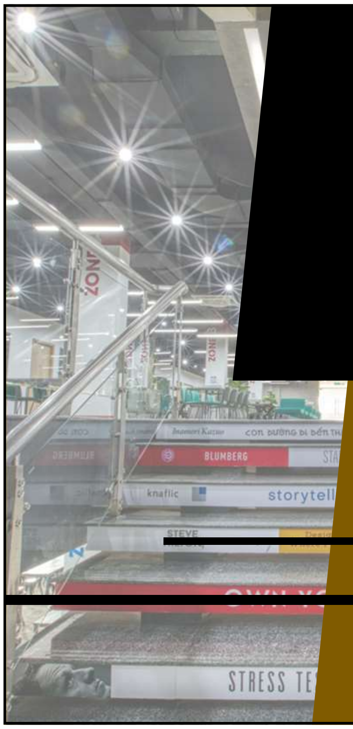


EIU
TRƯỜNG ĐẠI HỌC
QUỐC TẾ
MIỀN ĐÔNG
EASTERN
INTERNATIONAL
UNIVERSITY

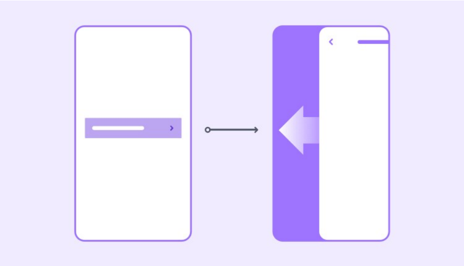
Mobile Programming

Chapter 4: REACT NAVIGATION

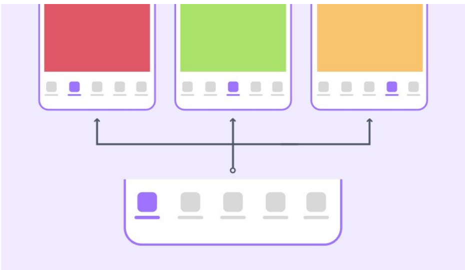
REACT NAVIGATION

- Mobile apps are often built with multiple screens. Manage presentation and switch between screens used with the navigator
- **React Navigation** is a set of Facebook libraries developed by the community to solve these problems.
- Types of Navigator:
  - Stack Navigator
  - Drawer Navigator
  - Bottom Tab Navigator
  - Material Top Tab Navigator
- Doc React Navigation 5.x: https://reactnavigation.org/docs/getting-started

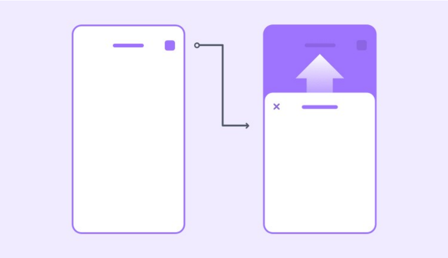
REACT NAVIGATION



Stack Navigator



Bottom Tab Navigator

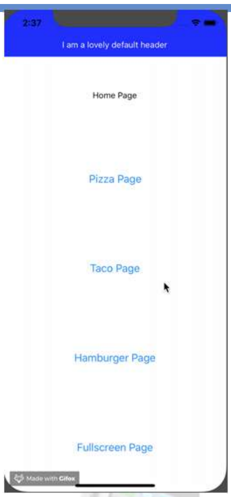


Drawer Navigator

3

3

REACT NAVIGATION



2:37

I am a lovely default header

Home Page

Pizza Page

Taco Page

Hamburger Page

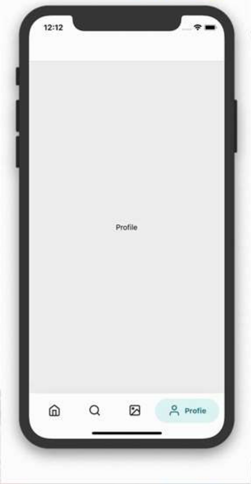
Fullscreen Page

Stack Navigator

12:01

MainLayout

Drawer Navigator



12:12

Profile

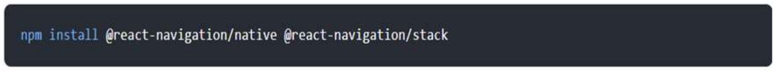
Bottom Tab Navigator

4

4

Installation

- Step 1. Go to the project folder



```
npm install @react-navigation/native @react-navigation/stack
```

- Bước 2. Cài các dependencies cần thiết
  - For expo

```
expo install react-native-reanimated react-native-gesture-handler react-native-screens react-native-safe-area-context @react-native-community/masked-view
```

