



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

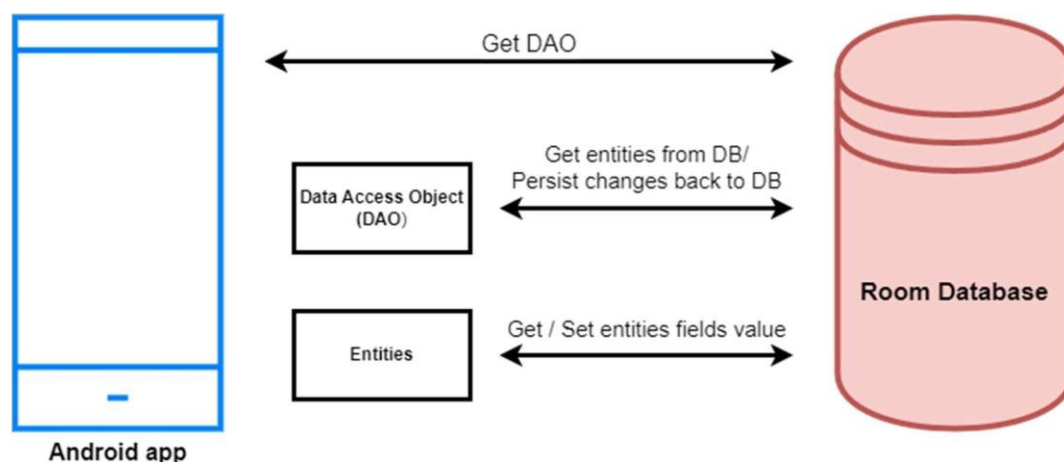
**Project Based Experiential Learning Program**

## 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



### 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 logs 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:

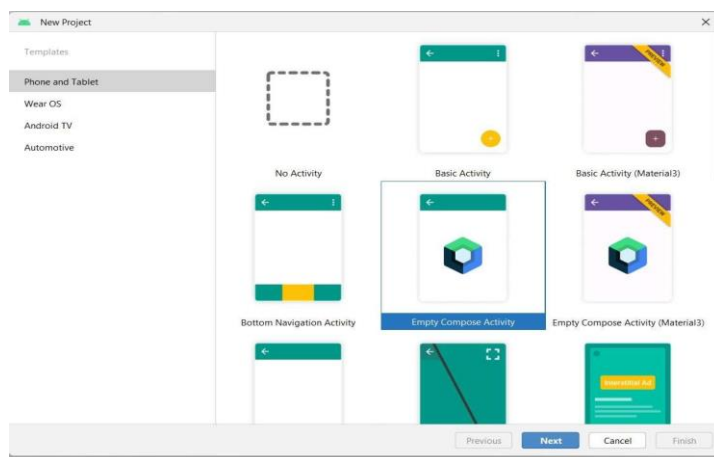
Required initial steps :

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

### Task 2 :

Creating a new project.

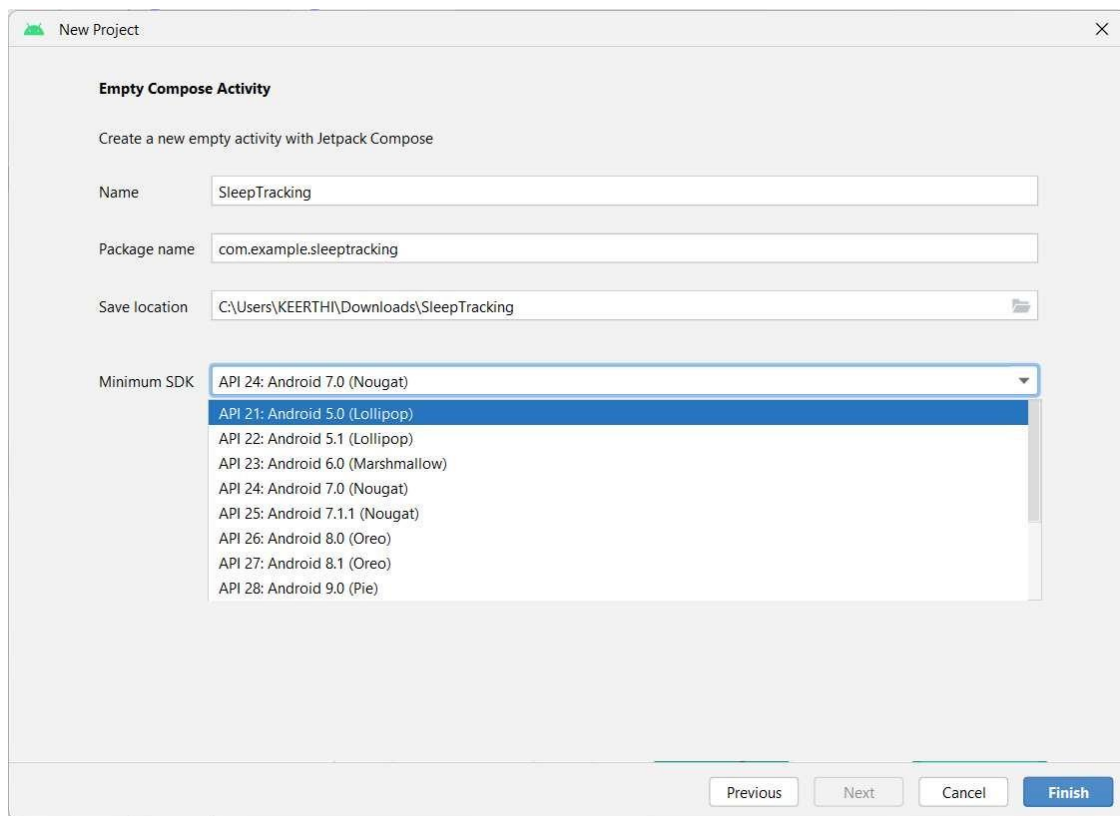
Step 1 : Android studio > File > New > New Project > Empty Compose Activity Step 2 : Click on Next button.



