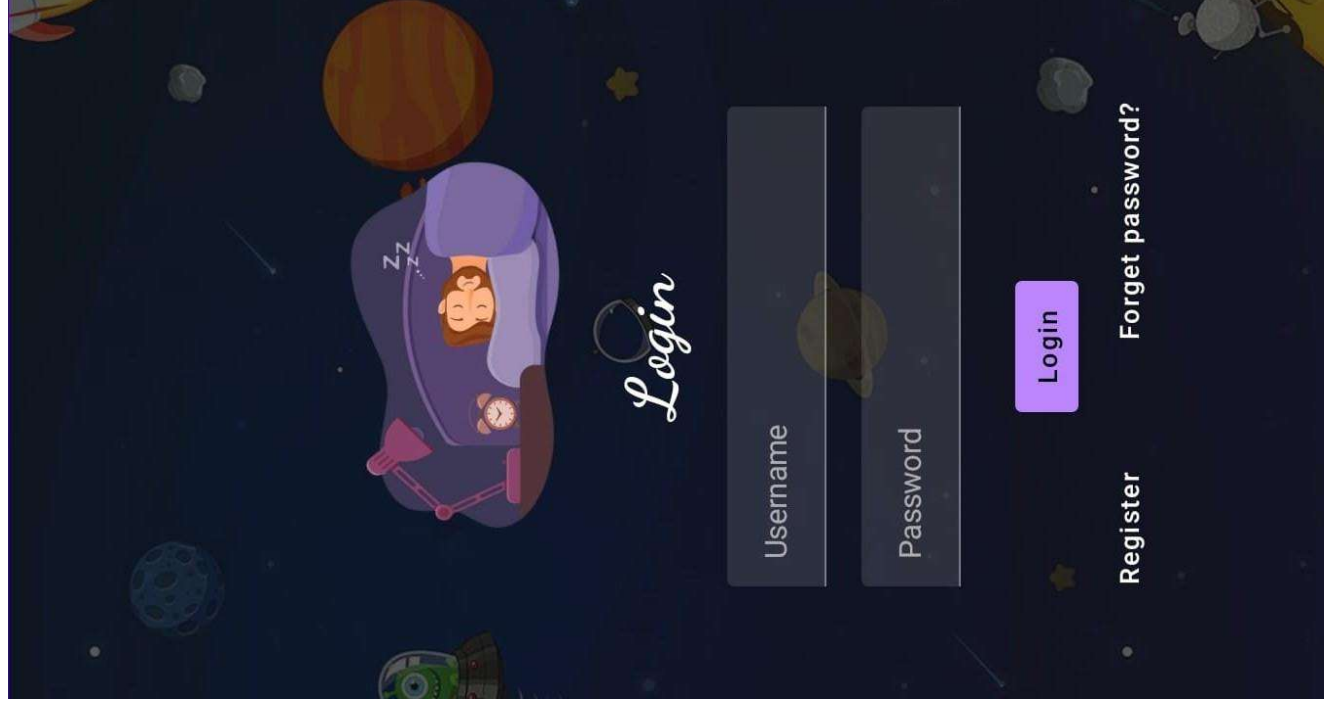
Step 1: Run apps on a hardware device
https://developer.android.com/studio/run/device
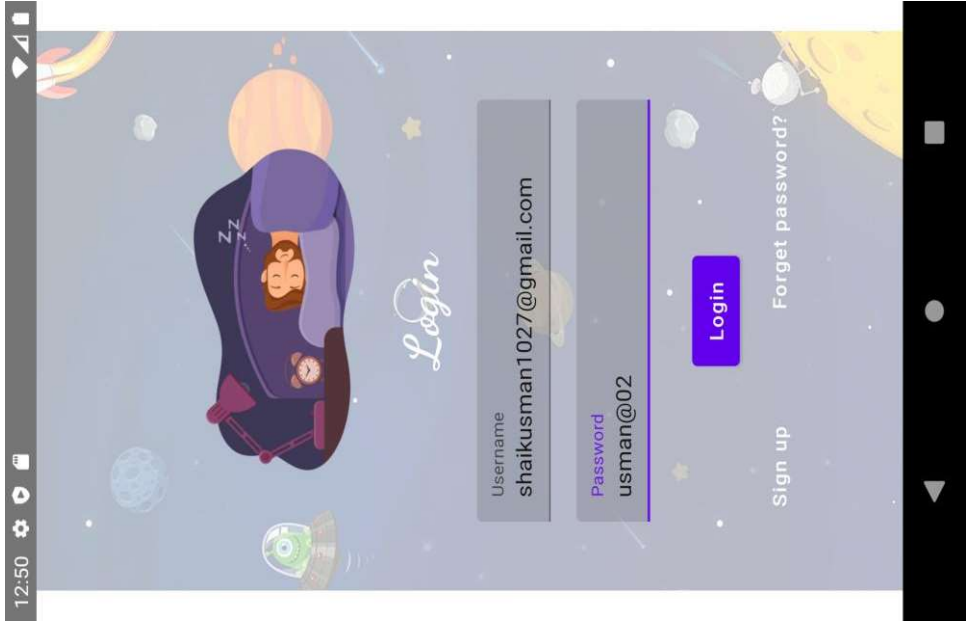
Step 2: Run the application in Mobile

Complete Project Link: https://github.com/usmanshaikusman/Sleep-Tracking-app-

Final Output of the Application :

Login Page :

Registration Page:

12:50

Login

Username
shaikusman1027@gmail.com

Password
usman@02

Login

Sign up   Forget password?

Main Page:

Start

Elapsed Time: 00:00:00

Track Sleep

Track Sleep Page:

Sleep Tracking

Start time: 1970-01-01 05:30:00
End time: 2023-08-04 12:55:00

Start time: 2023-08-04 12:55:03
End time: 2023-08-04 12:57:16

Start time: 2023-08-04 12:57:18
End time: 2023-08-04 12:57:24

Start time: 2023-08-04 12:57:29
End time: 2023-08-04 12:57:36