# Wanderlust: A Personalized Travel Planning and Tracking App

## 1.Abstract:

Wanderlust is a personalized travel planning and tracking application designed for Android devices. This app aims to provide users with an intuitive, easy-to-use platform for managing their travel experiences, from initial trip planning to real-time tracking. By leveraging data from user profiles and external APIs, Wanderlust delivers customized travel suggestions, personalized itineraries, expense tracking, and real-time notifications to enhance the user experience. The app’s goal is to simplify the travel process, help users stay within budget, and provide a seamless, enjoyable experience while traveling. Through the use of modern technologies like Firebase for data management, Google Maps API for location-based services, and a clean, user-friendly interface, Wanderlust promises to become a valuable companion for any traveler. This report outlines the objectives, design, implementation, challenges, and future improvements of the Wanderlust app.

## 2.Introduction:

- **Project Overview**:
  Wanderlust is a mobile application that provides personalized travel planning and tracking features for users. The app’s goal is to simplify trip planning, help users manage their itineraries, and track their travel experiences in real time. It caters to travelers who want a more organized, personalized, and efficient way of planning their trips, while offering features like budget management, activity recommendations, and location-based services.

- **Problem Statement**:
  Traveling often requires juggling multiple sources of information, from itineraries to hotel bookings to local attractions. Traditional methods of organizing and planning trips can be time-consuming and inefficient. Many travelers find it difficult to get personalized suggestions that match their preferences and needs. Wanderlust addresses these challenges by offering a unified platform that combines trip planning, budgeting, and tracking in a personalized way.
- **Objective**:
  The goal of the Wanderlust app is to provide a one-stop solution for travel planning, including personalized recommendations, itinerary management, and real-time tracking, all within a simple and easy-to-navigate mobile interface.

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# 3.Features and Functionality:

- **User Profile & Preferences**:
  The app allows users to create detailed profiles where they can input their travel preferences (e.g., budget, destination, interests). The app uses this information to provide tailored trip suggestions.
- **Trip Planning**:
  Wanderlust enables users to create, customize, and manage travel itineraries. Users can plan trips by adding destinations, activities, hotels, and transportation details to a calendar or timeline.
- **Travel Tracking**:
  Users can track their trips in real time, including activities they've completed, places they've visited, and expenses incurred.
- **Budgeting and Expenses**:
  The app includes an expense tracker that allows users to monitor their spending. It categorizes expenses and provides insights into

how much they’ve spent on activities, accommodations, food, and more.

- **Interactive Maps & Recommendations**:
  The app integrates with Google Maps to offer location-based recommendations for points of interest (e.g., restaurants, attractions). Users can view these recommendations on a map, plan their route, and explore local areas based on their preferences.
- **Notifications & Reminders**:
  Push notifications keep users informed about upcoming events, activities, or travel reminders, ensuring that they stay on top of their schedules.
- **Social Sharing**:
  Users can share their travel experiences by posting photos, itineraries, and travel logs within the app, allowing friends and family to follow their journey.

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# 4.System Architecture:

- **Platform**:
  Android mobile platform, developed using **Kotlin** (or Java) for building the application. Data storage and authentication are managed through **Firebase** and **SQLite**.
- **Key Technologies**:
  - **Frontend**: Kotlin/Java for building the user interface and app logic.
  - **Backend**: Firebase Firestore for real-time database management and user authentication.
  - **APIs**: Google Maps API for location services, third-party APIs for flight and hotel bookings.
  - **Authentication**: Firebase Authentication for secure user login.

- **Push Notifications**: Firebase Cloud Messaging (FCM) for push notifications.

- **UI/UX Design**:
  The app uses **Material Design** principles to create an intuitive, consistent, and visually appealing user interface. The design focuses on ease of use, with clear navigation, well-organized content, and engaging visuals.

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# 5.Development Process:

- **Planning and Research**:
  The first phase involved researching user needs, travel habits, and analyzing competing travel apps. This helped shape the app's features and functionality, ensuring they align with what travelers truly need.
- **Design Phase**:
  Wireframes and prototypes were created for key app screens (dashboard, trip planner, map view). User feedback was incorporated into the design to optimize the user experience.
- **Implementation**:
  The development was divided into multiple stages: user authentication, trip planning functionality, map integration, and budgeting. Firebase was used for real-time data syncing and secure authentication.
- **Testing and Debugging**:
  Extensive testing was done to ensure the app works across a range of devices and Android versions. This included functional testing, usability testing, and debugging to ensure smooth performance and reliability.