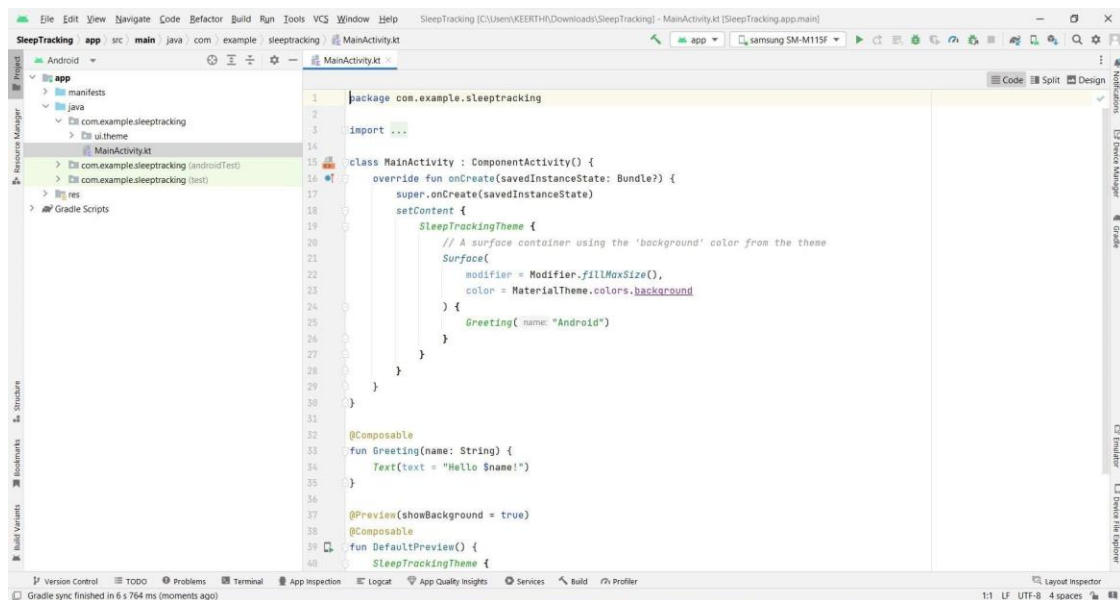
Step 3 : Give name to the new project.

Step 4 : Give the Minimum SDK value Step 5

: Click Finish



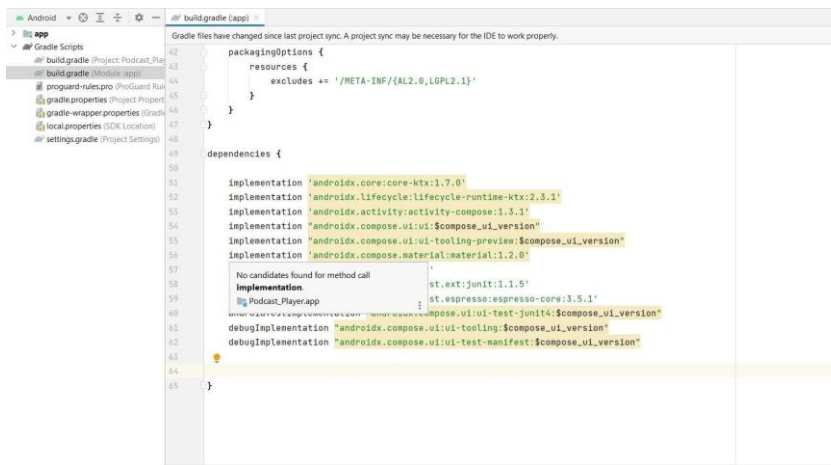
## Main activity file



## Task 3 :

Adding required dependencies.

Step 1 : Gradle scripts > build.gradle(Module :app)



Step 2 : Adding room dependencies.

Add the below code in dependencies

```
dependencies { this: DependencyHandlerScope
    implementation("androidx.core:core-ktx:1.9.0")
    implementation("androidx.lifecycle:lifecycle-runtime-ktx:2.6.1")
    implementation("androidx.activity:activity-compose:1.7.2")
    implementation(platform("androidx.compose:compose-bom:2023.03.00"))
    implementation("androidx.compose.ui:ui")
    implementation("androidx.compose.ui:ui-graphics")
    implementation("androidx.compose.ui:ui-tooling-preview")
    implementation("androidx.compose.material3:material3")
    testImplementation("junit:junit:4.13.2")
    androidTestImplementation("androidx.test.ext:junit:1.1.5")
    androidTestImplementation("androidx.test.espresso:espresso-core:3.5.1")
    androidTestImplementation(platform("androidx.compose:compose-bom:2023.03.00"))
    androidTestImplementation("androidx.compose.ui:ui-test-junit4")
    debugImplementation("androidx.compose.ui:ui-tooling")
    debugImplementation("androidx.compose.ui:ui-test-manifest")
}
```

Step 3 : Click on Sync now

Task 4:

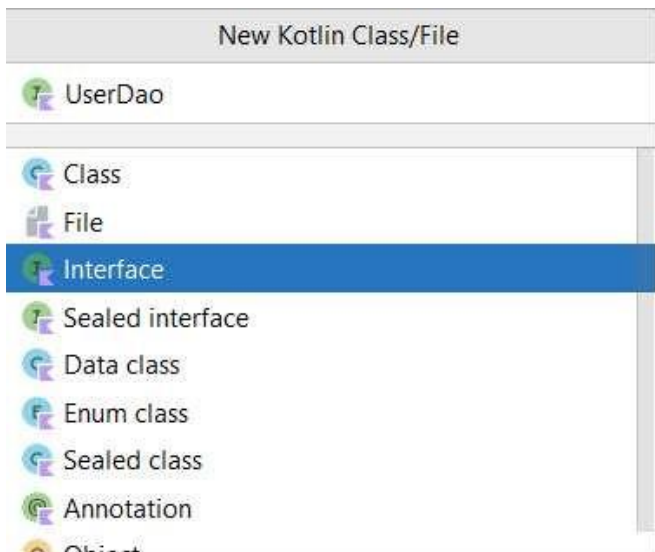
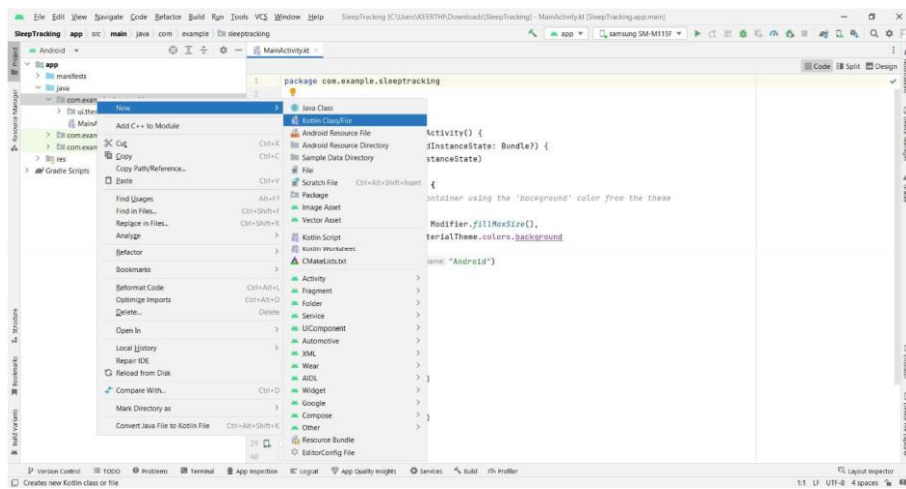
Creating the database classes.