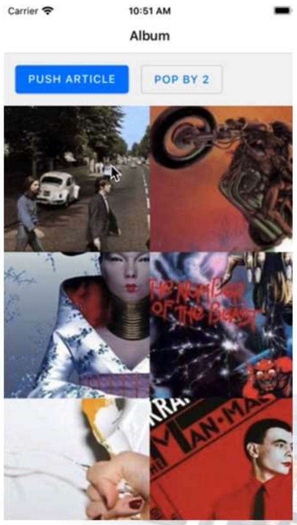
  - For React Native Project

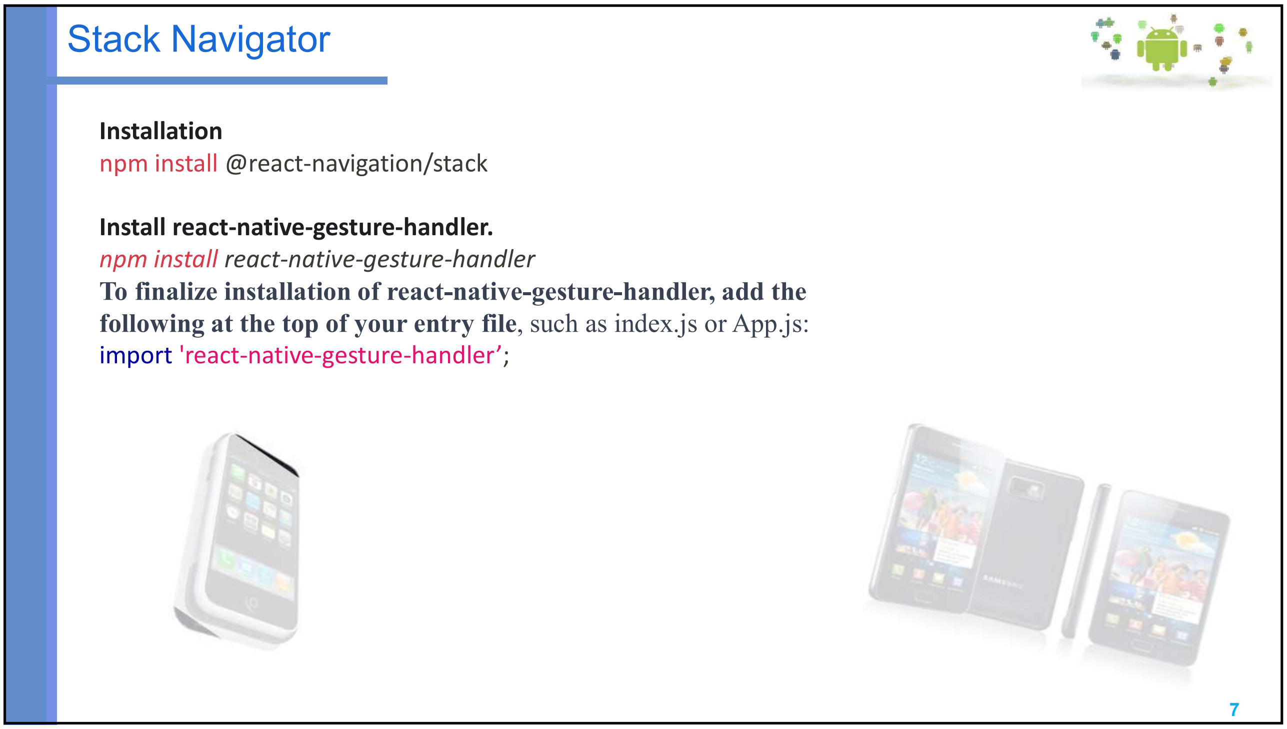
```
npm install react-native-reanimated react-native-gesture-handler react-native-screens react-native-safe-area-context @react-native-community/masked-view
```

Stack Navigator

- In stack navigation, screens are stacked on top of each other.
- It follows a Last-In-First-Out (LIFO) order.

- Hierarchical navigation: Screens are organized in a stack.
- Transition animations: Provides sliding or fading transitions.
- Back button: Users can navigate back to the previous screen.





Stack Navigator

Installation

```
npm install @react-navigation/stack
```

Install react-native-gesture-handler.

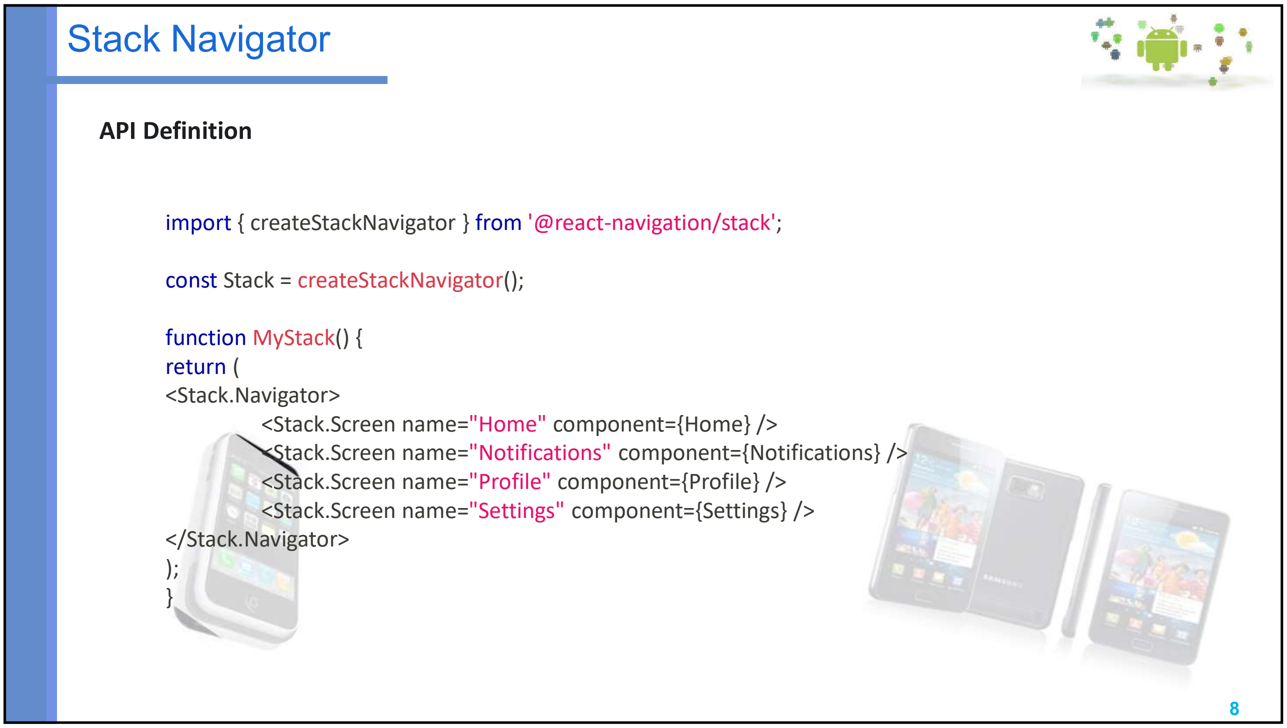
```
npm install react-native-gesture-handler
```

To finalize installation of react-native-gesture-handler, add the following at the top of your entry file, such as index.js or App.js:

```
import 'react-native-gesture-handler’;
```