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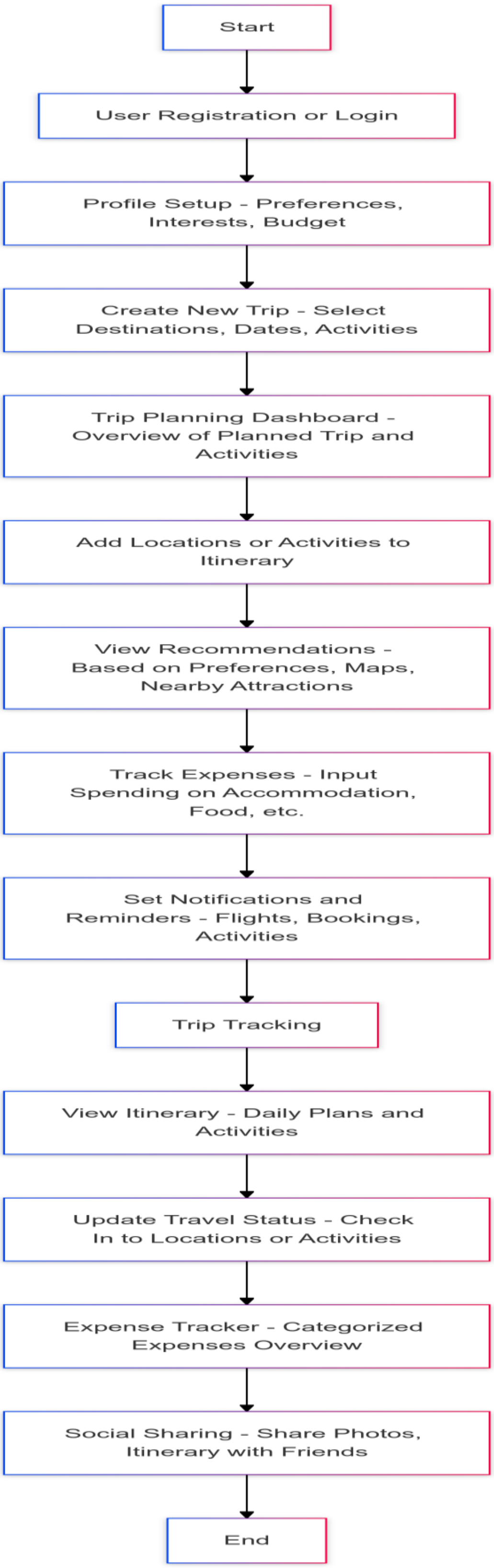
# 6.Flowchart:


Start
User Registration or Login
Profile Setup - Preferences, Interests, Budget
Create New Trip - Select Destinations, Dates, Activities
Trip Planning Dashboard - Overview of Planned Trip and Activities
Add Locations or Activities to Itinerary
View Recommendations - Based on Preferences, Maps, Nearby Attractions
Track Expenses - Input Spending on Accommodation, Food, etc.
Set Notifications and Reminders - Flights, Bookings, Activities
Trip Tracking
View Itinerary - Daily Plans and Activities
Update Travel Status - Check In to Locations or Activities
Expense Tracker - Categorized Expenses Overview
Social Sharing - Share Photos, Itinerary with Friends
End

# 7.Challenges and Solutions:

- **Challenge 1: Data Synchronization Across Devices Solution**:
  We used Firebase Firestore for real-time data synchronization, allowing users to seamlessly access their data across multiple devices (e.g., phone and tablet).
- **Challenge 2: Integrating Third-Party APIs Solution**:
  The integration of external APIs, including Google Maps and third-party booking services, posed challenges in terms of data consistency and error handling. These were resolved by creating robust API wrappers and implementing fallback mechanisms.
- **Challenge 3: Battery Optimization and Location Services Solution**:
  To reduce battery consumption, location services were optimized by using location updates only when necessary (e.g., when users check-in to a location or view nearby attractions).

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# 8.Testing and Evaluation:

- **User Testing**:
  The app was tested by a small group of beta users. Feedback from these testers led to several improvements, particularly in the UI and navigation.
- **Performance Testing**:
  The app was tested on multiple devices to ensure consistent performance. This included checking for lag in map loading, speed of data syncing, and overall app responsiveness.

- **Security Testing**:
  User data is protected through encryption and secure login procedures. Firebase Authentication ensures that only authorized users can access their accounts, and all personal information is securely stored.

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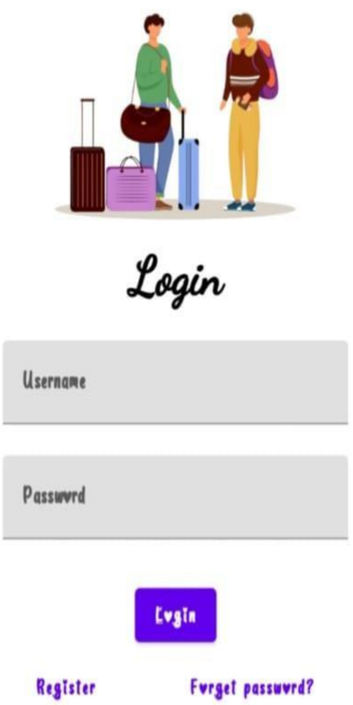
# 9.Program code:

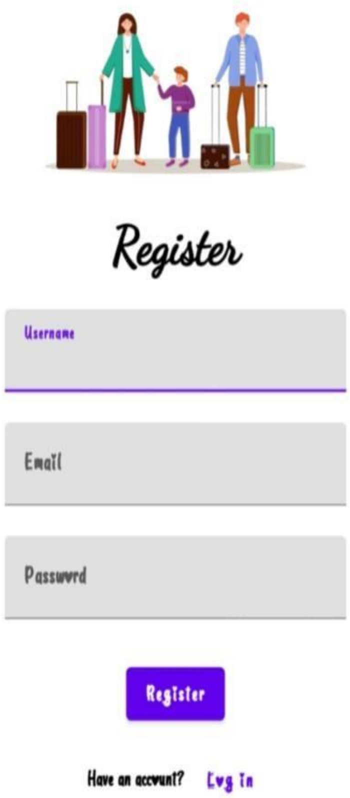
```
package com.example.travelapp


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.clickable import

androidx.compose.foundation.layout.*

import androidx.compose.foundation.rememberScrollState

import androidx.compose.foundation.verticalScroll

import androidx.compose.material.Card

import androidx.compose.material.Text

import androidx.compose.runtime.Composable

import androidx.compose.ui.Alignment

import androidx.compose.ui.Modifier

import androidx.compose.ui.draw.scale

import androidx.compose.ui.graphics.Color

import androidx.compose.ui.res.painterResource

import androidx.compose.ui.res.stringResource

import androidx.compose.ui.text.font.FontFamily
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

class MainActivity : ComponentActivity() {
  override fun onCreate(savedInstanceState: Bundle?) { super.onCreate(savedInstanceState)
    setContent {
      TravelApp(this)
    }
  }


  @Composable
  fun TravelApp(context: Context) {
    Column(
      modifier = Modifier
        .padding(20.dp)
        .verticalScroll(rememberScrollState())

    ) {

      Text(
        fontSize = 40.sp,
        color = Color(android.graphics.Color.rgb(120, 40,
        251)), fontFamily = FontFamily.Cursive,
        text = "Wanderlust Travel"
      )
```

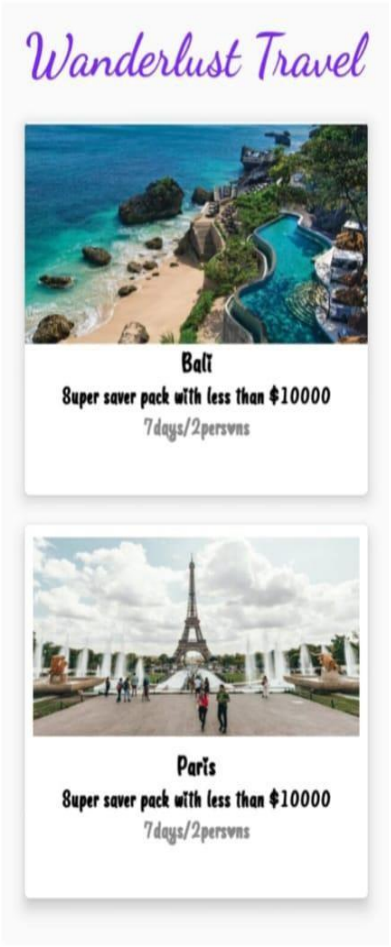
```
Spacer(modifier = Modifier.height(20.dp))

// 01
Card(
    modifier = Modifier
        .fillMaxWidth()
         .height(250.dp)
        .clickable {
        context.startActivity(
            Intent(context, BaliActivity::class.java)

        )
        },
    elevation = 8.dp
)
{
    Column(
        horizontalAlignment = Alignment.CenterHorizontally
    ) {
        Image(
            painterResource(id = R.drawable.bali), contentDescription = "",
            modifier = Modifier
                .height(150.dp)
                .scale(scaleX = 1.2F, scaleY = 1F)
        )

        Text(
            text = stringResource(id = R.string.place_1),
            fontSize = 18.sp
        )



        Text(
            text = stringResource(id = R.string.description),
            fontWeight = FontWeight.Light,
            fontSize = 16.sp,
            textAlign = TextAlign.Center,
        )

        Text(
            text = stringResource(id = R.string.plan), color = Color.Gray,
            fontSize = 16.sp
        )
    }
}

Spacer(modifier = Modifier.height(20.dp))



//02
Card(
    modifier = Modifier
        .fillMaxWidth()
         .height(250.dp)
        .clickable {
        context.startActivity(
            Intent(context, ParisActivity::class.java)
        )
        },
    elevation = 8.dp
)
{
    Column(
        horizontalAlignment = Alignment.CenterHorizontally
    ) {
        Image(
            painterResource(id = R.drawable.paris), contentDescription = "",
            modifier = Modifier
                .height(150.dp)
                .scale(scaleX = 1.2F, scaleY = 1F)
        )

        Text(
            text = stringResource(id = R.string.place_2),
            fontSize = 18.sp
        )



        Text(
            text = stringResource(id = R.string.description),
            fontWeight = FontWeight.Light,
            fontSize = 16.sp,
            textAlign = TextAlign.Center,
        )
        Text(
            text = stringResource(id = R.string.plan), color = Color.Gray,
            fontSize = 16.sp
        )
    }
}

Spacer(modifier = Modifier.height(20.dp))

//03
Card(
    modifier = Modifier
        .fillMaxWidth()
         .height(250.dp)
        .clickable {
        context.startActivity(
            Intent(context, SingaporeActivity::class.java)

        )
        },
    elevation = 8.dp
)
{
    Column(
        horizontalAlignment = Alignment.CenterHorizontally
    ) {
        Image(
            painterResource(id = R.drawable.singapore), contentDescription = "",
            modifier = Modifier
```

```
                            .height(150.dp)
                            .scale(scaleX = 1.2F, scaleY = 1F)
                    )

                    Text(
                        text = stringResource(id = R.string.place_3),
                        fontSize = 18.sp
                    )



                    Text(
                        text = stringResource(id = R.string.description),
                        fontWeight = FontWeight.Light,
                        fontSize = 16.sp,
                        textAlign = TextAlign.Center,
                    )

                    Text(
                        text = stringResource(id = R.string.plan), color = Color.Gray,
                        fontSize = 16.sp
                    )
                }
            }

            Spacer(modifier = Modifier.height(20.dp))
        }
    }
}
```

# 11.Output:







Bali

Super saver pack with less than $10000

7days/2persons

Paris

Super saver pack with less than $10000

7days/2persons

# 12.Conclusion:

Wanderlust has the potential to significantly enhance the travel planning experience for users, providing a one-stop platform for organizing trips, tracking expenses, and discovering new places. The combination of personalized recommendations, real-time tracking, and budgeting features will make it an invaluable tool for travelers. This project showcases how technology can simplify travel planning, making it more efficient and enjoyable. With further development, Wanderlust can evolve into an even more comprehensive tool for all types of travelers.

# 13.Future Improvements:

- **AI-Based Recommendations**:
  Future versions of the app will include machine learning algorithms to better understand user preferences and offer more accurate trip recommendations based on past behavior and interactions.
- **Multi-Language Support**:
  To appeal to a global audience, multi-language support will be added, enabling users from different regions to use the app in their native languages.
- **Offline Functionality**:
  Adding offline capabilities will allow users to access their itineraries, maps, and essential trip details even when they are not connected to the internet.

**Collaborative Features**:
A future feature will allow users to collaborate with friends or family when planning trips, sharing itineraries, and making joint decisions.