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

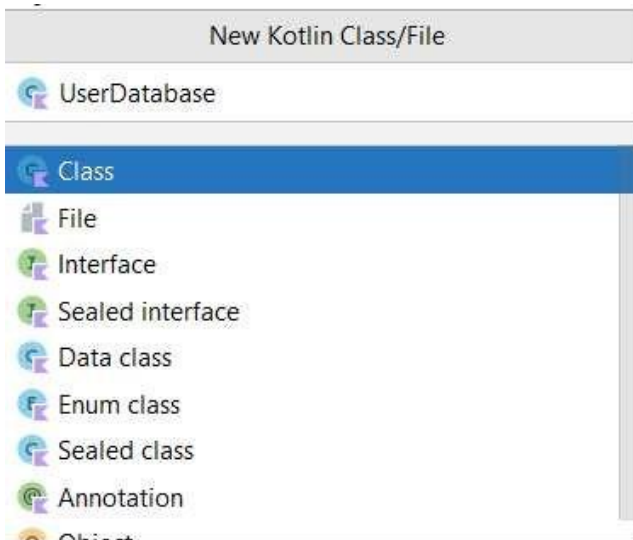
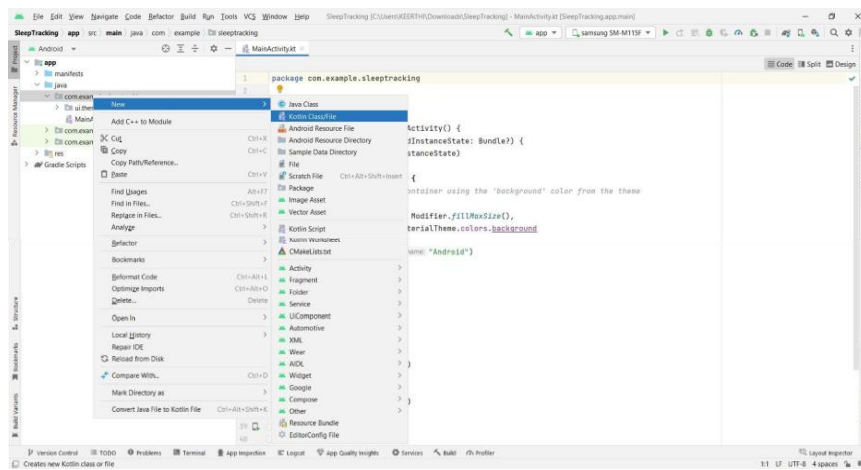




UserDao interface code:

<https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/java/com/example/sleeptracking/UserDao.kt>

Step 3 : Create an UserDatabase class

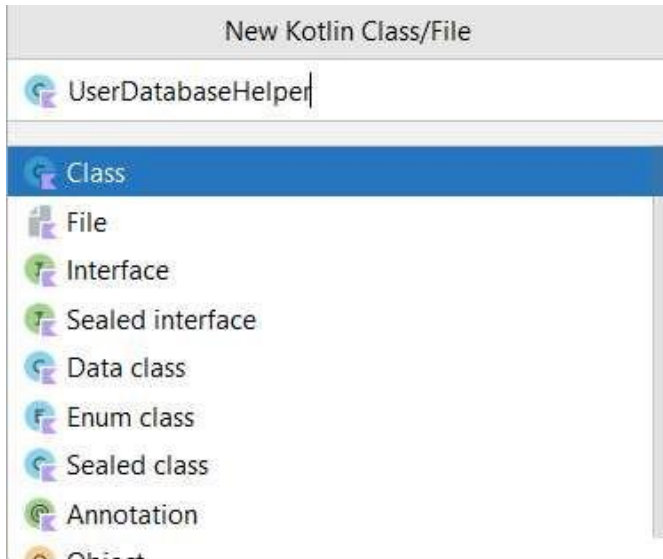
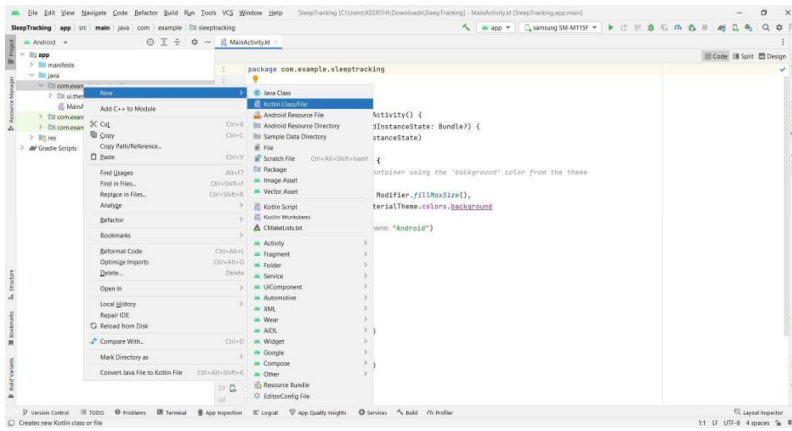


UserDatabase class code :

<https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/java/com/example/sleeptracking/UserDatabase.kt>