7

7



Stack Navigator

API Definition

```
import { createStackNavigator } from '@react-navigation/stack';

const Stack = createStackNavigator();

function MyStack() {
return (
<Stack.Navigator>
        <Stack.Screen name="Home" component={Home} />
        <Stack.Screen name="Notifications" component={Notifications} />
        <Stack.Screen name="Profile" component={Profile} />
        <Stack.Screen name="Settings" component={Settings} />
</Stack.Navigator>
);
}
```

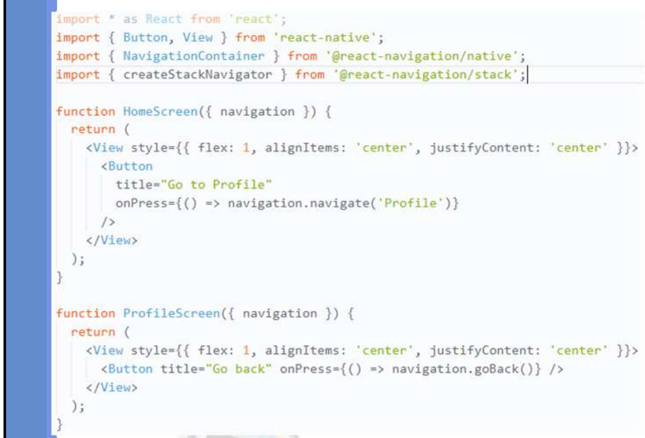
8

8

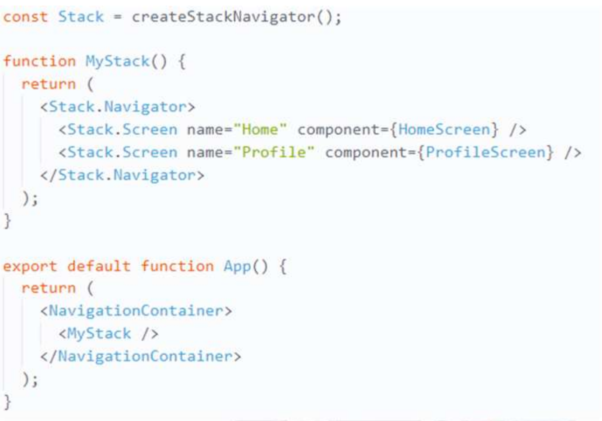
Stack Navigator

- Stack.Navigator includes the following props::
  - initialRouteName : The name of the route to render on first load of the navigator.
  - screenOptions: Default options to use for the screens in the navigator.
- **Options:** used to configure screens in Navigator, including:
  - title
  - header
  - headerLeft
  - headerRight
  - headerBackground
  - Kham khảo: https://reactnavigation.org/docs/stack-navigator#props

Stack Navigator

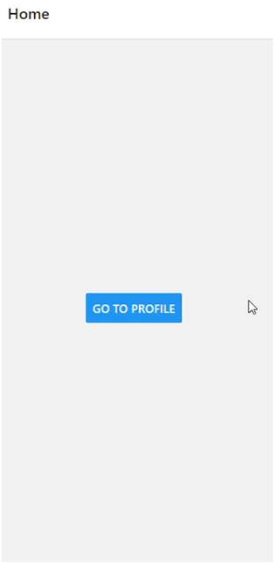


```
import * as React from 'react';
import { Button, View } from 'react-native';
import { NavigationContainer } from '@react-navigation/native';
import { createStackNavigator } from '@react-navigation/stack';

function HomeScreen({ navigation }) {
  return (
    <View style={{ flex: 1, alignItems: 'center', justifyContent: 'center' }}>
      <Button
        title="Go to Profile"
        onPress={() => navigation.navigate('Profile')}
      />
    </View>
  );
}

function ProfileScreen({ navigation }) {
  return (
    <View style={{ flex: 1, alignItems: 'center', justifyContent: 'center' }}>
      <Button title="Go back" onPress={() => navigation.goBack()} />
    </View>
  );
}
```



```
const Stack = createStackNavigator();

function MyStack() {
  return (
    <Stack.Navigator>
      <Stack.Screen name="Home" component={HomeScreen} />
      <Stack.Screen name="Profile" component={ProfileScreen} />
    </Stack.Navigator>
  );
}

export default function App() {
  return (
    <NavigationContainer>
      <MyStack />
    </NavigationContainer>
  );
}
```

Stack Navigator



https://snack.expo.dev/@taitv/navigation-stack

Native Stack Navigator

Stack navigator allows you to switch between screens by pushing or dragging them into the stack. Native stack navigator does the same thing, but it uses the platform's native components to create transition effects and navigation options

Some of the key differences between a stack and a native stack are:

- Native stack navigator has higher performance than stack navigator, as it doesn't need to create virtual screens on JavaScript
- Native stack navigator supports native features of the platform, like status bar, title bar, tab bar, bottom bar, etc. Stack navigator can also customize these components, but it needs to use additional libraries.
- The native stack navigator can detect which platform you are running code on and load the correct code for that platform.

Native Stack Navigator

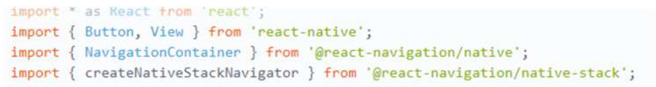
API Definition

```
import { createNativeStackNavigator } from '@react-navigation/native-stack';

const Stack = createNativeStackNavigator();

function MyStack() {
return (
        <Stack.Navigator>
                <Stack.Screen name="Home" component={Home} />
                <Stack.Screen name="Notifications" component={Notifications} />
                <Stack.Screen name="Profile" component={Profile} />
                <Stack.Screen name="Settings" component={Settings} />
        </Stack.Navigator>
        );
}
```

