Android Application Development

A Sleep Tracking App for a Better Night's Rest

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CONTENT

A sleep tracking app for a better night's rest

1.PROJECT DESCRIPTION

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

2.PROJECT OBJECTIVE

The objective of the Sleep Tracker project is to design and develop an intuitive mobile application that enables users to monitor, assess, and improve their sleep quality. The app aims to provide a straightforward interface for tracking sleep duration, rating sleep quality, and generating meaningful insights into the user's sleep patterns. By offering detailed, data-driven feedback and analysis, the Sleep Tracker app empowers users to establish healthier sleep habits, recognize factors impacting their rest, and ultimately achieve a more consistent and restful sleep. The project seeks to enable users to start a sleep timer at bedtime and stop it upon waking, capturing precise sleep duration and to allow users to rate their sleep quality each morning to reflect on their sleep experience and to store and display historical sleep data, providing insights into trends over days and weeks and to utilize a modern, responsive UI built with Jetpack Compose to enhance usability and accessibility and to provide users with

sleep pattern analysis to support informed decisions about improving sleep hygiene and overall well-being. Ultimately, the Sleep Tracker app aims to promote better sleep habits, leading to enhanced mental and physical health for its users.

3.REQUIREMETS:

3.1 SOFTWARE REQUIREMENTS

- **Operating System:** Windows 10, macOS, or Linux
- **Android Studio:** Latest stable version with Jetpack Compose support
- **Programming Language:** Kotlin
- **Database:** Room Database (for storing sleep data locally)
- **Development Kit:** Android SDK 23 (Marshmallow) or higher
- **Build Tool:** Gradle 7.0 or higher

3.2 HARDWARE REQUIREMENTS

- **Processor:** Minimum Intel i3 or AMD equivalent (i5/i7 recommended for smoother performance)
- **RAM:** 8 GB minimum (16 GB recommended)
- **Storage:** At least 4 GB of free space for Android Studio and Android SDK
- **Screen Resolution:** 1280 x 800 or higher (for better layout in Android Studio)

Android Device or Emulator: Android 6.0 (Marshmallow) or higher for testing

4.TOOLS AND VERSION

1. **Android Studio:** Arctic Fox (2020.3.1) or higher, with support for Jetpack Composes

2. **Kotlin Version:** 1.5.0 or higher
3. **Jetpack Compose:** 1.0.0 or higher (recommended to use the latest stable release)
4. **Gradle Version:** 7.0 or higher
5. **Room Database Library:** Version 2.4.0 or higher
6. **Coroutines:** Version 1.5.0 or higher for asynchronous tasks
7. **Navigation Component (Compose):** Version 2.4.0-alpha or higher for navigating between screens

5.PROGRAM

LoginActivity.kt

```
package com.example.projectone

import android.content.Context

import android.content.Intent

import android.os.Bundle

import androidx.activity.ComponentActivity

import androidx.activity.compose.setContent

import androidx.compose.foundation.Image

import androidx.compose.foundation.layout.*

import androidx.compose.material.*

import androidx.compose.runtime.*

import androidx.compose.ui.Alignment

import androidx.compose.ui.Modifier

import androidx.compose.ui.draw.alpha

import androidx.compose.ui.graphics.Color
```

```
import androidx.compose.ui.layout.ContentScale
import androidx.compose.ui.res.painterResource
import androidx.compose.ui.text.font.FontFamily
import androidx.compose.ui.text.font.FontWeight
import androidx.compose.ui.unit.dp
import androidx.compose.ui.unit.sp
import androidx.core.content.ContextCompat
import com.example.projectone.ui.theme.ProjectOneTheme
class LoginActivity : 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
                ) {
                    LoginScreen(this, databaseHelper)
                }
            }
        }
    }
```

```
}
@Composable
fun LoginScreen(context: Context, databaseHelper: UserDatabaseHelper) {
    var username by remember { mutableStateOf("") }
    var password by remember { mutableStateOf("") }
    var error by remember { mutableStateOf("") }
    val imageModifier = Modifier
    Image(
        painterResource(id = R.drawable.sleeptracking)
        contentScale = ContentScale.FillHeight,
        contentDescription = "",
        modifier = imageModifier
            .alpha(0.3F),
    )
    Column(
        modifier = Modifier.fillMaxSize(),
        horizontalAlignment = Alignment.CenterHorizontally,
        verticalArrangement = Arrangement.Center
    ) {
        Image(
            painter = painterResource(id = R.drawable.sleep),
            contentDescription = "",
            modifier = imageModifier
                .width(260.dp)
                .height(200.dp)
```

```
)
Text(
    fontSize = 36.sp,
    fontWeight = FontWeight.ExtraBold,
    fontFamily = FontFamily.Cursive,
    color = Color.White,
    text = "Login"
)
Spacer(modifier = Modifier.height(10.dp))
TextField(
    value = username,
    onValueChange = { username = it },
    label = { Text("Username") },
    modifier = Modifier.padding(10.dp)
        .width(280.dp)
)
TextField(
    value = password,
    onValueChange = { password = it },
    label = { Text("Password") },
    modifier = Modifier.padding(10.dp)
        .width(280.dp)
)
if (error.isNotEmpty()) {
    Text(
```

```
            text = error,
            color = MaterialTheme.colors.error,
            modifier = Modifier.padding(vertical = 16.dp)
        )
    }
    Button(
        onClick = {
            if (username.isNotEmpty() && password.isNotEmpty()) {
                val user = databaseHelper.getUserByUsername(username)
                if (user != null && user.password == password) {
                    error = "Successfully log in"
                    context.startActivity(
                        Intent(
                            context,
                            MainActivity::class.java
                        )
                    )
                    //onLoginSuccess()
                } else {
                    error = "Invalid username or password"
                }
            } else {
                error = "Please fill all fields"
            }
        },
```

```
    modifier = Modifier.padding(top = 16.dp)
) {
    Text(text = "Login")
}
Row {
    TextButton(onClick = {context.startActivity(
        Intent(
            context,
            MainActivity2::class.java
        )
    )}
    )
    { Text(color = Color.White,text = "Sign up") }
    TextButton(onClick = {
        /*startActivity(
        Intent(
            applicationContext,
            MainActivity2::class.java
        )
    )*/
    })
    {
        Spacer(modifier = Modifier.width(60.dp))
        Text(color = Color.White,text = "Forget password?")
    }
```

```
        }
    }
}
private fun startMainPage(context: Context) {
    val intent = Intent(context, MainActivity2::class.java)
    ContextCompat.startActivity(context, intent, null)
}
```

RegisterActivity.kt

```
package com.example.projectone
import android.content.Context
import android.content.Intent
import android.os.Bundle
import androidx.activity.ComponentActivity
import androidx.activity.compose.setContent
import androidx.compose.foundation.Image
import androidx.compose.foundation.layout.*
import androidx.compose.material.*
import androidx.compose.runtime.*
import androidx.compose.ui.Alignment
import androidx.compose.ui.Modifier
import androidx.compose.ui.draw.alpha
import androidx.compose.ui.graphics.Color
import androidx.compose.ui.layout.ContentScale
```

```
import androidx.compose.ui.res.painterResource
import androidx.compose.ui.text.font.FontFamily
import androidx.compose.ui.text.font.FontWeight
import androidx.compose.ui.unit.dp
import androidx.compose.ui.unit.sp
import androidx.core.content.ContextCompat
import com.example.projectone.ui.theme.ProjectOneTheme
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 = "",
        modifier = imageModifier
            .alpha(0.3F),
    )
    Column(
        modifier = Modifier.fillMaxSize(),
        horizontalAlignment = Alignment.CenterHorizontally,
        verticalArrangement = Arrangement.Center
    ) {
        Image(
            painter = painterResource(id = R.drawable.sleep),
            contentDescription = "",


            modifier = imageModifier
                .width(260.dp)
```

```
        .height(200.dp)
    )
    Text(
        fontSize = 36.sp,
        fontWeight = FontWeight.ExtraBold,
        fontFamily = FontFamily.Cursive,
        color = Color.White,
        text = "Register"
    )

    Spacer(modifier = Modifier.height(10.dp))
    TextField(
        value = username,
        onValueChange = { username = it },
        label = { Text("Username") },
        modifier = Modifier
            .padding(10.dp)
            .width(280.dp)

    )

    TextField(
        value = email,
        onValueChange = { email = it },
        label = { Text("Email") },
```

```
    modifier = Modifier
        .padding(10.dp)
        .width(280.dp)
)

TextField(
    value = password,
    onValueChange = { password = it },
    label = { Text("Password") },
    modifier = Modifier
        .padding(10.dp)
        .width(280.dp)
)



if (error.isNotEmpty()) {
    Text(
        text = error,
        color = MaterialTheme.colors.error,
        modifier = Modifier.padding(vertical = 16.dp)
    )
}

Button(
    onClick = {
```

```
            if (username.isNotEmpty() && password.isNotEmpty() && email.isNotEmpty()) {
                val user = User(
                    id = null,
                    firstName = username,
                    lastName = null,
                    email = email,
                    password = password
                )
                databaseHelper.insertUser(user)
                error = "User registered successfully"
                // Start LoginActivity using the current context
                context.startActivity(
                    Intent(
                        context,
                        LoginActivity::class.java
                    )
                )

            } else {
                error = "Please fill all fields"
            }
        },
        modifier = Modifier.padding(top = 16.dp)
    ) {
        Text(text = "Register")
```

```
        }
        Spacer(modifier = Modifier.width(10.dp))
        Spacer(modifier = Modifier.height(10.dp))

        Row() {
            Text(
                modifier = Modifier.padding(top = 14.dp), text = "Have an account?"
            )
            TextButton(onClick = {

            })

            {
                Spacer(modifier = Modifier.width(10.dp))
                Text(text = "Log in")
            }
        }
    }
}
private fun startLoginActivity(context: Context) {
    val intent = Intent(context, LoginActivity::class.java)
    ContextCompat.startActivity(context, intent, null)
}
```

TimeDatabaseHelper.kt

```
package com.example.projectone


import android.annotation.SuppressLint

import android.content.ContentValues

import android.content.Context

import android.database.Cursor

import android.database.sqlite.SQLiteDatabase

import android.database.sqlite.SQLiteOpenHelper

import java.util.*


class TimeLogDatabaseHelper(context: Context) : SQLiteOpenHelper(context, DATABASE_NAME, null,
DATABASE_VERSION) {

    companion object {

        private const val DATABASE_NAME = "timelog.db"

        private const val DATABASE_VERSION = 1

        const val TABLE_NAME = "time_logs"

        private const val COLUMN_ID = "id"

        const val COLUMN_START_TIME = "start_time"

        const val COLUMN_END_TIME = "end_time"


        // Database creation SQL statement

        private const val DATABASE_CREATE =

            "create table $TABLE_NAME ($COLUMN_ID integer primary key autoincrement, " +

                    "$COLUMN_START_TIME integer not null, $COLUMN_END_TIME integer);"

    }
```

```
override fun onCreate(db: SQLiteDatabase?) {
    db?.execSQL(DATABASE_CREATE)
}

override fun onUpgrade(db: SQLiteDatabase?, oldVersion: Int, newVersion: Int) {
    db?.execSQL("DROP TABLE IF EXISTS $TABLE_NAME")
    onCreate(db)
}

// function to add a new time log to the database
fun addTimeLog(startTime: Long, endTime: Long) {
    val values = ContentValues()
    values.put(COLUMN_START_TIME, startTime)
    values.put(COLUMN_END_TIME, endTime)
    writableDatabase.insert(TABLE_NAME, null, values)
}

// function to get all time logs from the database
@SuppressLint("Range")
fun getTimeLogs(): List<TimeLog> {
    val timeLogs = mutableListOf<TimeLog>()
    val cursor = readableDatabase.rawQuery("select * from $TABLE_NAME", null)
    cursor.moveToFirst()
    while (!cursor.isAfterLast) {
        val id = cursor.getInt(cursor.getColumnIndex(COLUMN_ID))
```

```
            val startTime = cursor.getLong(cursor.getColumnIndex(COLUMN_START_TIME))
            val endTime = cursor.getLong(cursor.getColumnIndex(COLUMN_END_TIME))
            timeLogs.add(TimeLog(id, startTime, endTime))
            cursor.moveToNext()
        }
        cursor.close()
        return timeLogs
    }

    fun deleteAllData() {
        writableDatabase.execSQL("DELETE FROM $TABLE_NAME")
    }

    fun getAllData(): Cursor? {
        val db = this.writableDatabase
        return db.rawQuery("select * from $TABLE_NAME", null)
    }

    data class TimeLog(val id: Int, val startTime: Long, val endTime: Long?) {
        fun getFormattedStartTime(): String {
            return Date(startTime).toString()
        }

        fun getFormattedEndTime(): String {
            return endTime?.let { Date(it).toString() } ?: "not ended"
```

```
        }
    }
}
```

TimeLog.kt

```
package com.example.projectone

import androidx.room.Entity
import androidx.room.PrimaryKey
import java.sql.Date

@Entity(tableName = "TimeLog")
data class TimeLog(
    @PrimaryKey(autoGenerate = true)
    val id: Int = 0,
    val startTime: Date,
    val stopTime: Date
)
```

TimeLogDao.kt

```
package com.example.projectone

import androidx.room.Dao
import androidx.room.Insert
```

```
@Dao
interface TimeLogDao {
    @Insert
    suspend fun insert(timeLog: TimeLog)

}
```

TrackActivity.kt

```
package com.example.projectone

import android.icu.text.SimpleDateFormat
import android.os.Bundle
import android.util.Log
import androidx.activity.ComponentActivity
import androidx.activity.compose.setContent
import androidx.compose.foundation.Image
import androidx.compose.foundation.layout.*
import androidx.compose.foundation.lazy.LazyColumn
import androidx.compose.foundation.lazy.LazyRow
import androidx.compose.foundation.lazy.items
import androidx.compose.material.MaterialTheme
import androidx.compose.material.Surface
import androidx.compose.material.Text
import androidx.compose.runtime.Composable
```

```
import androidx.compose.ui.Modifier
import androidx.compose.ui.draw.alpha
import androidx.compose.ui.graphics.Color
import androidx.compose.ui.layout.ContentScale
import androidx.compose.ui.res.painterResource
import androidx.compose.ui.unit.dp
import androidx.compose.ui.unit.sp
import com.example.projectone.ui.theme.ProjectOneTheme
import java.util.*

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(
        painterResource(id = R.drawable.sleeptracking),
        contentScale = ContentScale.FillHeight,
        contentDescription = "",
        modifier = imageModifier
            .alpha(0.3F),
    )


    Text(text = "Sleep Tracking", modifier = Modifier.padding(top = 16.dp, start = 106.dp ), color = Color.White, fontSize = 24.sp)
```

```
    Spacer(modifier = Modifier.height(30.dp))
    LazyRow(
        modifier = Modifier
            .fillMaxSize()
            .padding(top = 56.dp),

        horizontalArrangement = Arrangement.SpaceBetween
    ){
        item {

            LazyColumn {
                items(timeLogs) { timeLog ->
                    Column(modifier = Modifier.padding(16.dp)) {
                        //Text("ID: ${timeLog.id}")
                        Text("Start time: ${formatDateTime(timeLog.startTime)}")
                        Text("End time: ${timeLog.endTime?.let { formatDateTime(it) }}")
                    }
                }
            }
        }

        }
    }

private fun formatDateTime(timestamp: Long): String {
```

```
    val dateFormat = SimpleDateFormat("yyyy-MM-dd HH:mm:ss", Locale.getDefault())
    return dateFormat.format(Date(timestamp))
}
```

MainActivity.kt

```
package com.example.projectone

import android.content.Context
import android.content.Intent
import android.icu.text.SimpleDateFormat
import android.os.Bundle
import androidx.activity.ComponentActivity
import androidx.activity.compose.setContent
import androidx.compose.foundation.Image
import androidx.compose.foundation.layout.*
import androidx.compose.material.Button
import androidx.compose.material.MaterialTheme
import androidx.compose.material.Surface
import androidx.compose.material.Text
import androidx.compose.runtime.*
import androidx.compose.ui.Alignment
import androidx.compose.ui.Modifier
import androidx.compose.ui.draw.alpha
import androidx.compose.ui.layout.ContentScale
import androidx.compose.ui.res.painterResource
```

```
import androidx.compose.ui.unit.dp
import androidx.core.content.ContextCompat
import com.example.projectone.ui.theme.ProjectOneTheme
import java.util.*

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),
    )

    Column(
        modifier = Modifier.fillMaxSize(),
        horizontalAlignment = Alignment.CenterHorizontally,
        verticalArrangement = Arrangement.Center
    ) {
        if (!isRunning) {
            Button(onClick = {
                startTime = System.currentTimeMillis()
                isRunning = true
            }) {
```

```
            Text("Start")
            //databaseHelper.addTimeLog(startTime)
        }
    } else {
        Button(onClick = {
            elapsedTime = System.currentTimeMillis()
            isRunning = false
        }) {
            Text("Stop")
            databaseHelper.addTimeLog(elapsedTime,startTime)
        }
    }
    Spacer(modifier = Modifier.height(16.dp))
    Text(text = "Elapsed Time: ${formatTime(elapsedTime - startTime)}")



    Spacer(modifier = Modifier.height(16.dp))
    Button(onClick = { context.startActivity(
        Intent(
            context,
            TrackActivity::class.java
        )
    ) }) {
        Text(text = "Track Sleep")
    }
```

```
    }

}

private fun startTrackActivity(context: Context) {
    val intent = Intent(context, TrackActivity::class.java)
    ContextCompat.startActivity(context, intent, null)
}
fun getCurrentDateTime(): String {
    val dateFormat = SimpleDateFormat("yyyy-MM-dd HH:mm:ss", Locale.getDefault())
    val currentTime = System.currentTimeMillis()
    return dateFormat.format(Date(currentTime))
}

fun formatTime(timeInMillis: Long): String {
    val hours = (timeInMillis / (1000 * 60 * 60)) % 24
    val minutes = (timeInMillis / (1000 * 60)) % 60
    val seconds = (timeInMillis / 1000) % 60
    return String.format("%02d:%02d:%02d", hours, minutes, seconds)
}
```

AppDatabase.kt

```
package com.example.projectone
```

```
import android.content.Context
import androidx.room.Database
import androidx.room.Room
import androidx.room.RoomDatabase

@Database(entities = [TimeLog::class], version = 1, exportSchema = false)
abstract class AppDatabase : RoomDatabase() {

    abstract fun timeLogDao(): TimeLogDao

    companion object {
        private var INSTANCE: AppDatabase? = null

        fun getDatabase(context: Context): AppDatabase {
            val tempInstance = INSTANCE
            if (tempInstance != null) {
                return tempInstance
            }
            synchronized(this) {
                val instance = Room.databaseBuilder(
                    context.applicationContext,
                    AppDatabase::class.java,
                    "app_database"
                ).build()
                INSTANCE = instance
```

```
                return instance
            }
        }
    }
}
```

User.kt

```
package com.example.projectone

import androidx.room.ColumnInfo
import androidx.room.Entity
import androidx.room.PrimaryKey

@Entity(tableName = "user_table")
data class User(
    @PrimaryKey(autoGenerate = true) val id: Int?,
    @ColumnInfo(name = "first_name") val firstName: String?,
    @ColumnInfo(name = "last_name") val lastName: String?,
    @ColumnInfo(name = "email") val email: String?,
    @ColumnInfo(name = "password") val password: String?,

    )
```

UserDao.kt

```
package com.example.projectone
```

```
import androidx.room.*

@Dao
interface UserDao {

    @Query("SELECT * FROM user_table WHERE email = :email")
    suspend fun getUserByEmail(email: String): User?

    @Insert(onConflict = OnConflictStrategy.REPLACE)
    suspend fun insertUser(user: User)

    @Update
    suspend fun updateUser(user: User)

    @Delete
    suspend fun deleteUser(user: User)
}
```

UserDatabase.kt

```
package com.example.projectone

import android.content.Context
import androidx.room.Database
import androidx.room.Room
```

```
import androidx.room.RoomDatabase

@Database(entities = [User::class], version = 1)
abstract class UserDatabase : RoomDatabase() {

    abstract fun userDao(): UserDao

    companion object {

        @Volatile
        private var instance: UserDatabase? = null

        fun getDatabase(context: Context): UserDatabase {
            return instance ?: synchronized(this) {
                val newInstance = Room.databaseBuilder(
                    context.applicationContext,
                    UserDatabase::class.java,
                    "user_database"
                ).build()
                instance = newInstance
                newInstance
            }
        }
    }
}
```

UserDatabaseHelper.kt

```
package com.example.projectone


import android.annotation.SuppressLint
import android.content.ContentValues
import android.content.Context
import android.database.Cursor
import android.database.sqlite.SQLiteDatabase
import android.database.sqlite.SQLiteOpenHelper


class UserDatabaseHelper(context: Context) :
    SQLiteOpenHelper(context, DATABASE_NAME, null, DATABASE_VERSION) {


    companion object {
        private const val DATABASE_VERSION = 1
        private const val DATABASE_NAME = "UserDatabase.db"


        private const val TABLE_NAME = "user_table"
        private const val COLUMN_ID = "id"
        private const val COLUMN_FIRST_NAME = "first_name"
        private const val COLUMN_LAST_NAME = "last_name"
        private const val COLUMN_EMAIL = "email"
        private const val COLUMN_PASSWORD = "password"
    }
```

```
override fun onCreate(db: SQLiteDatabase?) {
    val createTable = "CREATE TABLE $TABLE_NAME (" +
            "$COLUMN_ID INTEGER PRIMARY KEY AUTOINCREMENT, " +
            "$COLUMN_FIRST_NAME TEXT, " +
            "$COLUMN_LAST_NAME TEXT, " +
            "$COLUMN_EMAIL TEXT, " +
            "$COLUMN_PASSWORD TEXT" +
            ")"

    db?.execSQL(createTable)
}

override fun onUpgrade(db: SQLiteDatabase?, oldVersion: Int, newVersion: Int) {
    db?.execSQL("DROP TABLE IF EXISTS $TABLE_NAME")
    onCreate(db)
}

fun insertUser(user: User) {
    val db = writableDatabase
    val values = ContentValues()
    values.put(COLUMN_FIRST_NAME, user.firstName)
    values.put(COLUMN_LAST_NAME, user.lastName)
    values.put(COLUMN_EMAIL, user.email)
    values.put(COLUMN_PASSWORD, user.password)
```

```
        db.insert(TABLE_NAME, null, values)
        db.close()
    }

    @SuppressLint("Range")
    fun getUserByUsername(username: String): User? {
        val db = readableDatabase
        val cursor: Cursor = db.rawQuery("SELECT * FROM $TABLE_NAME WHERE $COLUMN_FIRST_NAME = ?", arrayOf(username))
        var user: User? = null
        if (cursor.moveToFirst()) {
            user = User(
                id = cursor.getInt(cursor.getColumnIndex(COLUMN_ID)),
                firstName = cursor.getString(cursor.getColumnIndex(COLUMN_FIRST_NAME)),
                lastName = cursor.getString(cursor.getColumnIndex(COLUMN_LAST_NAME)),
                email = cursor.getString(cursor.getColumnIndex(COLUMN_EMAIL)),
                password = cursor.getString(cursor.getColumnIndex(COLUMN_PASSWORD)),
            )
        }
        cursor.close()
        db.close()
        return user
    }
    @SuppressLint("Range")
    fun getUserById(id: Int): User? {
        val db = readableDatabase
```

```
        val cursor: Cursor = db.rawQuery("SELECT * FROM $TABLE_NAME WHERE $COLUMN_ID =
?", arrayOf(id.toString()))

        var user: User? = null

        if (cursor.moveToFirst()) {

            user = User(

                id = cursor.getInt(cursor.getColumnIndex(COLUMN_ID)),

                firstName = cursor.getString(cursor.getColumnIndex(COLUMN_FIRST_NAME)),

                lastName = cursor.getString(cursor.getColumnIndex(COLUMN_LAST_NAME)),

                email = cursor.getString(cursor.getColumnIndex(COLUMN_EMAIL)),

                password = cursor.getString(cursor.getColumnIndex(COLUMN_PASSWORD)),

            )

        }

        cursor.close()

        db.close()

        return user

    }


    @SuppressLint("Range")

    fun getAllUsers(): List<User> {

        val users = mutableListOf<User>()

        val db = readableDatabase

        val cursor: Cursor = db.rawQuery("SELECT * FROM $TABLE_NAME", null)

        if (cursor.moveToFirst()) {

            do {

                val user = User(

                    id = cursor.getInt(cursor.getColumnIndex(COLUMN_ID)),
```

```
                firstName = cursor.getString(cursor.getColumnIndex(COLUMN_FIRST_NAME)),
                lastName = cursor.getString(cursor.getColumnIndex(COLUMN_LAST_NAME)),
                email = cursor.getString(cursor.getColumnIndex(COLUMN_EMAIL)),
                password = cursor.getString(cursor.getColumnIndex(COLUMN_PASSWORD)),
            )
            users.add(user)
        } while (cursor.moveToNext())
    }
    cursor.close()
    db.close()
    return users
  }

}
```

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:supportsRtl="true"
android:theme="@style/Theme.ProjectOne"
tools:targetApi="31">
<activity
    android:name=".TrackActivity"
    android:exported="false"
    android:label="@string/title_activity_track"
    android:theme="@style/Theme.ProjectOne" />
<activity
    android:name=".MainActivity"
    android:exported="false"
    android:label="@string/app_name"
    android:theme="@style/Theme.ProjectOne" />
<activity
    android:name=".MainActivity2"
    android:exported="false"
    android:label="RegisterActivity"
    android:theme="@style/Theme.ProjectOne" />
<activity
    android:name=".LoginActivity"
    android:exported="true"
    android:label="@string/app_name"
    android:theme="@style/Theme.ProjectOne">
    <intent-filter>
```

```
            <action android:name="android.intent.action.MAIN" />


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

</manifest>
```

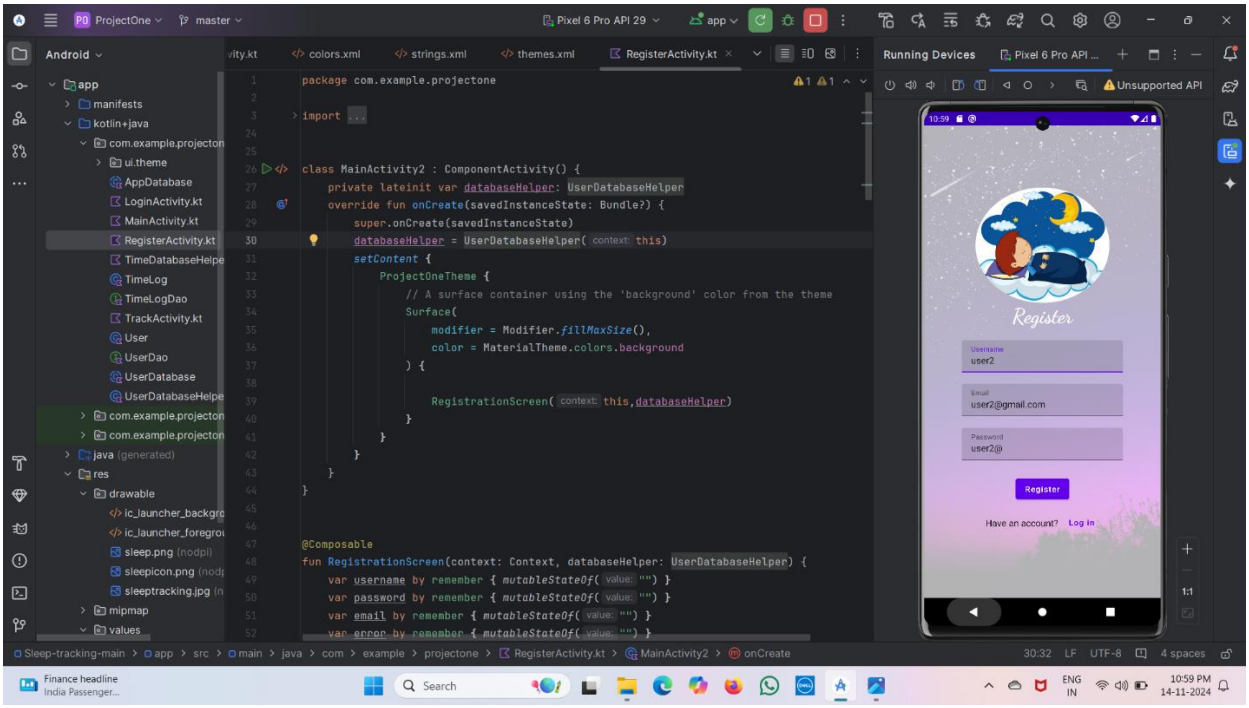
build.gradle

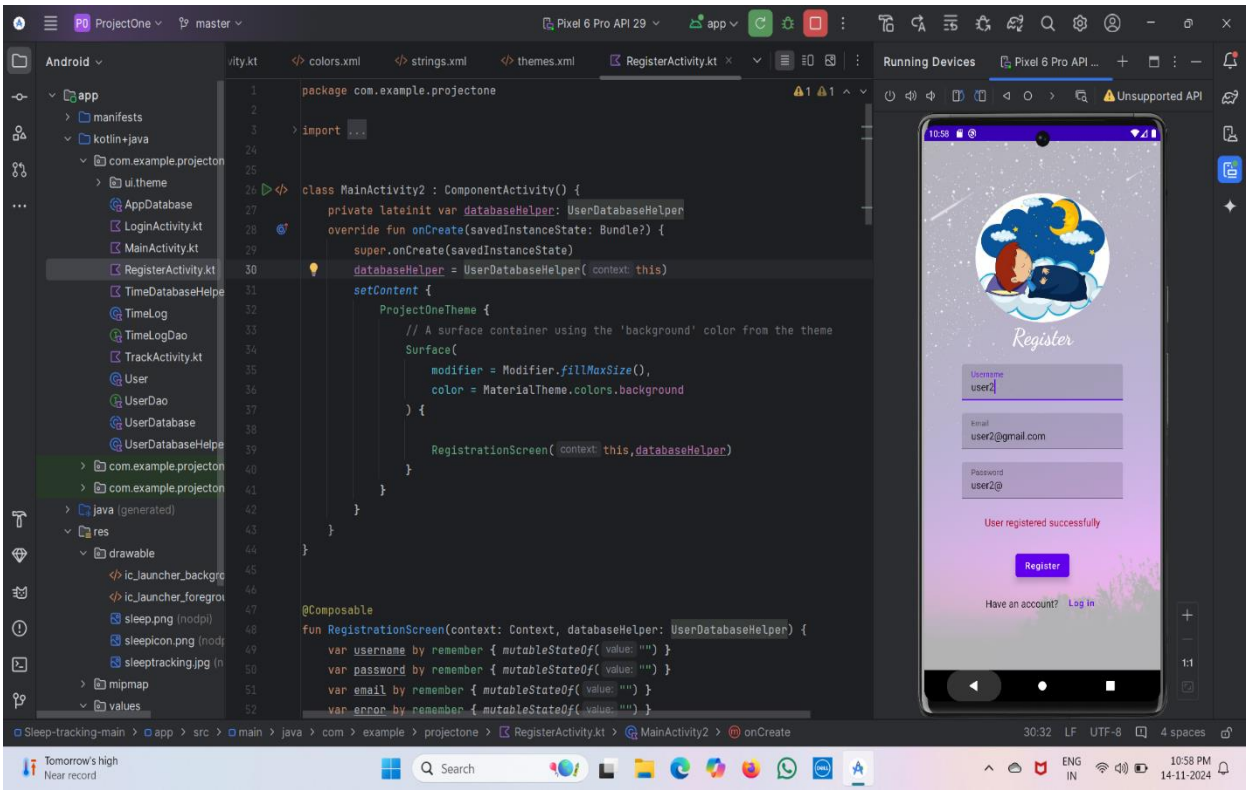
```
plugins {
    id 'com.android.application'
    id 'org.jetbrains.kotlin.android'
}

android {
    namespace 'com.example.projectone'
    compileSdk 33

    defaultConfig {
        applicationId "com.example.projectone"
        minSdk 24
        targetSdk 33
        versionCode 1
        versionName "1.0"
```

```
    testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"
    vectorDrawables {
        useSupportLibrary true
    }
}

buildTypes {
    release {
        minifyEnabled false
        proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-rules.pro'
    }
}
compileOptions {
    sourceCompatibility JavaVersion.VERSION_1_8
    targetCompatibility JavaVersion.VERSION_1_8
}
kotlinOptions {
    jvmTarget = '1.8'
}
buildFeatures {
    compose true
}
composeOptions {
    kotlinCompilerExtensionVersion '1.2.0'
}
```

```
    packagingOptions {
        resources {
            excludes += '/META-INF/{AL2.0,LGPL2.1}'
        }
    }
}

dependencies {

    implementation 'androidx.core:core-ktx:1.7.0'
    implementation 'androidx.lifecycle:lifecycle-runtime-ktx:2.3.1'
    implementation 'androidx.activity:activity-compose:1.3.1'
    implementation "androidx.compose.ui:ui:$compose_ui_version"
    implementation "androidx.compose.ui:ui-tooling-preview:$compose_ui_version"
    implementation 'androidx.compose.material:material:1.2.0'
    implementation 'androidx.room:room-common:2.5.0'
    implementation 'androidx.room:room-ktx:2.5.0'
    testImplementation 'junit:junit:4.13.2'
    androidTestImplementation 'androidx.test.ext:junit:1.1.5'
    androidTestImplementation 'androidx.test.espresso:espresso-core:3.5.1'
    androidTestImplementation "androidx.compose.ui:ui-test-junit4:$compose_ui_version"
    debugImplementation "androidx.compose.ui:ui-tooling:$compose_ui_version"
    debugImplementation "androidx.compose.ui:ui-test-manifest:$compose_ui_version"
}
```

6.OUTPUT


ProjectOne
master
Pixel 6 Pro API 29
app
Android
colors.xml
strings.xml
themes.xml
RegisterActivity.kt
Running Devices
Pixel 6 Pro API ...
Unsupported API
package com.example.projectone
import ...
class MainActivity2 : ComponentActivity() {
private lateinit var databaseHelper: UserDatabaseHelper
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
) {
RegistrationScreen(context: this,databaseHelper)
}
}
}
}
@Composable
fun RegistrationScreen(context: Context, databaseHelper: UserDatabaseHelper) {
var username by remember { mutableStateOf(value: "") }
var password by remember { mutableStateOf(value: "") }
var email by remember { mutableStateOf(value: "") }
Register
user2
user2@gmail.com
Have an account? Log in
Sleep-tracking-main
app
src
main
java
com
example
projectone
RegisterActivity.kt
MainActivity2
onCreate
30:32
LF
UTF-8
4 spaces
Finance headline
India Passenger...
Search
ENG
IN
10:59 PM
14-11-2024


ProjectOne
master
Pixel 6 Pro API 29
app
Android
colors.xml
strings.xml
themes.xml
RegisterActivity.kt
Running Devices
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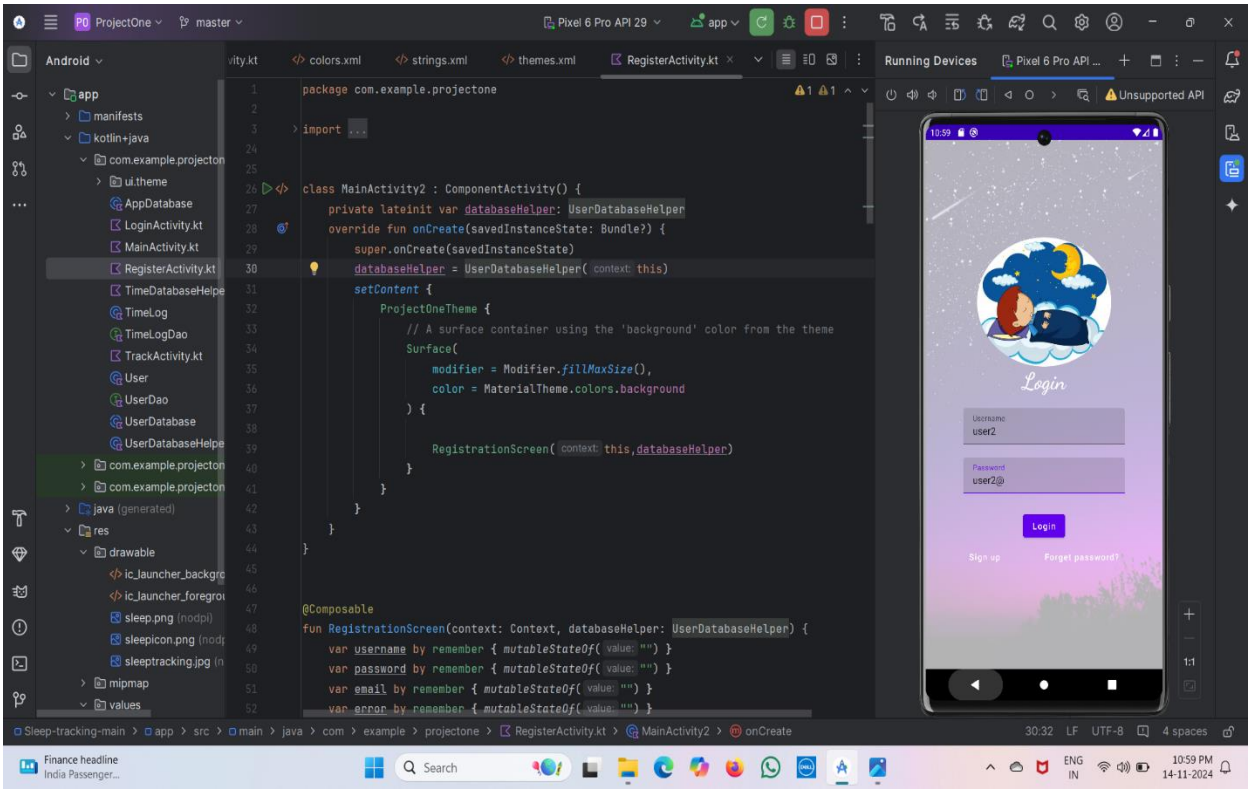
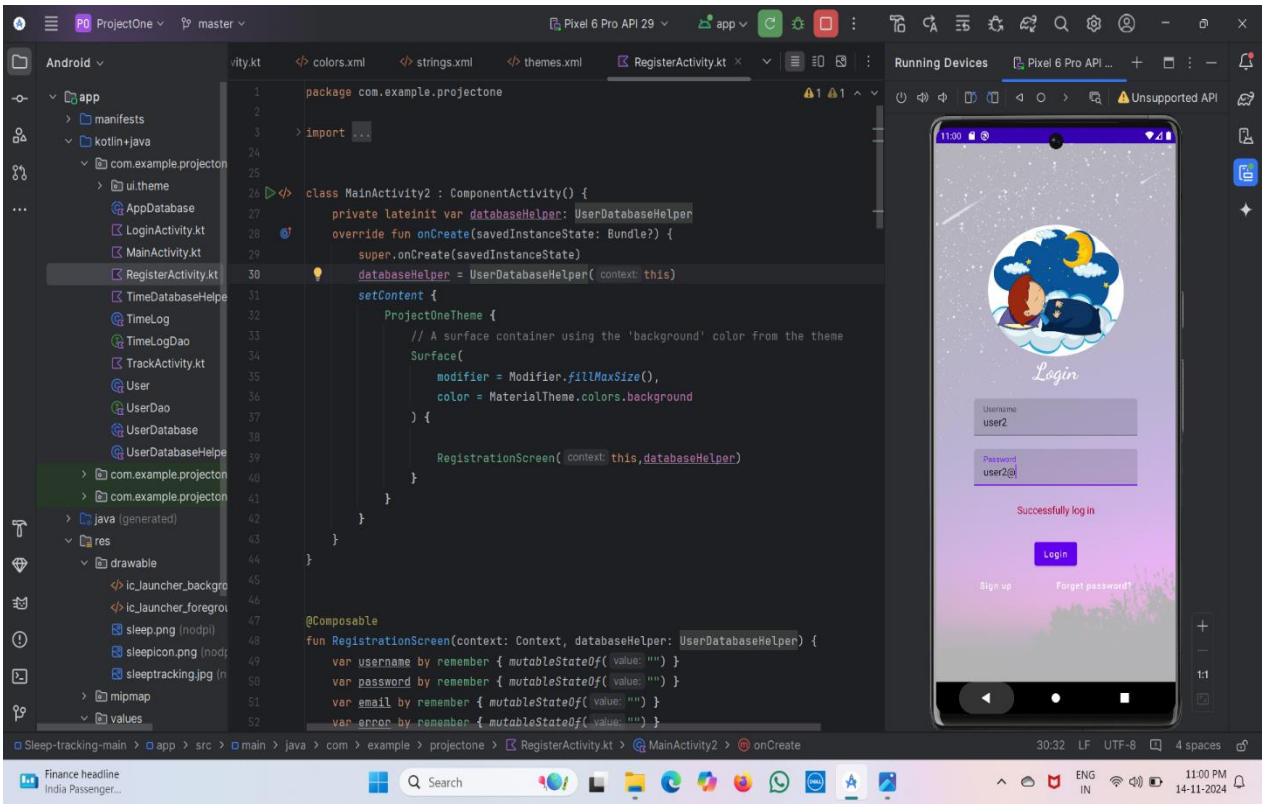
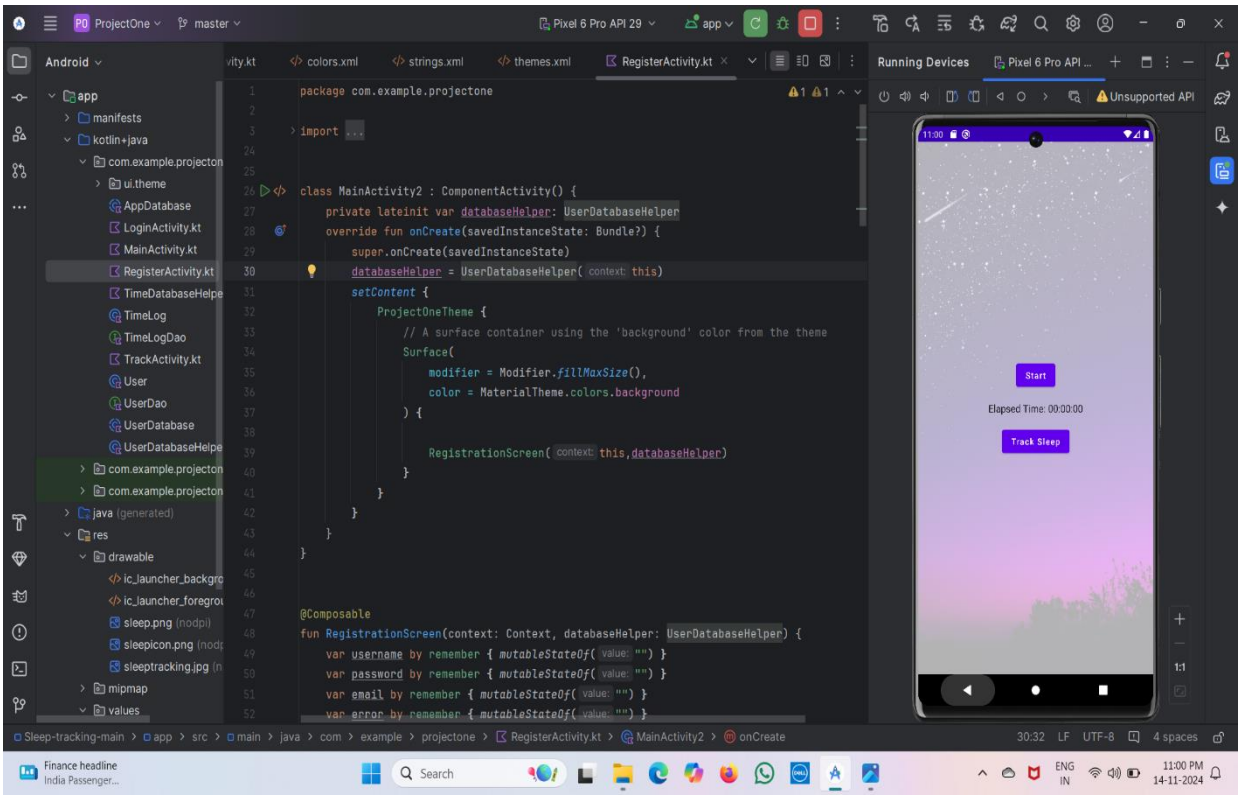
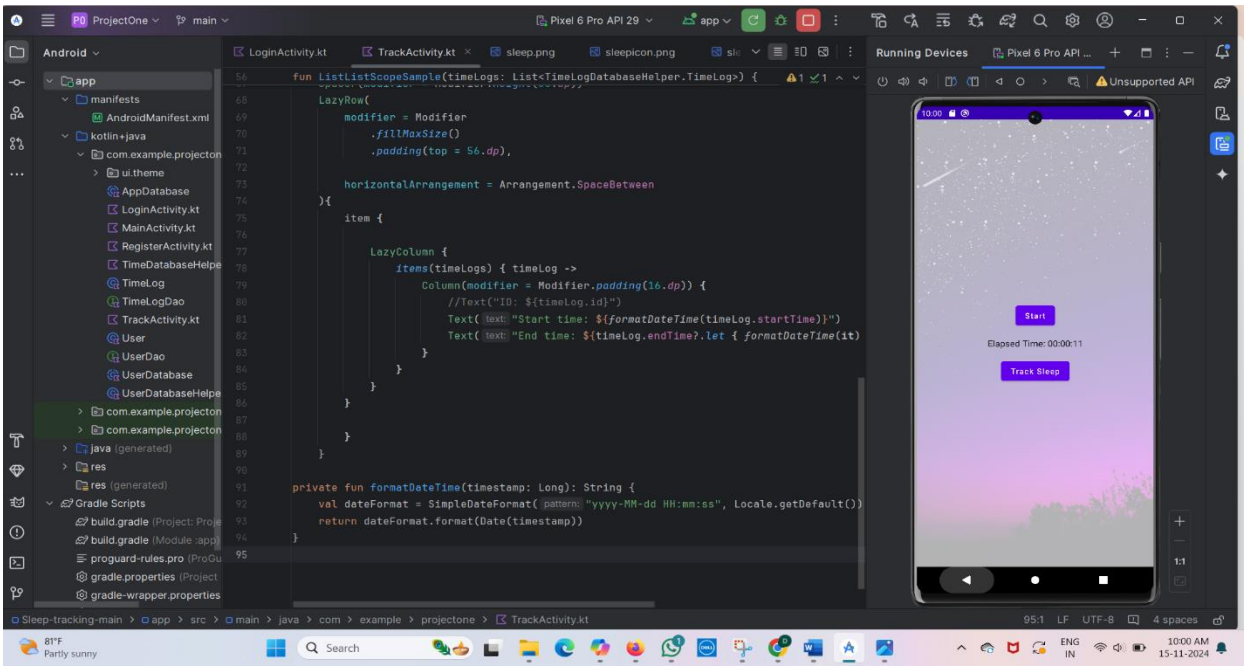
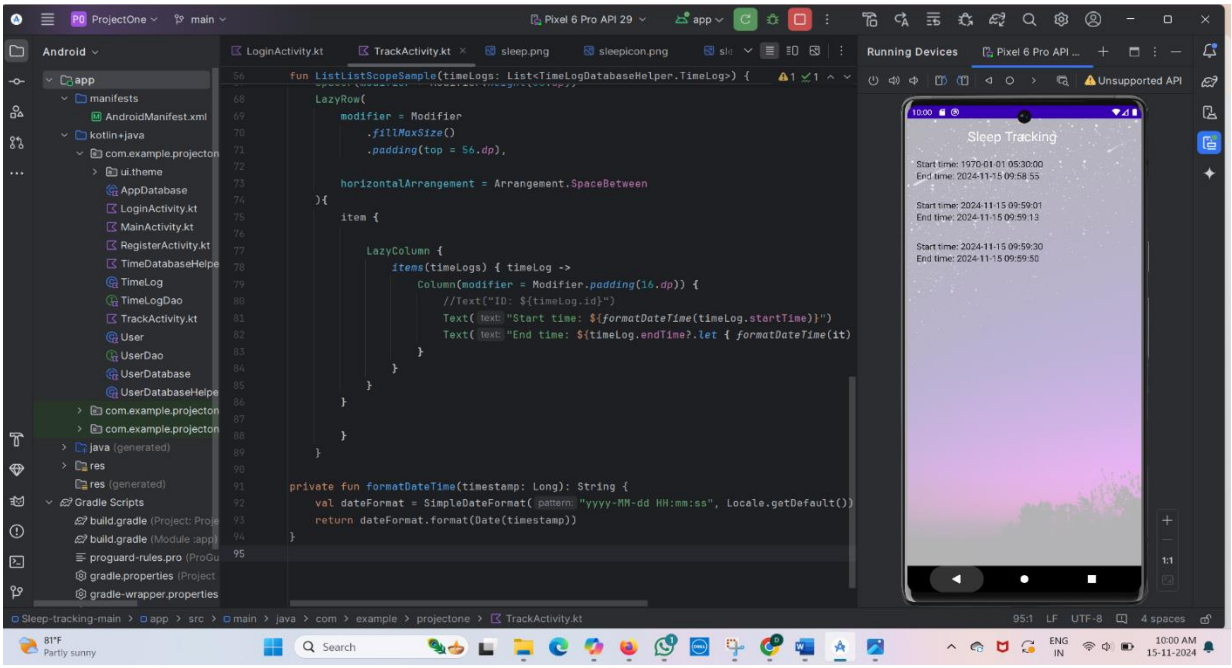
color = MaterialTheme.colors.background
) {
RegistrationScreen(context: this,databaseHelper)
}
}
}
}
@Composable
fun RegistrationScreen(context: Context, databaseHelper: UserDatabaseHelper) {
var username by remember { mutableStateOf(value: "") }
var password by remember { mutableStateOf(value: "") }
var email by remember { mutableStateOf(value: "") }
Register
user2
user2@gmail.com
User registered successfully
Have an account? Log in
Sleep-tracking-main
app
src
main
java
com
example
projectone
RegisterActivity.kt
MainActivity2
onCreate
30:32
LF
UTF-8
4 spaces
Tomorrow's high
Near record
Search
ENG
IN
10:58 PM
14-11-2024


ProjectOne
master
Pixel 6 Pro API 29
app
Android
RegisterActivity.kt
Running Devices
Pixel 6 Pro API ...
Unsupported API
Login
user2
user2@
Login
Sign up
Forget password?
Sleep-tracking-main › app › src › main › java › com › example › projectone › RegisterActivity.kt › MainActivity2 › onCreate
30:32 LF UTF-8 4 spaces
Finance headline
India Passenger...
Search
ENG
IN
10:59 PM
14-11-2024


ProjectOne
master
Pixel 6 Pro API 29
app
Android
RegisterActivity.kt
Running Devices
Pixel 6 Pro API ...
Unsupported API
Login
user2
user2@
Successfully log in
Login
Sign up
Forget password?
Sleep-tracking-main › app › src › main › java › com › example › projectone › RegisterActivity.kt › MainActivity2 › onCreate
30:32 LF UTF-8 4 spaces
Finance headline
India Passenger...
Search
ENG
IN
11:00 PM
14-11-2024


ProjectOne
master
Pixel 6 Pro API 29
app
Android
colors.xml
strings.xml
themes.xml
RegisterActivity.kt
Running Devices
Pixel 6 Pro API ...
Unsupported API
package com.example.projectone
import ...
class MainActivity2 : ComponentActivity() {
private lateinit var databaseHelper: UserDatabaseHelper
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
) {
RegistrationScreen(context: this,databaseHelper)
}
}
}
}
}
@Composable
fun RegistrationScreen(context: Context, databaseHelper: UserDatabaseHelper) {
var username by remember { mutableStateOf(value: "") }
var password by remember { mutableStateOf(value: "") }
var email by remember { mutableStateOf(value: "") }
var error by remember { mutableStateOf(value: "") }
Start
Elapsed Time: 00:00:00
Track Sleep
Sleep-tracking-main
app
src
main
java
com
example
projectone
RegisterActivity.kt
MainActivity2
onCreate
30:32
LF
UTF-8