Step 4 : Create an UserDatabaseHelper class



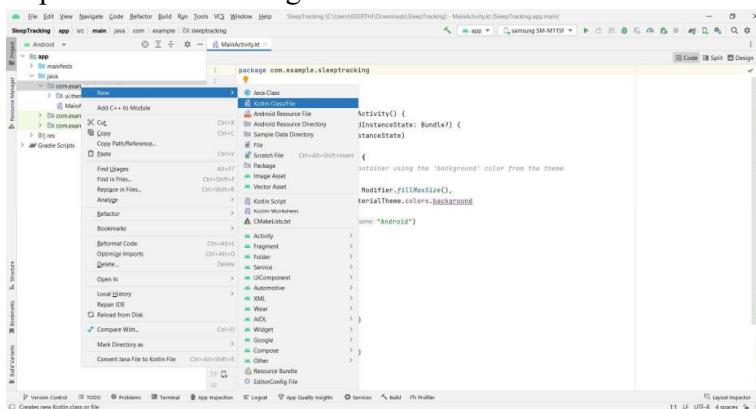


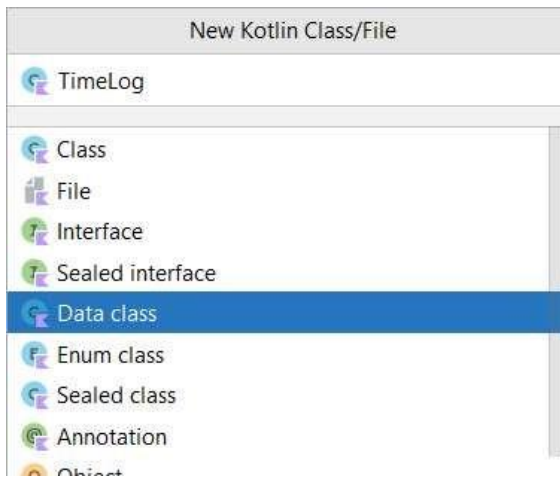
UserDatabaseHelper class code :

<https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/java/com/example/sleeptracking/UserDatabaseHelper.kt>

## Database 2

### Step 1 : Create TimeLog data class

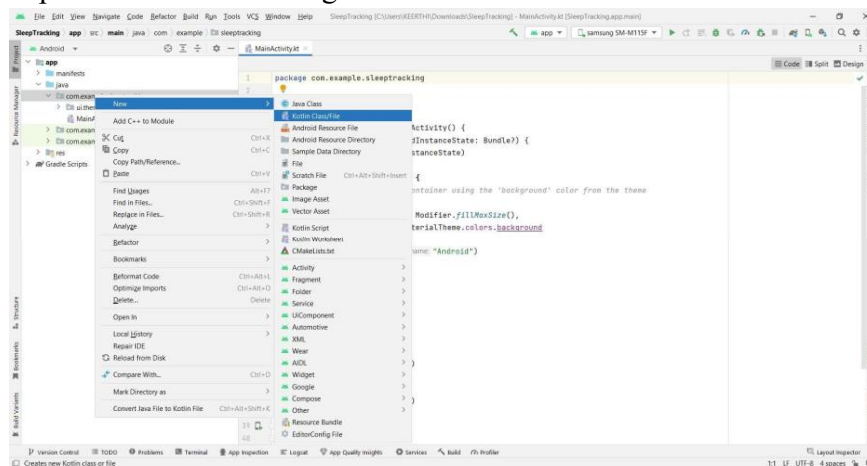


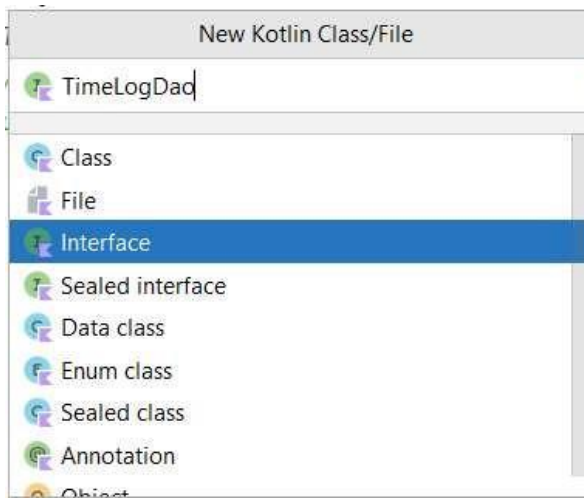


TimeLog data class code:

<https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/java/com/example/sleeptracking/TimeLog.kt>

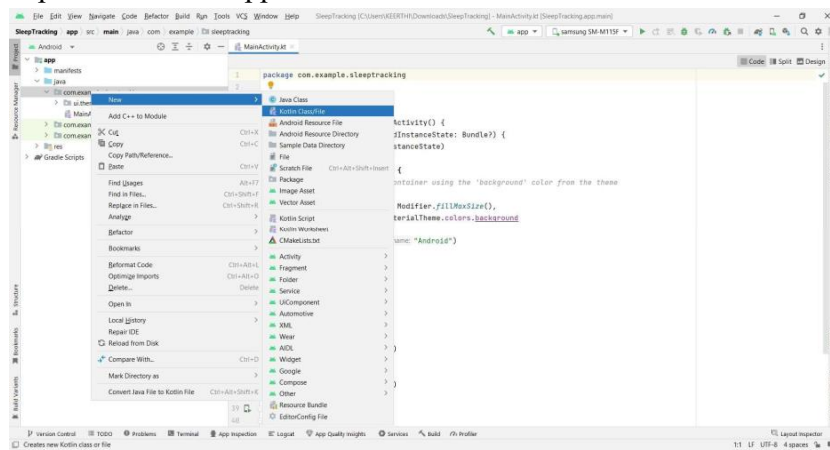
Step 2 : Create an TimeLogDao interface

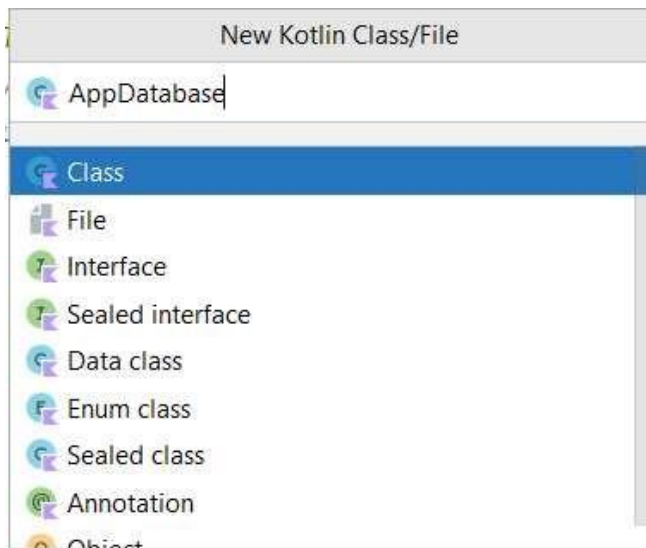




TimeLogDao interface code: <https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/java/com/example/sleeptracking/TimeLogDao.kt>