Native Stack Navigator

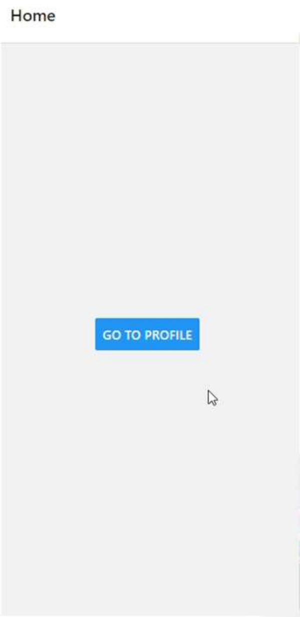
Installation

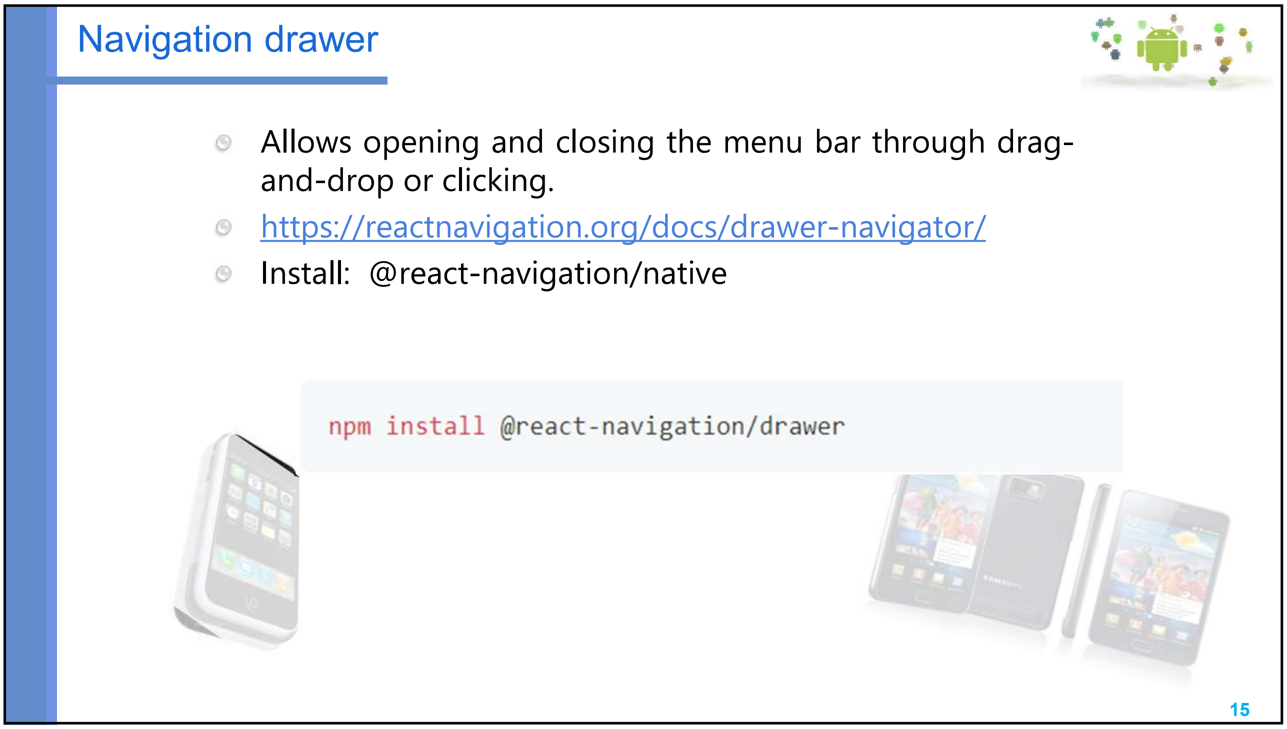
npm install @react-navigation/native-stack



```
import * as React from 'react';
import { Button, View } from 'react-native';
import { NavigationContainer } from '@react-navigation/native';
import { createNativeStackNavigator } from '@react-navigation/native-stack';
```