4 spaces
Finance headline
India Passenger...
Search
ENG
IN
11:00 PM
14-11-2024


ProjectOne
main
Pixel 6 Pro API 29
app
Android
LoginActivity.kt
TrackActivity.kt
sleep.png
sleepicon.png
Running Devices
Pixel 6 Pro API ...
Unsupported API
fun ListListScopeSample(timeLogs: List<TimeLogDatabaseHelper.TimeLog>) {
LazyRow(
modifier = Modifier
.fillMaxSize()
.padding(top = 56.dp),
horizontalArrangement = Arrangement.SpaceBetween
){
item {
LazyColumn {
items(timeLogs) { timeLog ->
Column(modifier = Modifier.padding(16.dp)) {
//Text("ID: ${timeLog.id}")
Text(text: "Start time: ${formatDateTime(timeLog.startTime)}")
Text(text: "End time: ${timeLog.endTime?.let { formatDateTime(it)
}
}
}
}
}
}
private fun formatDateTime(timestamp: Long): String {
val dateFormat = SimpleDateFormat(pattern: "yyyy-MM-dd HH:mm:ss", Locale.getDefault())
return dateFormat.format(Date(timestamp))
}
Start
Elapsed Time: 00:00:11
Track Sleep
Sleep-tracking-main
app
src
main
java
com
example
projectone
TrackActivity.kt
95:1
LF
UTF-8
4 spaces
81°F
Partly sunny
Search
ENG
IN
10:00 AM
15-11-2024



7.DEMO VIDEO LINK

https://drive.google.com/file/d/12N4PWiF-LsA1NPPkNNJs3jHBb6Z_-vGQ/view?usp=sharing

8.CONCLUSION

The **Sleep Tracker** app successfully fulfills its objective of helping users monitor and improve their sleep quality through a user-friendly interface and data-driven insights. By combining real-time sleep tracking, quality ratings, and historical analysis, the app provides users with a comprehensive view of their sleep patterns, enabling them to make informed decisions to enhance their rest. Leveraging Jetpack Compose for a modern and responsive UI, the app ensures an intuitive experience, making it accessible to a wide range of users.

This project not only highlights the effective use of Android development tools like Room Database and MVVM architecture but also emphasizes the importance of healthy sleep habits. The Sleep Tracker app offers a meaningful tool to promote better sleep hygiene, contributing to users'

overall well-being and productivity. Moving forward, the app can be enhanced with additional features such as sleep cycle tracking, personalized recommendations, and integration with wearable devices, further increasing its value as a health-focused application.