### Step 3 : Create an AppDatabase class

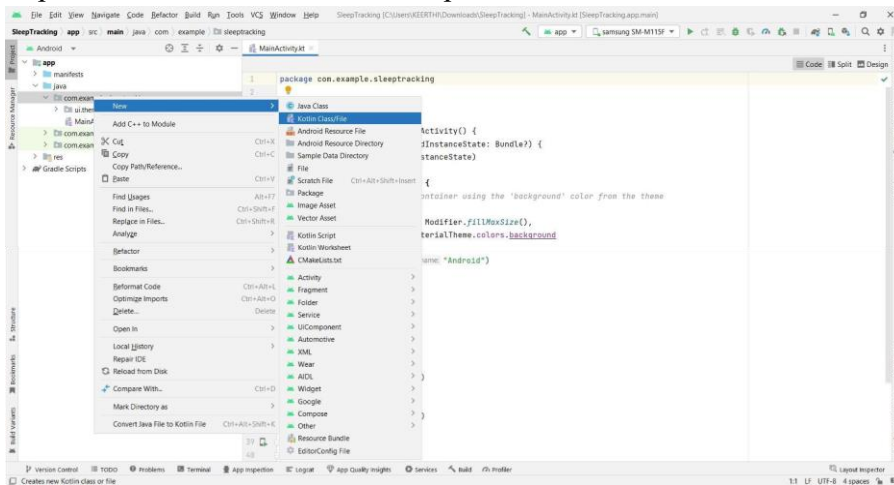


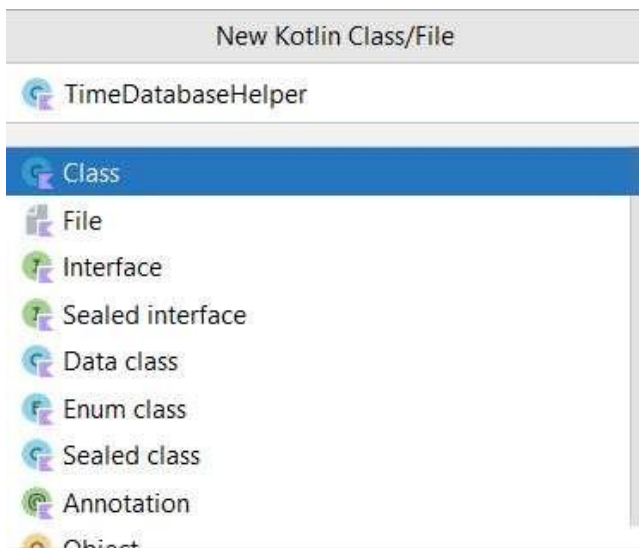


AppDatabase class code:

<https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/java/com/example/sleeptracking/UserDatabase.kt>

Step 4 : Create an TimeDatabaseHelper class





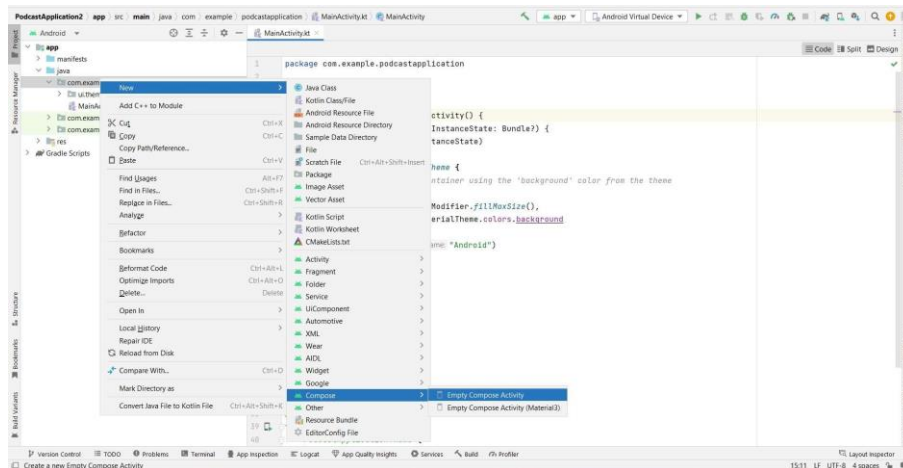
TimeDatabaseHelper class code:


<https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/java/com/example/sleeptracking/TimeDatabaseHelper.kt>

## Task 5:

Building application UI and connecting to database.

Step 1: Creating LoginActivity.kt with database



 New Android Activity ✕

**Empty Compose Activity**  
Create a new empty activity with Jetpack Compose

Activity Name

Package name

☐ Launcher Activity

Previous

Next

Cancel

Finish

Database connection in LoginActivity.kt:

```

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)
                }
            }
        }
    }
}

```

```

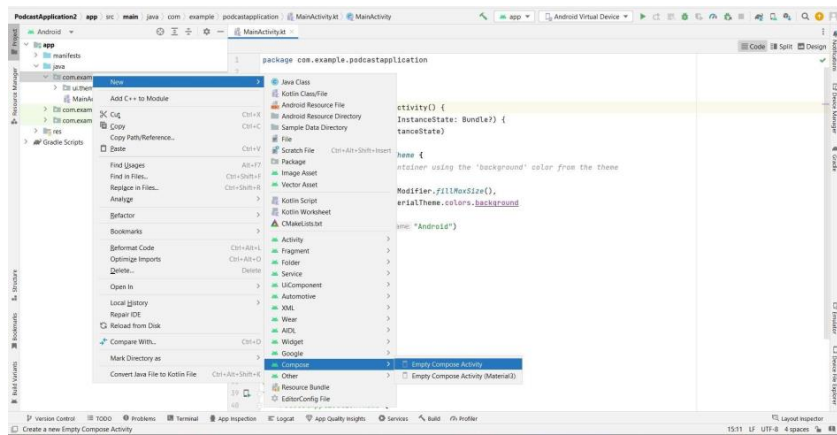
@Composable
fun LoginScreen(context: Context, databaseHelper: UserDatabaseHelper) {
    var username by remember { mutableStateOf( value: "") }
    var password by remember { mutableStateOf( value: "") }
    var error by remember { mutableStateOf( value: "") }
    val imageModifier = Modifier