https://snack.expo.dev/@taitv/native-stack-navigator-%7C-react-navigation

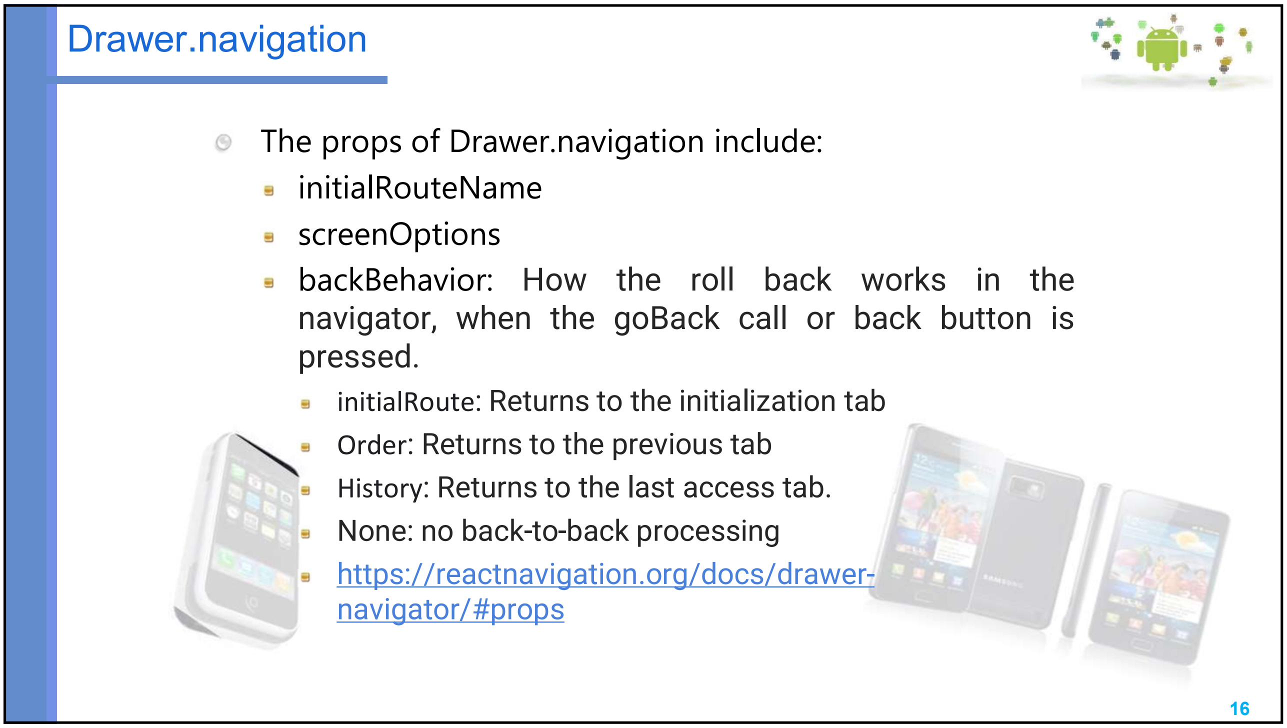




Navigation drawer

- Allows opening and closing the menu bar through drag-and-drop or clicking.
- https://reactnavigation.org/docs/drawer-navigator/
- Install: @react-navigation/native

```
npm install @react-navigation/drawer
```



Drawer.navigation

- The props of Drawer.navigation include:
  - initialRouteName
  - screenOptions
  - backBehavior: How the roll back works in the navigator, when the goBack call or back button is pressed.
    - initialRoute: Returns to the initialization tab
    - Order: Returns to the previous tab
    - History: Returns to the last access tab.
    - None: no back-to-back processing
    - https://reactnavigation.org/docs/drawer-navigator/#props

Drawer.navigation

- Configuration options for screens in navigator.
  - title
  - drawerIcon:
  - header:
  - headerShow: true/false
  - https://reactnavigation.org/docs/drawer-navigator/#options

17

17

Drawer.navigation

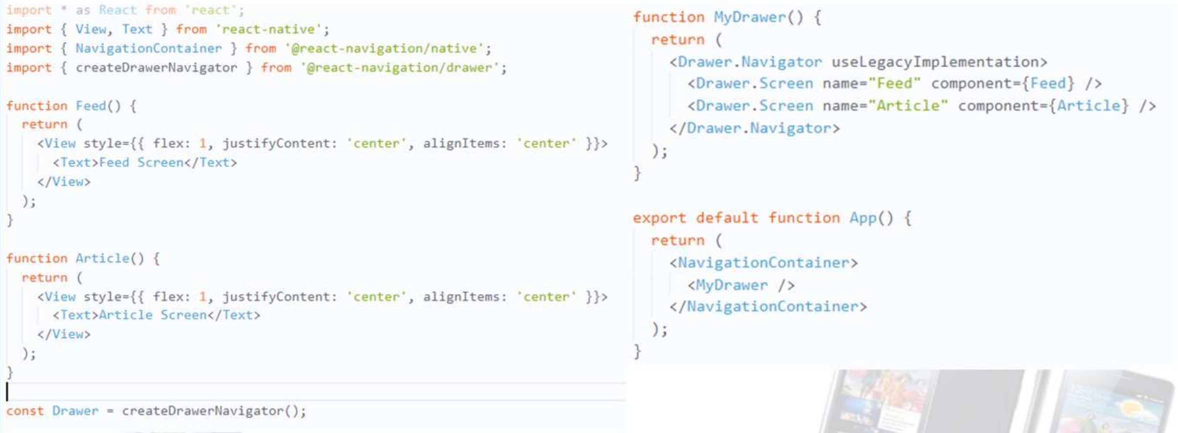
- Events of Drawer.navigation:
  - drawerOpen: This event triggers when the drawer opens
  - closeOpen: This event triggers when the drawer closes.

https://snack.expo.dev/@taitv/native-stack-navigator-%7C-react-navigation

18

18

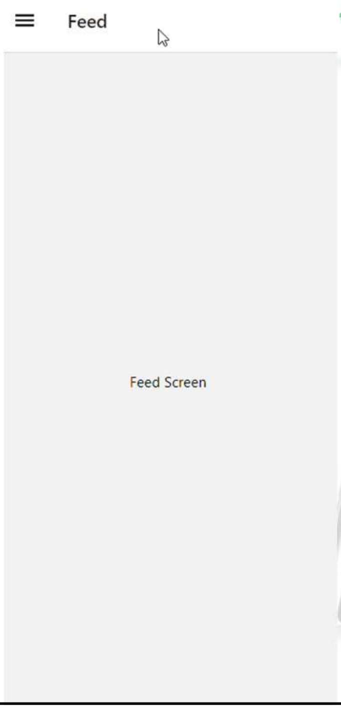
Drawer.navigation



```
import * as React from 'react';
import { View, Text } from 'react-native';
import { NavigationContainer } from '@react-navigation/native';
import { createDrawerNavigator } from '@react-navigation/drawer';

function Feed() {
  return (
    <View style={{ flex: 1, justifyContent: 'center', alignItems: 'center' }}>
      <Text>Feed Screen</Text>
    </View>
  );
}

function Article() {
  return (
    <View style={{ flex: 1, justifyContent: 'center', alignItems: 'center' }}>
      <Text>Article Screen</Text>
    </View>
  );
}

const Drawer = createDrawerNavigator();
```

```
function MyDrawer() {
  return (
    <Drawer.Navigator useLegacyImplementation>
      <Drawer.Screen name="Feed" component={Feed} />
      <Drawer.Screen name="Article" component={Article} />
    </Drawer.Navigator>
  );
}

export default function App() {
  return (
    <NavigationContainer>
      <MyDrawer />
    </NavigationContainer>
  );
}
```

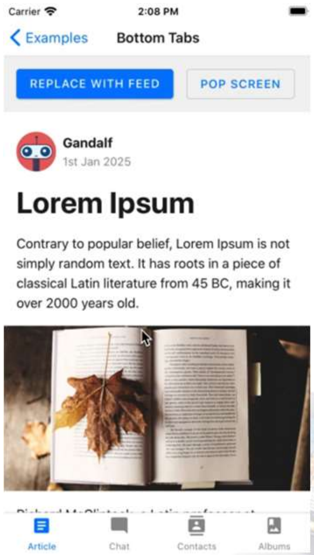
Drawer.navigation



https://snack.expo.dev/@taitv/navigation-drawer

Bottom Tabs Navigator

A simple tab bar on the bottom of the screen that lets you switch between different routes. Routes are lazily initialized
their screen components are not mounted until they are first focused.



Gandalf
1st Jan 2025

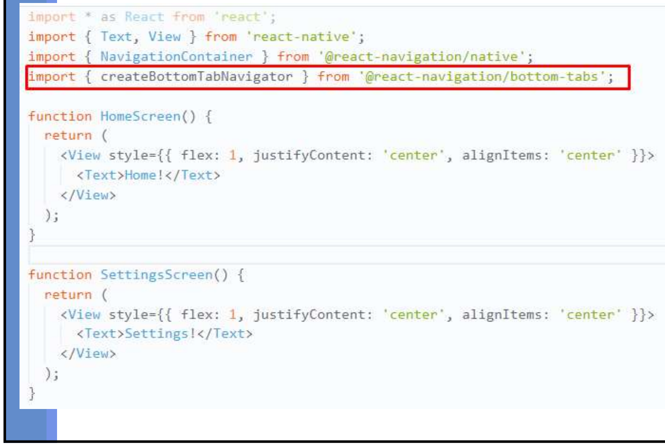
Lorem Ipsum

Contrary to popular belief, Lorem Ipsum is not simply random text. It has roots in a piece of classical Latin literature from 45 BC, making it over 2000 years old.

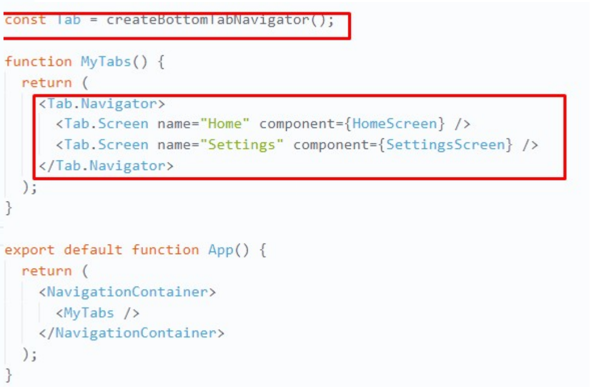
Bottom Tabs Navigator

Installation

npm install @react-navigation/bottom-tabs

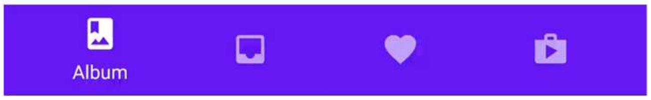


```
import * as React from 'react';
import { Text, View } from 'react-native';
import { NavigationContainer } from '@react-navigation/native';
import { createBottomTabNavigator } from '@react-navigation/bottom-tabs';

function HomeScreen() {
  return (
    <View style={{ flex: 1, justifyContent: 'center', alignItems: 'center' }}>
      <Text>Home!</Text>
    </View>
  );
}

function SettingsScreen() {
  return (
    <View style={{ flex: 1, justifyContent: 'center', alignItems: 'center' }}>
      <Text>Settings!</Text>
    </View>
  );
}
```



```
const Tab = createBottomTabNavigator();

function MyTabs() {
  return (
    <Tab.Navigator>
      <Tab.Screen name="Home" component={HomeScreen} />
      <Tab.Screen name="Settings" component={SettingsScreen} />
    </Tab.Navigator>
  );
}

export default function App() {
  return (
    <NavigationContainer>
      <MyTabs />
    </NavigationContainer>
  );
}
```

Material Bottom Tabs Navigator

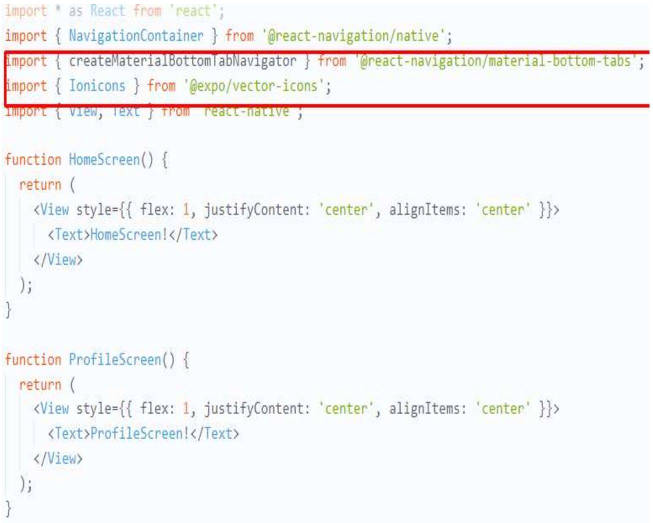


Installation

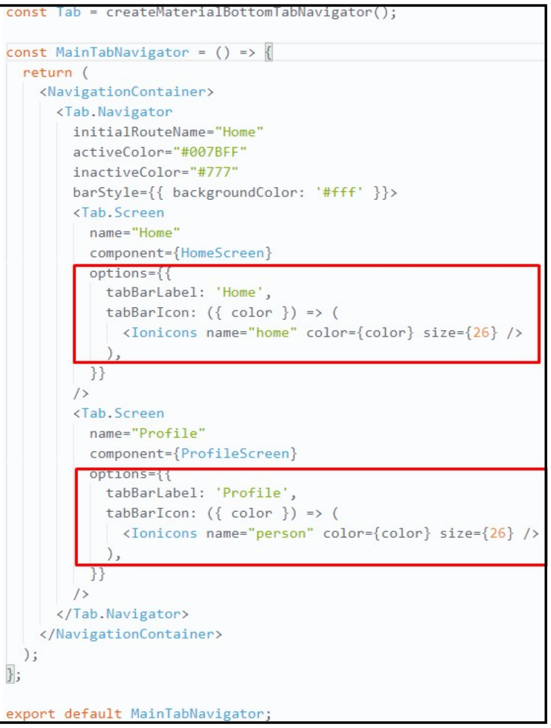
npm install @react-navigation/material-bottom-tabs react-native-paper react-native-vector-iconsnpm install @react-navigation/material-bottom-tabs react-native-paper react-native-vector-icons

23

Material Bottom Tabs Navigator



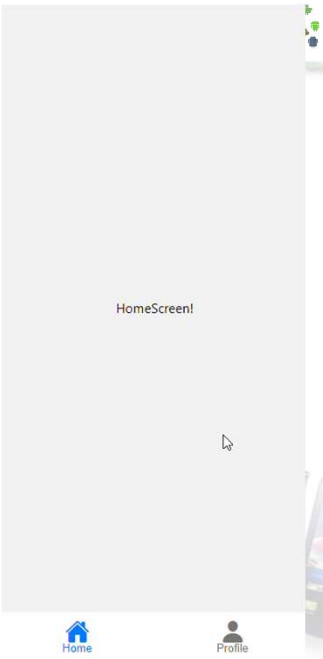
```
import * as React from 'react';
import { NavigationContainer } from '@react-navigation/native';
import { createMaterialBottomTabNavigator } from '@react-navigation/material-bottom-tabs';
import { Ionicons } from '@expo/vector-icons';
import { View, Text } from 'react-native';

function HomeScreen() {
  return (
    <View style={{ flex: 1, justifyContent: 'center', alignItems: 'center' }}>
      <Text>HomeScreen!</Text>
    </View>
  );
}

function ProfileScreen() {
  return (
    <View style={{ flex: 1, justifyContent: 'center', alignItems: 'center' }}>
      <Text>ProfileScreen!</Text>
    </View>
  );
}
```



```
const Tab = createMaterialBottomTabNavigator();

const MainTabNavigator = () => {
  return (
    <NavigationContainer>
      <Tab.Navigator
        initialRouteName="Home"
        activeColor="#007BFF"
        inactiveColor="#777"
        barStyle={{ backgroundColor: '#fff' }}>
        <Tab.Screen
          name="Home"
          component={HomeScreen}
          options={{
            tabBarLabel: 'Home',
            tabBarIcon: ({ color }) => (
              <Ionicons name="home" color={color} size={26} />
            ),
          }}
        />
        <Tab.Screen
          name="Profile"
          component={ProfileScreen}
          options={{
            tabBarLabel: 'Profile',
            tabBarIcon: ({ color }) => (
              <Ionicons name="person" color={color} size={26} />
            ),
          }}
        />
      </Tab.Navigator>
    </NavigationContainer>
  );
};

export default MainTabNavigator;
```

24

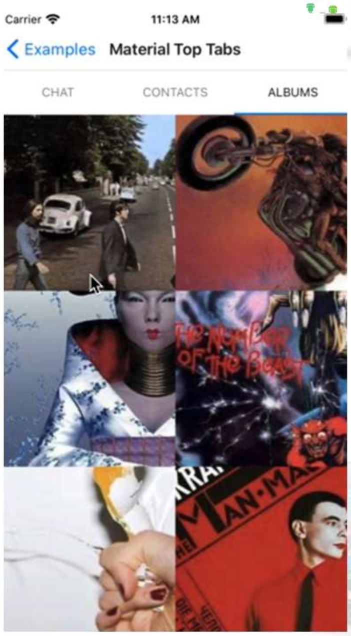
Material Bottom Tabs Navigator



https://snack.expo.dev/@taitv/material-bottom-tabs-navigator-%7C-react-navigation

Material Top Tabs Navigator

A material-design themed tab bar on the top of the screen that lets you switch between different routes by tapping the tabs or swiping horizontally. Transitions are animated by default. Screen components for each route are mounted immediately.



Material Top Tabs Navigator

Installation

npm install @react-navigation/material-top-tabs react-native-tab-view

Install react-native-pager-view which is required by the navigator.

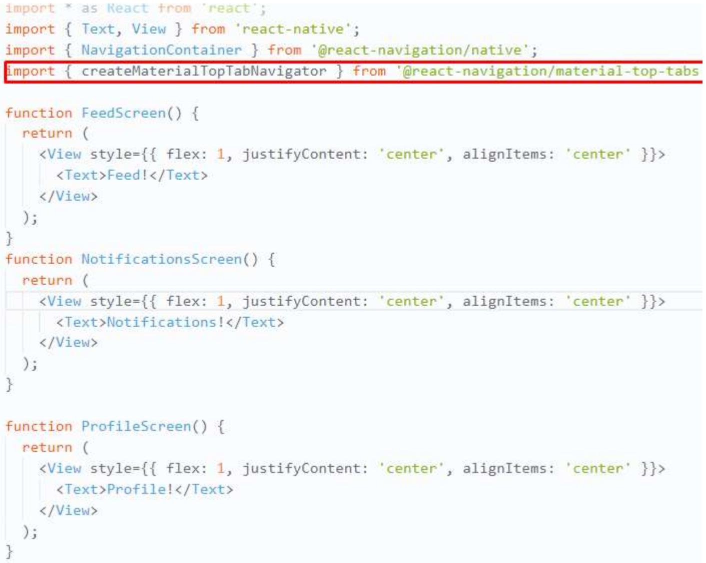
npm install react-native-pager-view

Material Top Tabs Navigator

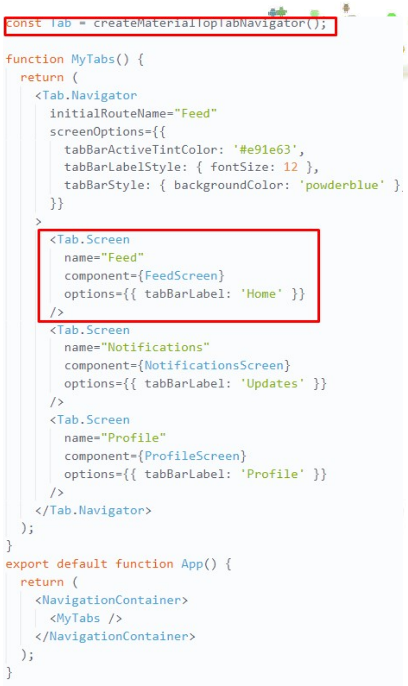
API Definition

```
import { createMaterialTopTabNavigator } from '@react-navigation/material-top-tabs';

const Tab = createMaterialTopTabNavigator();

function MyTabs() {
return (
   <Tab.Navigator>
            <Tab.Screen name="Home" component={HomeScreen} />
            <Tab.Screen name="Settings" component={SettingsScreen} />
   </Tab.Navigator>
   );
}
```

Material Top Tabs Navigator



```
import * as React from 'react';
import { Text, View } from 'react-native';
import { NavigationContainer } from '@react-navigation/native';
import { createMaterialTopTabNavigator } from '@react-navigation/material-top-tabs

function FeedScreen() {
  return (
    <View style={{ flex: 1, justifyContent: 'center', alignItems: 'center' }}>
      <Text>Feed!</Text>
    </View>
  );
}
function NotificationsScreen() {
  return (
    <View style={{ flex: 1, justifyContent: 'center', alignItems: 'center' }}>
      <Text>Notifications!</Text>
    </View>
  );
}

function ProfileScreen() {
  return (
    <View style={{ flex: 1, justifyContent: 'center', alignItems: 'center' }}>
      <Text>Profile!</Text>
    </View>
  );
}
```

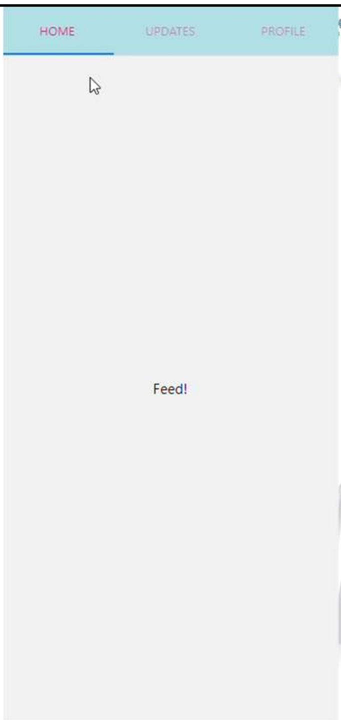


```
const Tab = createMaterialTopTabNavigator();

function MyTabs() {
  return (
    <Tab.Navigator
      initialRouteName="Feed"
      screenOptions={{
        tabBarActiveTintColor: '#e91e63',
        tabBarLabelStyle: { fontSize: 12 },
        tabBarStyle: { backgroundColor: 'powderblue' }
      }}
    >
      <Tab.Screen
        name="Feed"
        component={FeedScreen}
        options={{ tabBarLabel: 'Home' }}
      />
      <Tab.Screen
        name="Notifications"
        component={NotificationsScreen}
        options={{ tabBarLabel: 'Updates' }}
      />
      <Tab.Screen
        name="Profile"
        component={ProfileScreen}
        options={{ tabBarLabel: 'Profile' }}
      />
    </Tab.Navigator>
  );
}
export default function App() {
  return (
    <NavigationContainer>
      <MyTabs />
    </NavigationContainer>
  );
}
```

29

29

Material Top Tabs Navigator

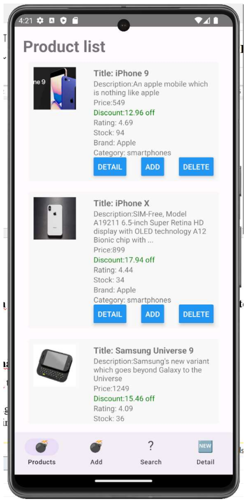


https://snack.expo.dev/@taitv/material-bottom-tabs-navigator-%7C-react-navigation

30

30

Exercise



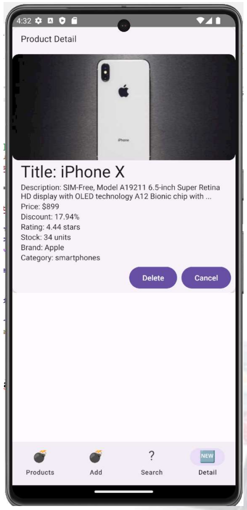
4:21

Product list

Title: iPhone 9
Description:An apple mobile which is nothing like apple
Price:549
Discount:12.96 off
Rating: 4.69
Stock: 94
Brand: Apple
Category: smartphones

Title: iPhone X
Description:SIM-Free, Model A19211 6.5-inch Super Retina HD display with OLED technology A12 Bionic chip with ...
Price:899
Discount:17.94 off
Rating: 4.44
Stock: 34
Brand: Apple
Category: smartphones

Title: Samsung Universe 9
Description:Samsung's new variant which goes beyond Galaxy to the Universe
Price:1249
Discount:15.46 off
Rating: 4.09
Stock: 36



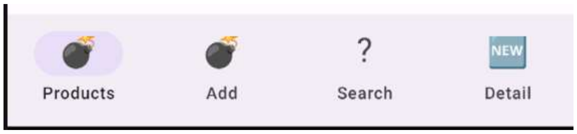
4:32

Product Detail

Title: iPhone X
Description: SIM-Free, Model A19211 6.5-inch Super Retina HD display with OLED technology A12 Bionic chip with ...
Price: $899
Discount: 17.94%
Rating: 4.44 stars
Stock: 34 units
Brand: Apple
Category: smartphones

Use stack/Native stack navigation to implement the "Detail“ and “Cancel” button

Exercise



Using Drawer navigation and Material Top Tabs Navigator to reimplement the navigation bar In Lab 3 – Question 5

Q&A

33