```

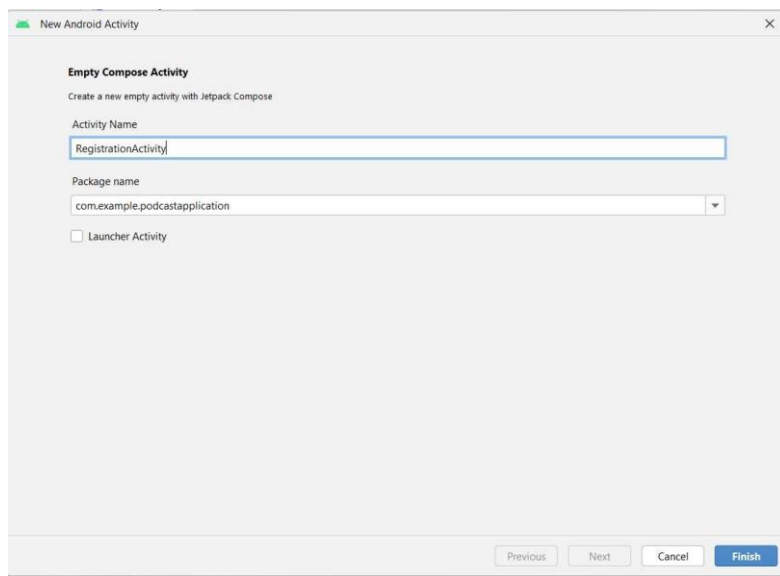
Complete code in below link:

<https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/java/com/example/sleeptracking/LoginActivity.kt>

Step 2 : Creating RegistrationActivity.kt with database







## Database connection in RegistrationActivity.kt

```
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("") }

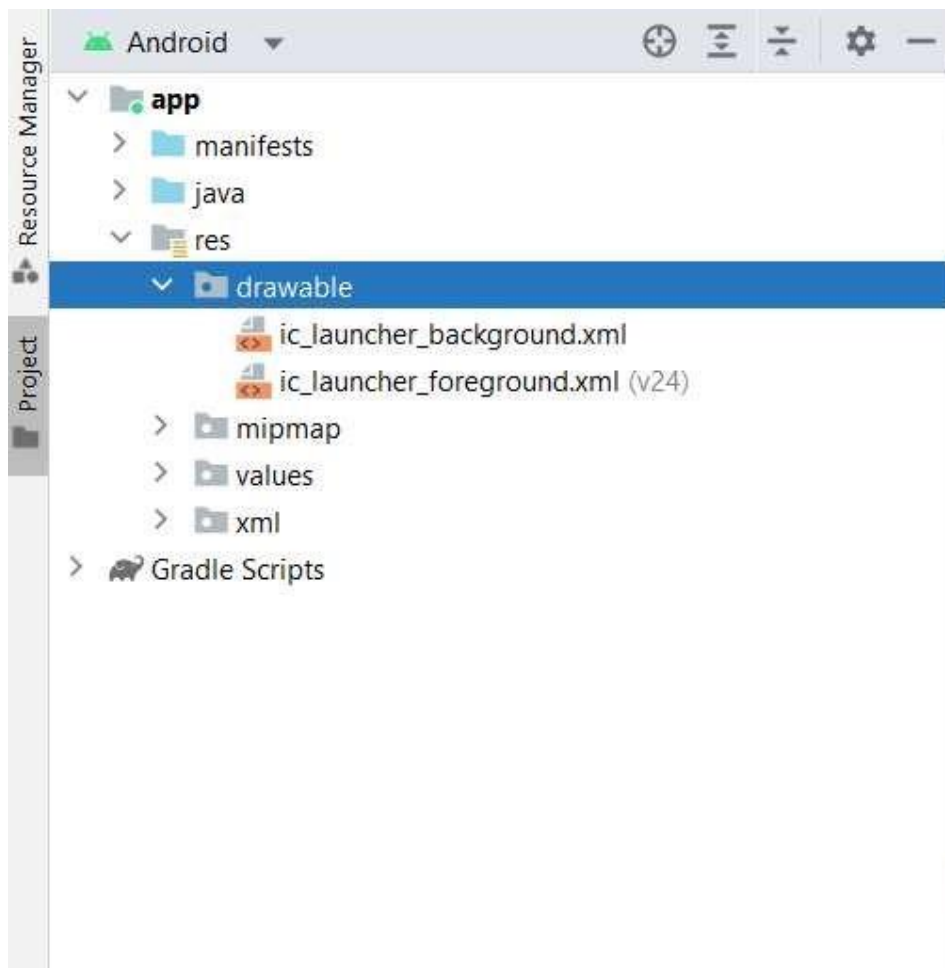
    val imageModifier = Modifier
    Image(
        painterResource(id = R.drawable.sleeptracking),
        contentScale = ContentScale.FillHeight,
        contentDescription = "",
    )
}
```

Complete code in below link: <https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/java/com/example/sleeptracking/RegistrationActivity.kt>

## Step 3 : Creating MainActivity.kt file

In MainActivity.kt file the main application is developed

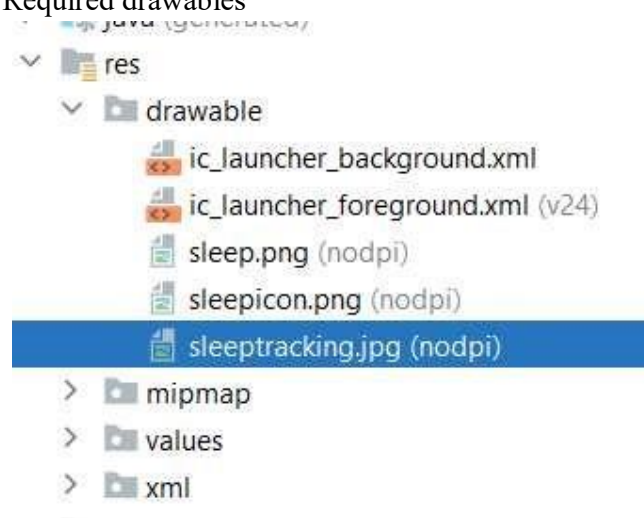
- Before creating UI we need to add some images in drawables which are in res



Download the required drawable from the code:

<https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/tree/master/app/src/main/res/drawable>

Required drawables



## MainActivity.kt

```
class MainActivity : ComponentActivity() {

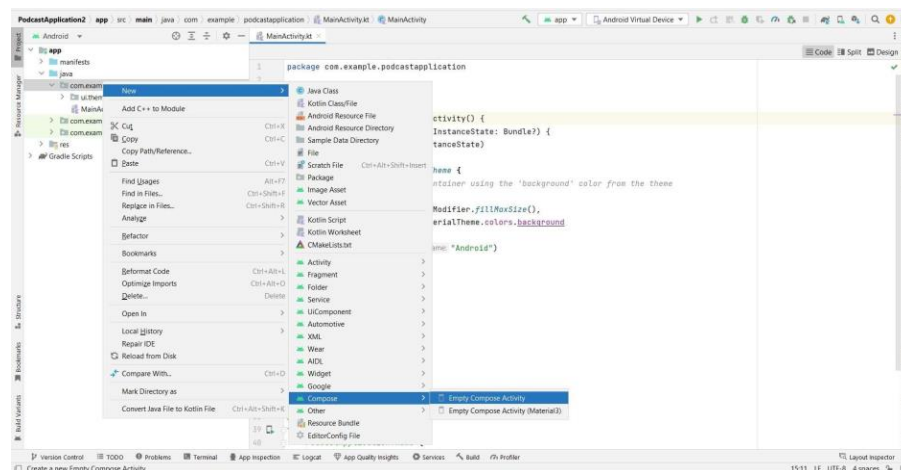
    private lateinit var databaseHelper: TimeLogDatabaseHelper

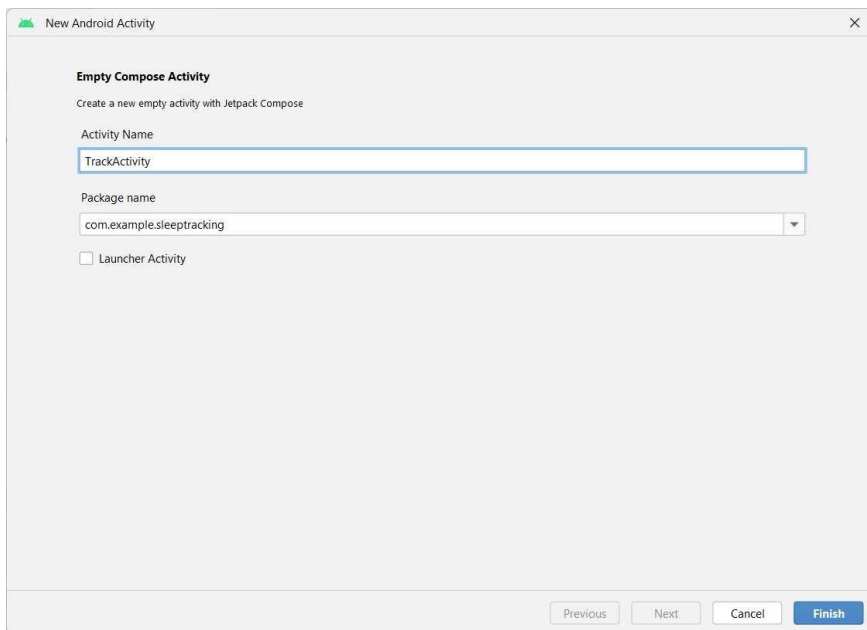
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        databaseHelper = TimeLogDatabaseHelper(this)
        databaseHelper.deleteAllData()
        setContent {
            ProjectOneTheme {
                // A surface container using the 'background' 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/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/java/com/example/sleeptracking/MainActivity.kt>

## Step 4 : Creating TrackActivity.kt file





## Database connection and fetching in TrackActivity.kt

```
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:

<https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/java/com/example/sleeptracking/TrackActivity.kt>

## Task 6:

### Modifying AndroidManifest.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:supportRtl="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.

```
<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:

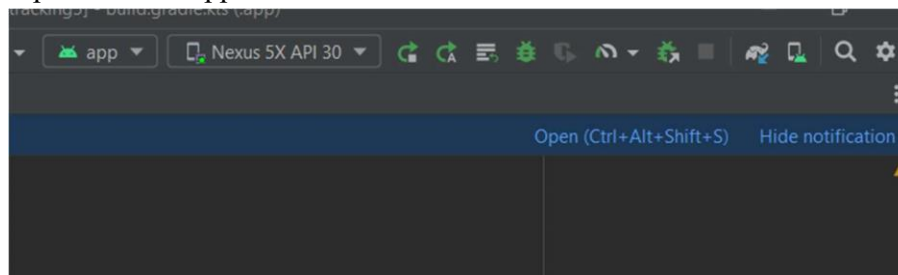
<https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest/blob/master/app/src/main/AndroidManifest.xml>

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

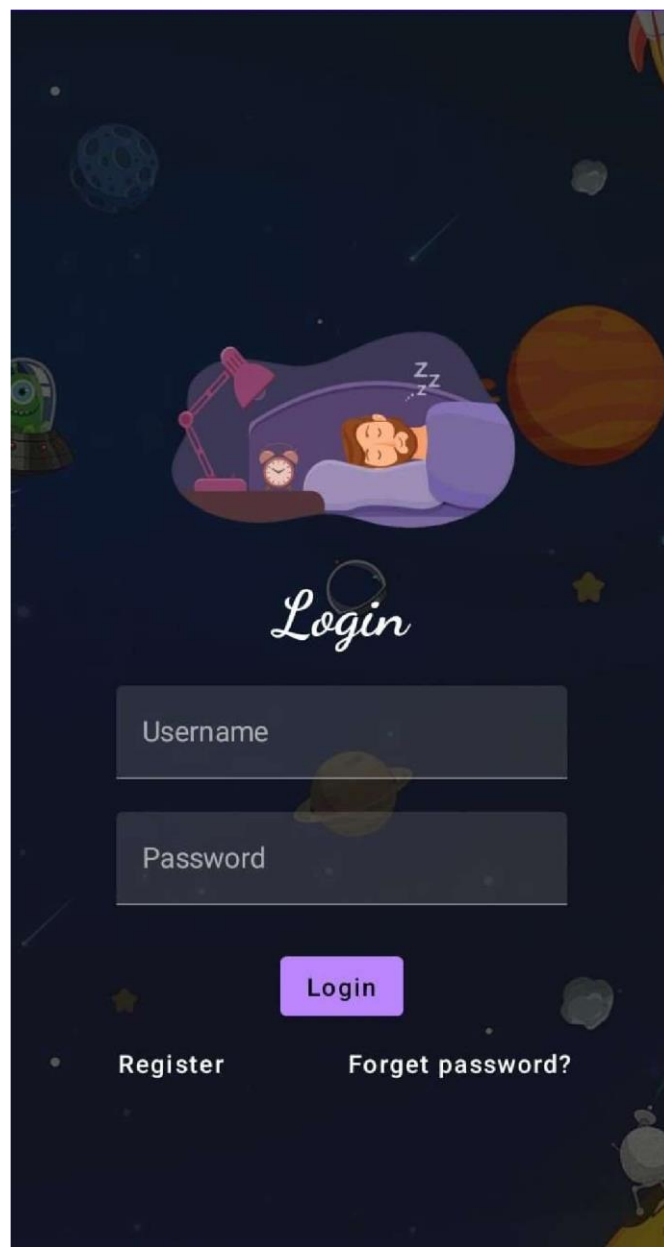


Complete Project Link: <https://github.com/udaykiranuday/A-Sleep-Tracking-App-For-A-Better-Night-s-Rest>

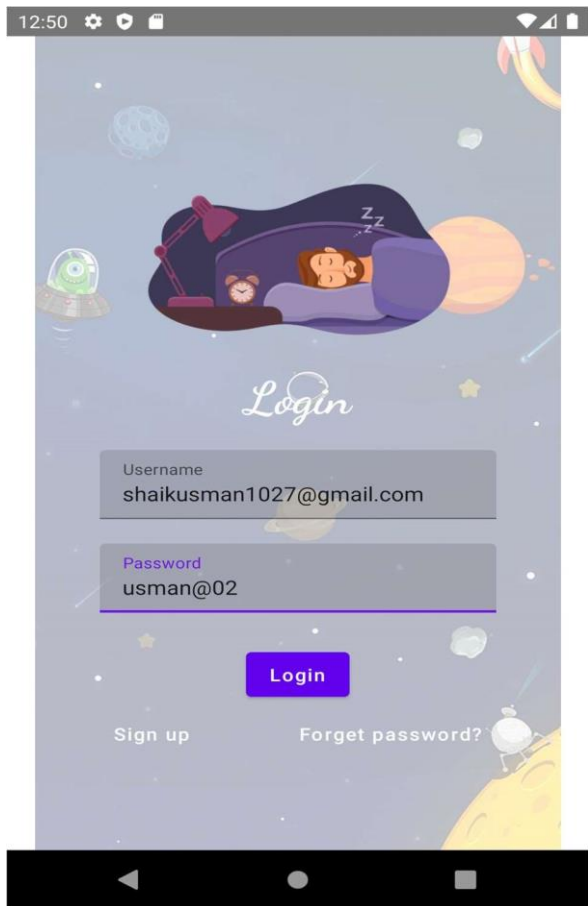
=

Final Output of the Application :

Login Page :

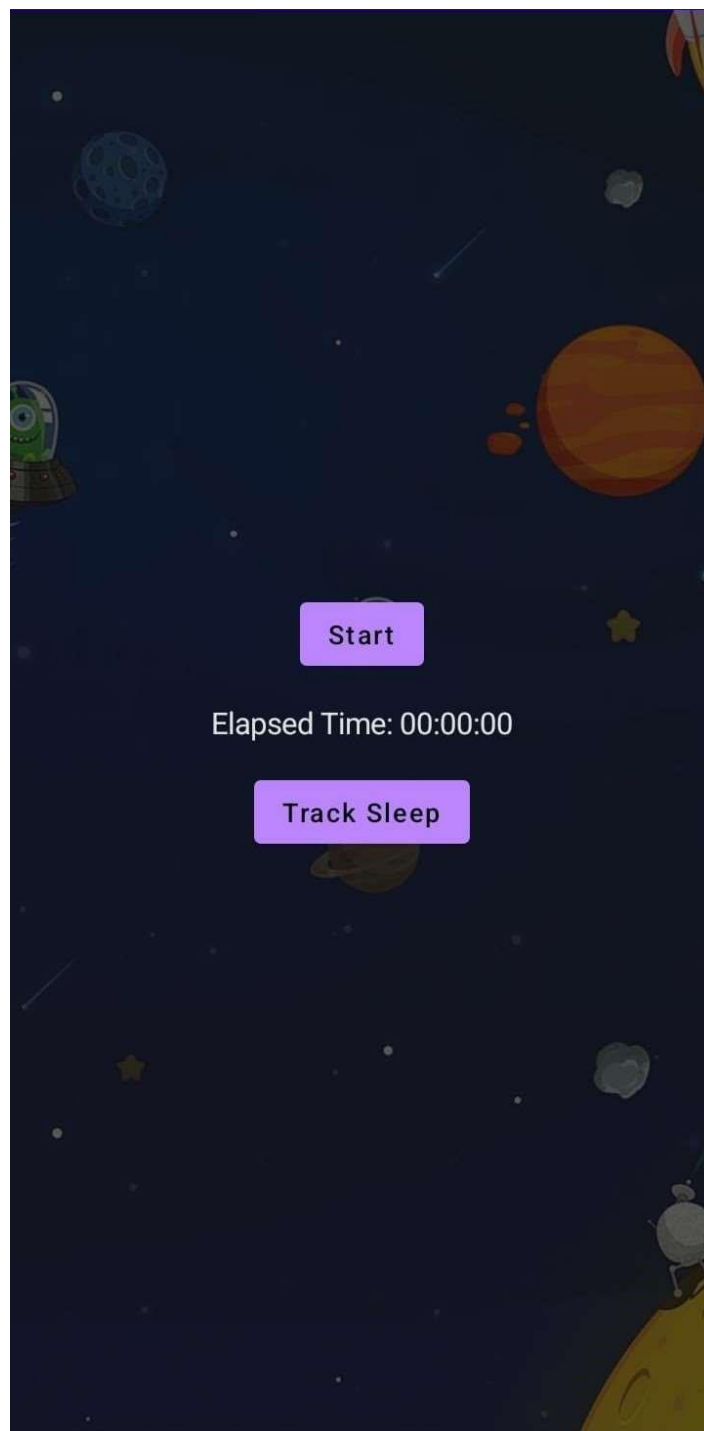


## Registration Page:



## Main Page:





Track Sleep Page:

