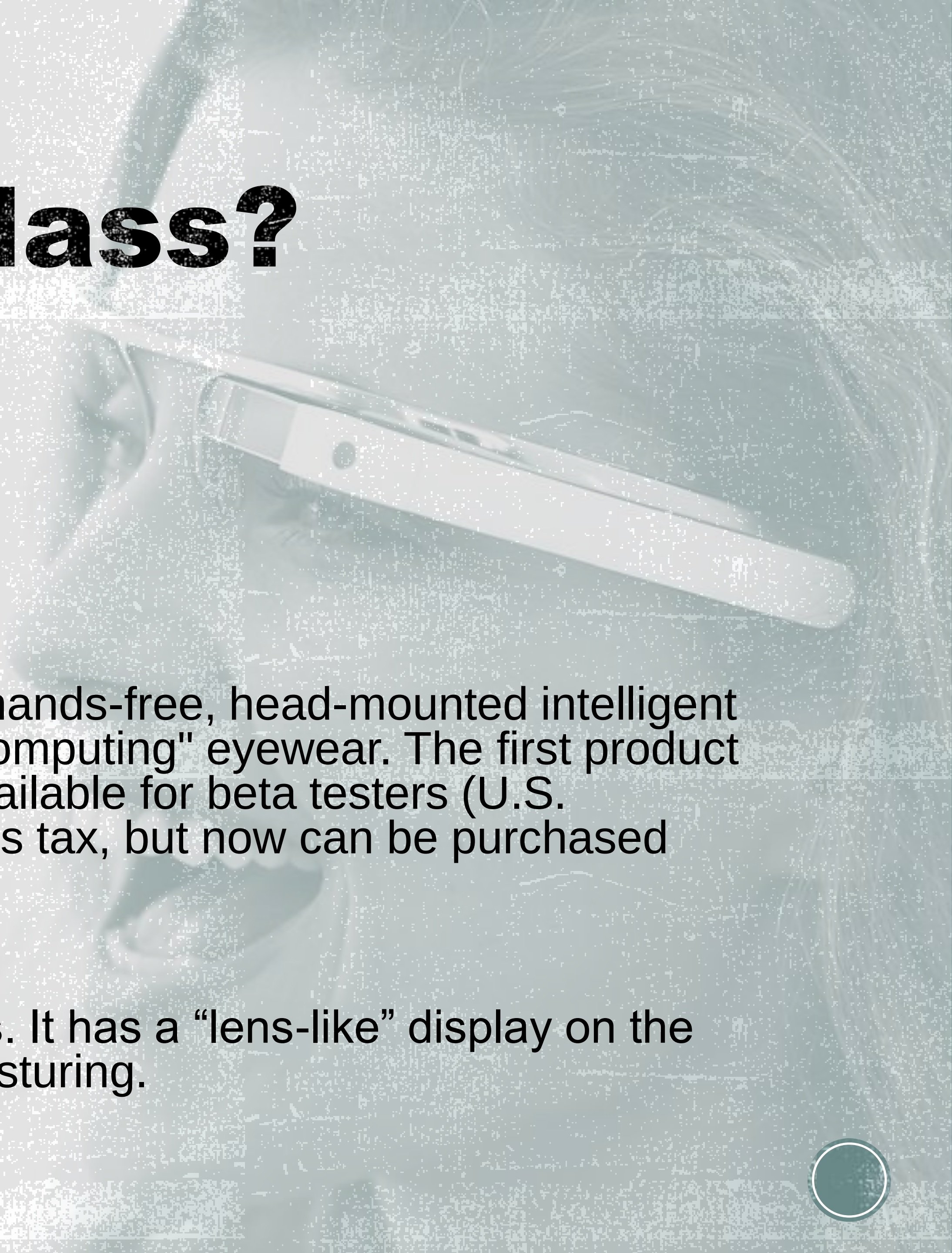
“Hand” Free Gaming Using GLASS

Skylar Argo

What is Google Glass?



GLASS

- Google's project program for developing a line of hands-free, head-mounted intelligent devices that can be worn by users as "wearable computing" eyewear. The first product release from Project Glass, Google Glass, was available for beta testers (U.S. residents only) to purchase in 2013, for $1,500 plus tax, but now can be purchased online on websites such as ebay.

- Glass is similar to a pair of glasses, without lenses. It has a “lens-like” display on the right hand side, along with a touchpad used for gesturing.

What is Google Glass?

- With Glass, you can use voice commands, the interactive display, and even a touchpad.

- Glass also uses Bluetooth and Wi-Fi to connect to an alternate devices, such as a phone, computer, or tablet.

- Glass uses Android as it’s mobile OS, but it compatible with Android and Apple devices.

Why use Google Glass?

- Google invented Glass as a way to disengage from technology such as our phones and computers. With Glass, you can look up instead of having your head down searching through emails, texts, and/or playing games.

- Glass can be used as a second screen to your mobile devices, leaving you to be able to use your devices “hands-free”

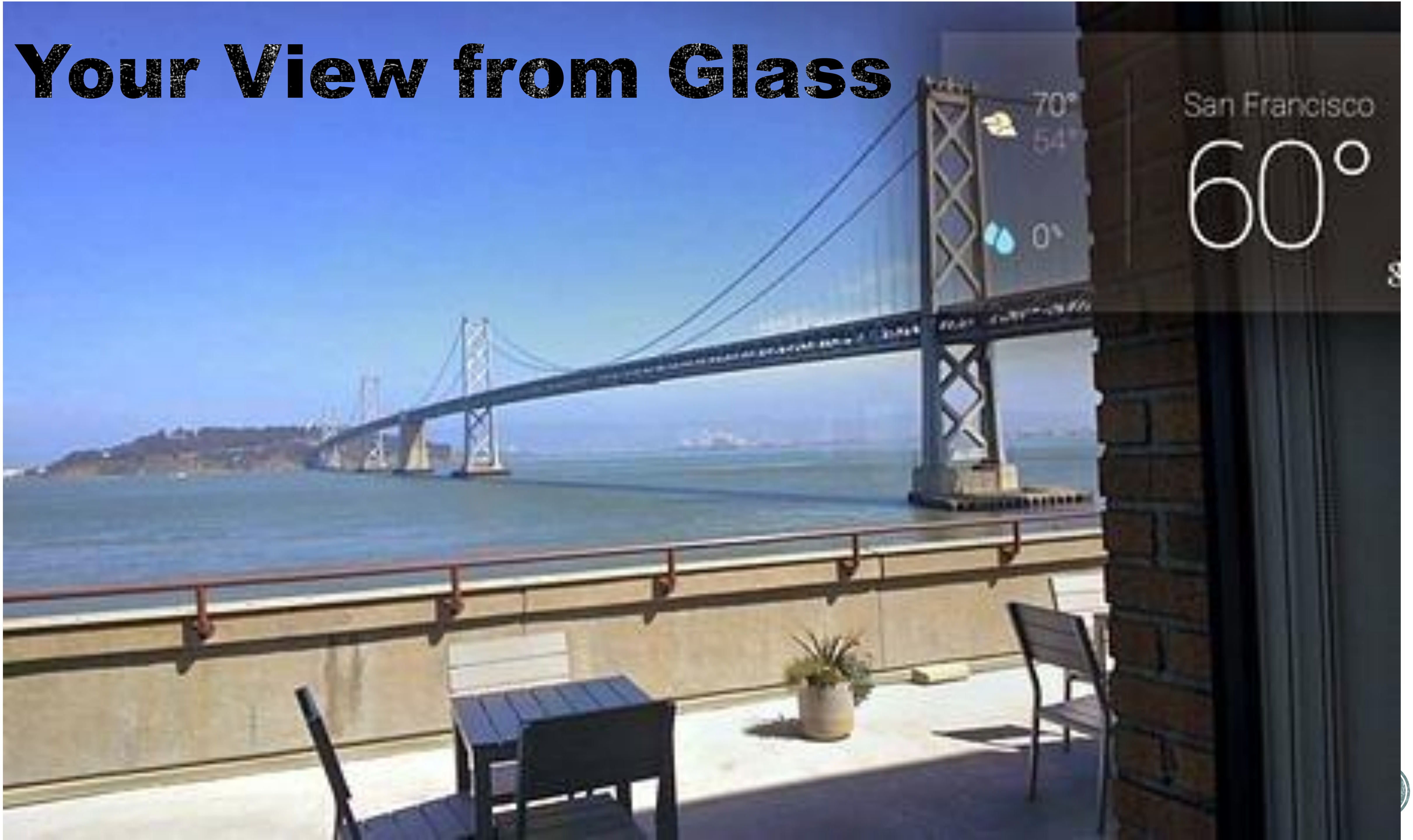
- Overall – Glass is an easier and sometimes safer way to use your mobile device!

What’s It Like to Wear Glass?

- Wearing Glass is like having on a bulky pair of glasses.

- When wearing Glass you can see notifications without the hassle of looking away from what you’re doing.

Your View from Glass



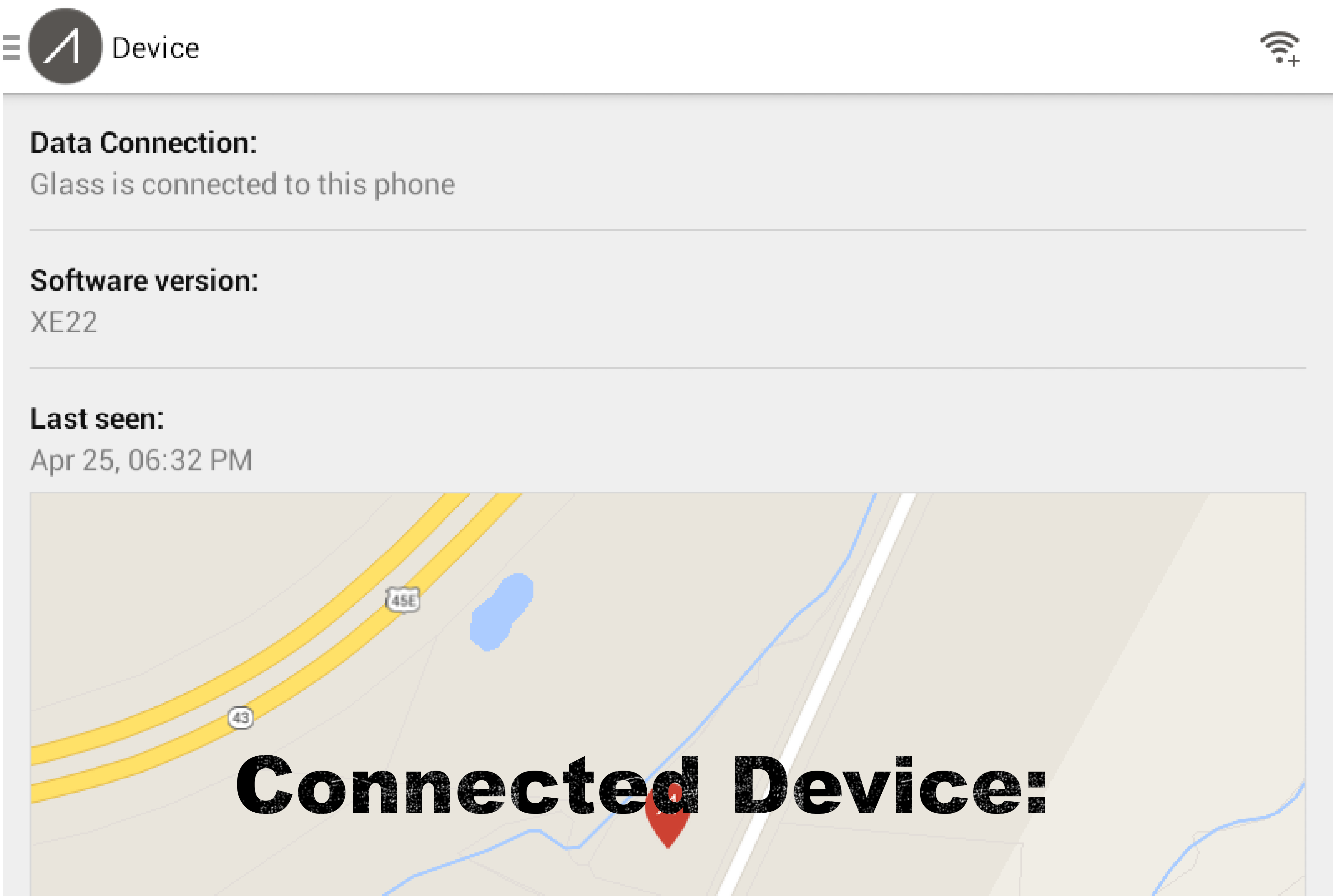
What Can You Do with Glass?

- Google Glass has several built in features. One of these is the camera. You can take pictures, record videos, and view these pictures and videos.

- There are tons of apps you can download for your Glass device.
  - To do this, you must connect Glass to a computer or other mobile device.
    - In my case, I connected Glass to my Android Galaxy tablet.
  - You must install the Glass application to the mobile device or computer.
  - From there, you can connect Glass to the device using WiFi or Bluetooth and search through the available Glassware applications.

  - There were several applications that I ran into while learning about Glass. The most interesting ones were Sky Map, Zombie Run, and Find My Car.

Connected Device:



Device

Data Connection:

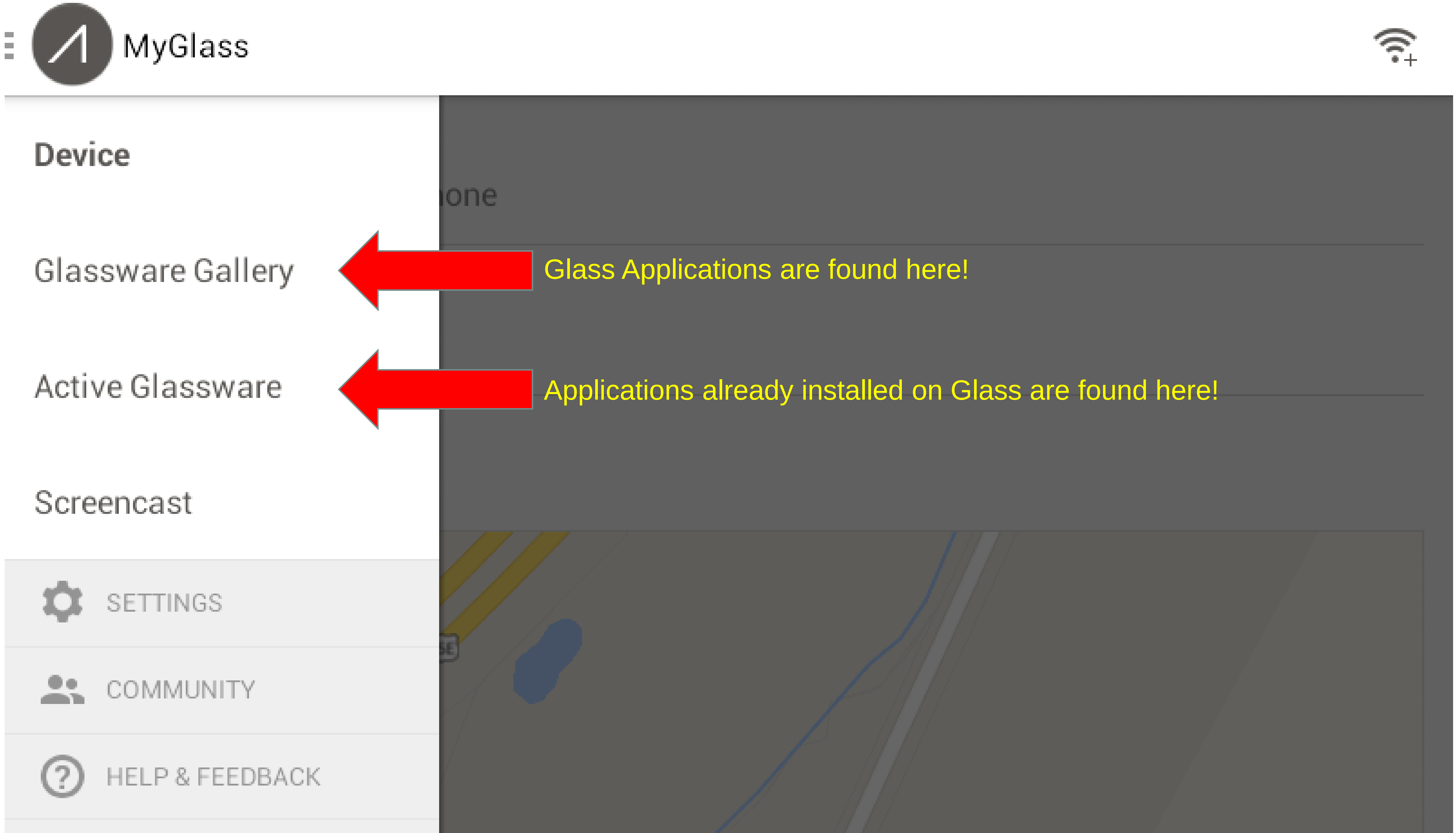
Glass is connected to this phone

Software version:

XE22

Last seen:

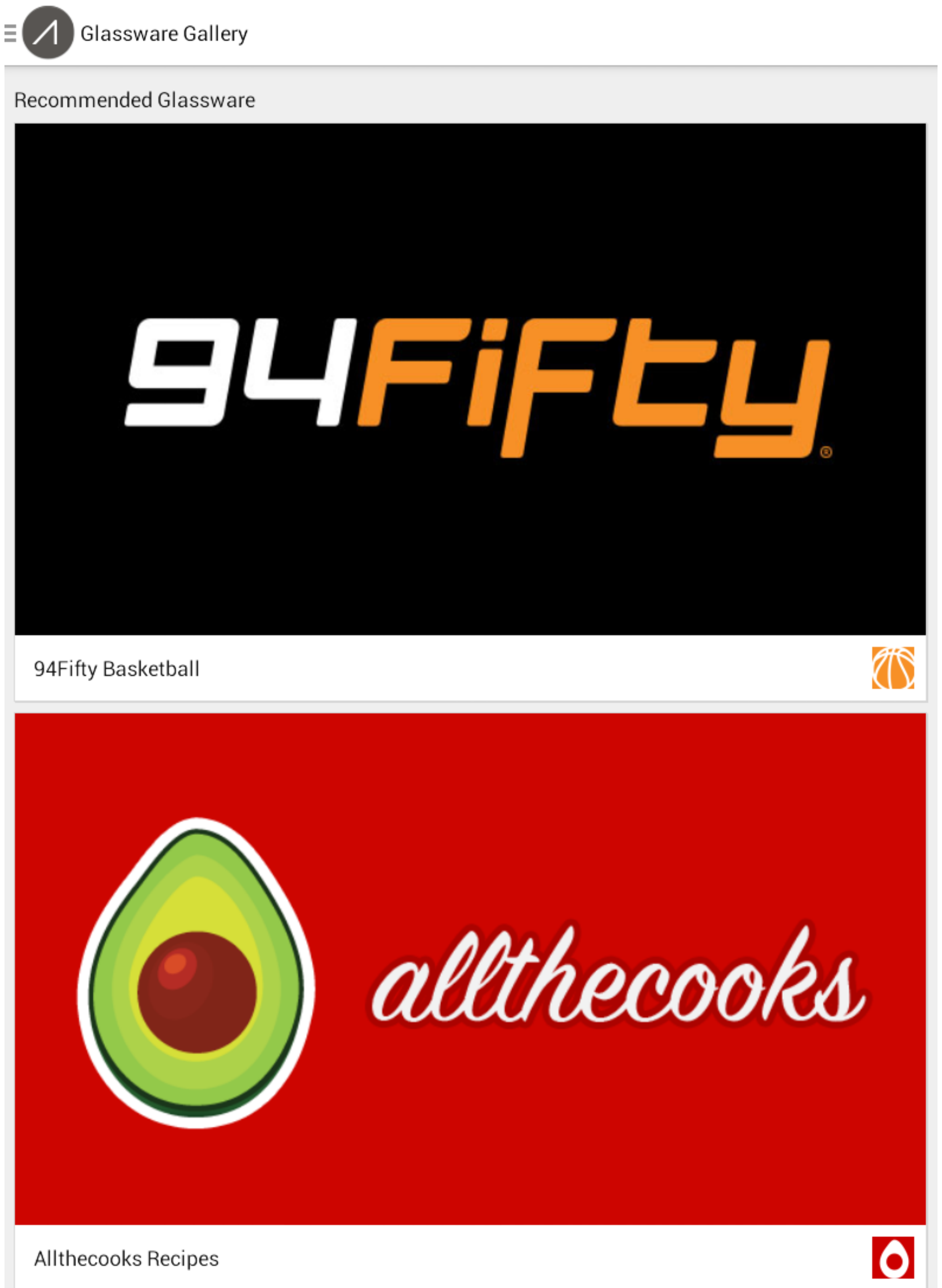
Apr 25, 06:32 PM



Glass Applications are found here!

Applications already installed on Glass are found here!

Applications for Glass, also known as “Glassware”



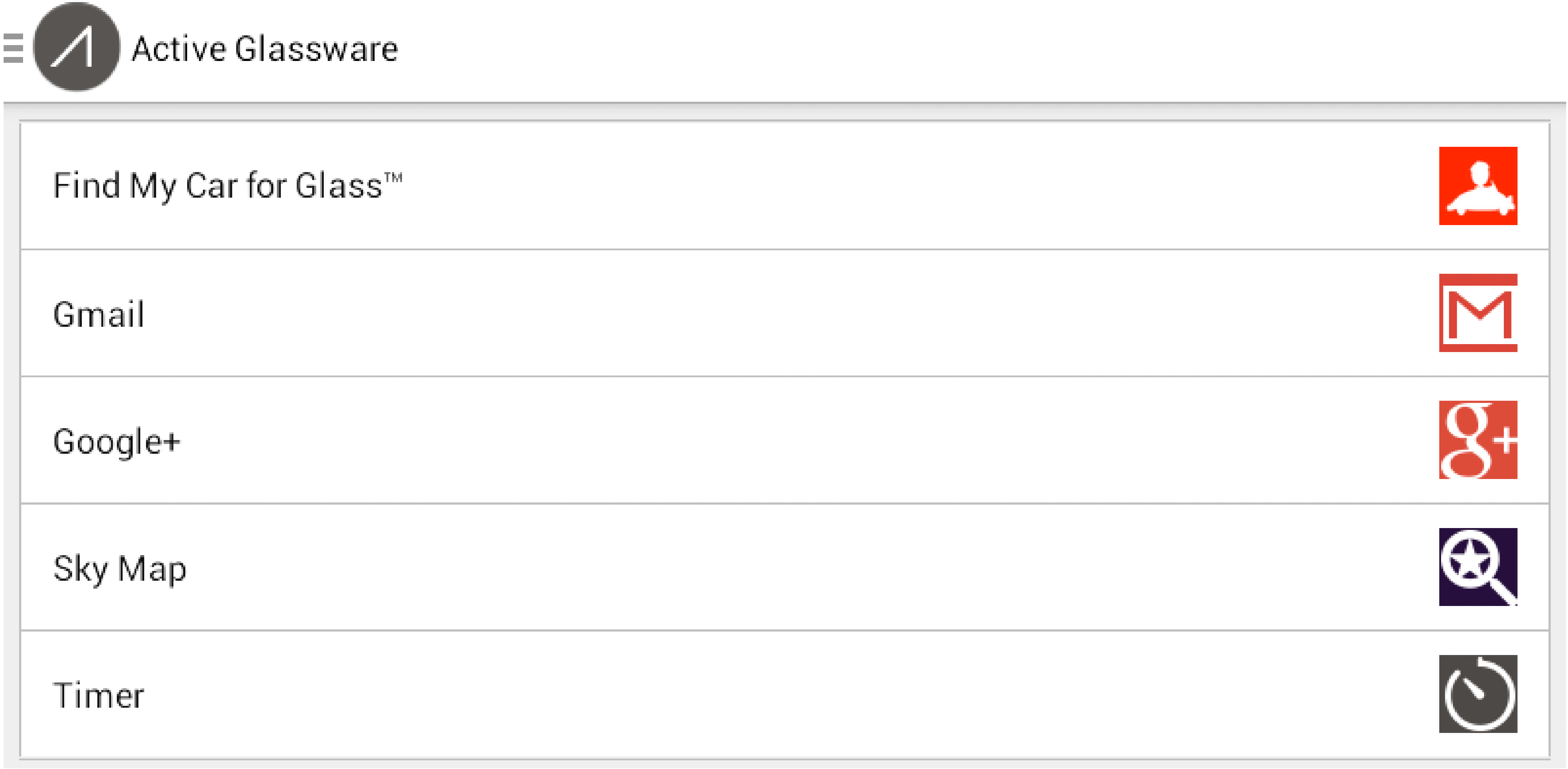
Glassware Gallery

Recommended Glassware

94Fifty Basketball

Allthecooks Recipes

Currently installed glassware:



Active Glassware

Find My Car for Glass™

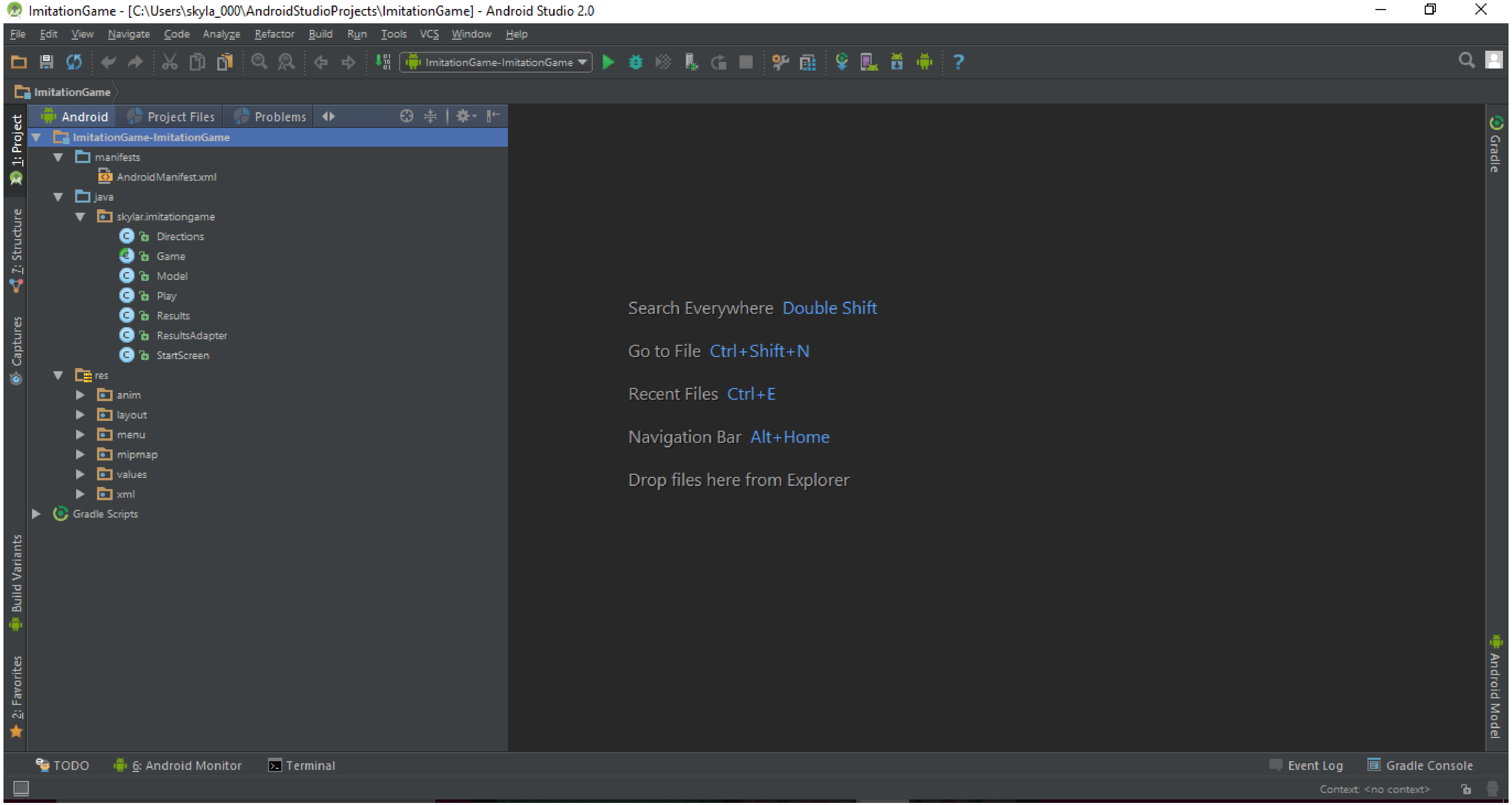
Gmail

Google+

Sky Map

Timer

Android Studio



Search Everywhere Double Shift

Go to File Ctrl+Shift+N

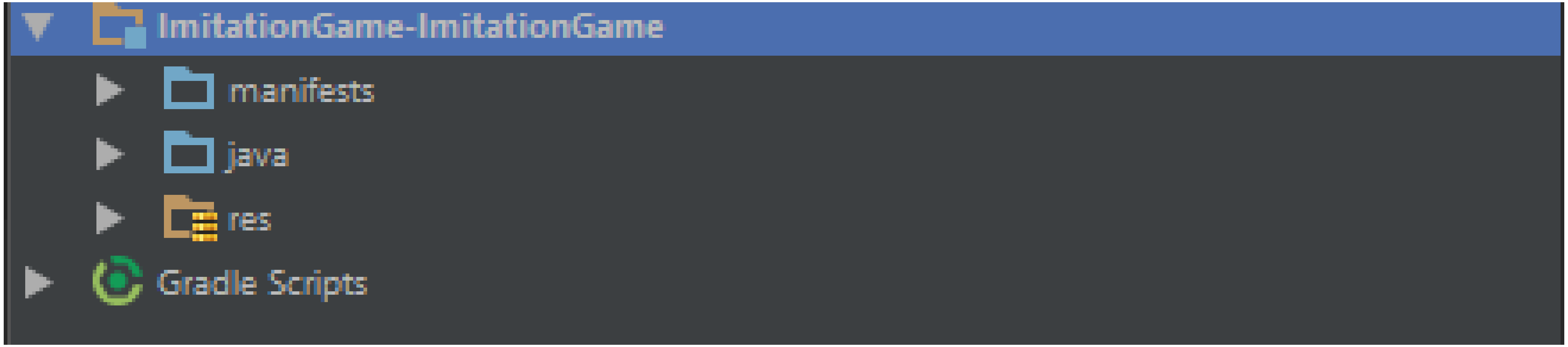
Recent Files Ctrl+E

Navigation Bar Alt+Home

Drop files here from Explorer

Android Studio

- To create my project, I used Android Studio.
- The process of actually creating a project in Android Studio is easy… Understanding it is a whole different story!
- For my project, I had three basic folders, which contained subfolders. These folders were under my app: Manifests, Java, and Res.



ImitationGame-ImitationGame

manifests

java

res

Gradle Scripts

Android Studio

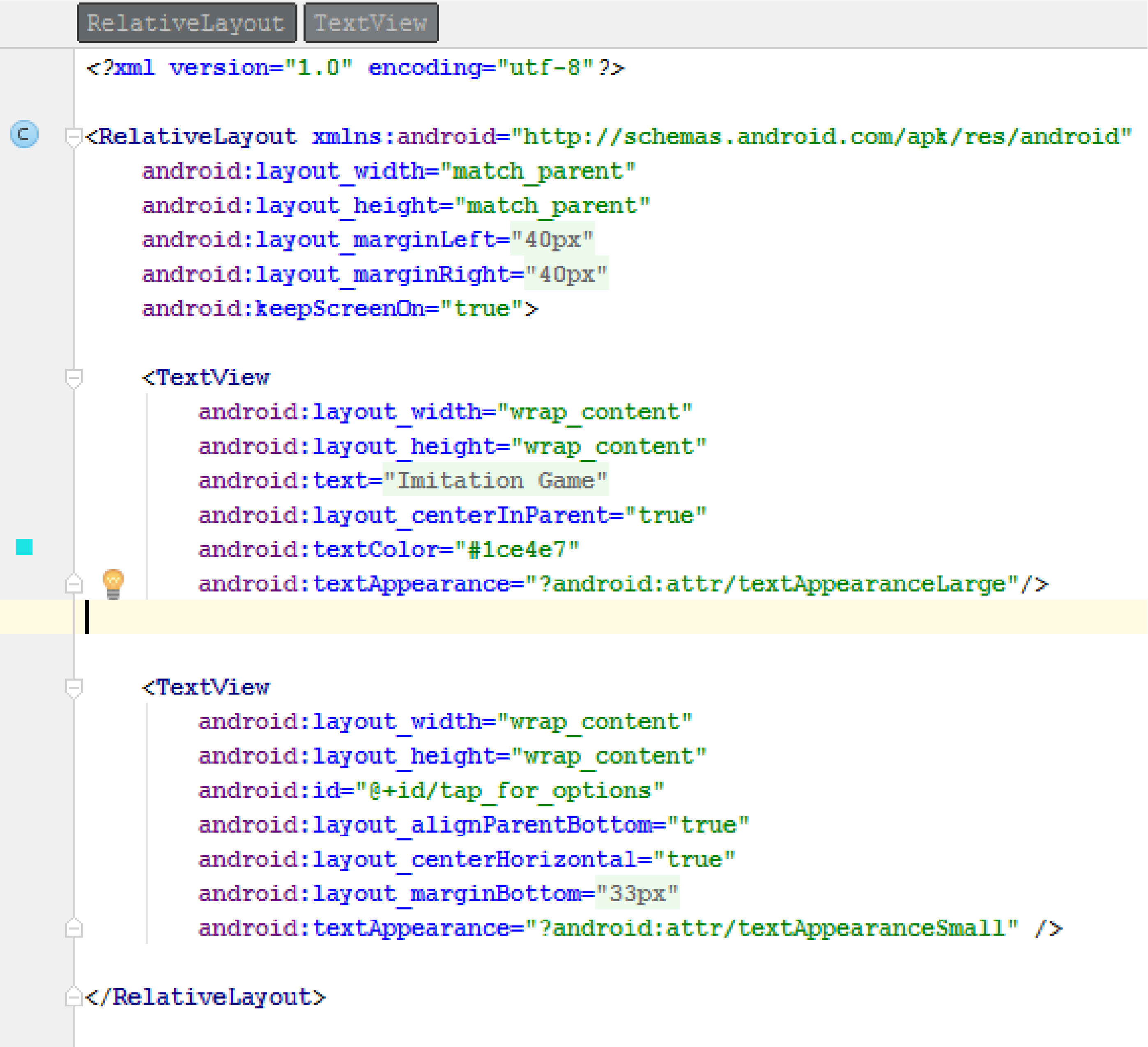
- The manifest folder “describes the nature of the application and each of its components”.

- The res folder contains application resources, such as drawable/mipmap files, layout files, and string values.

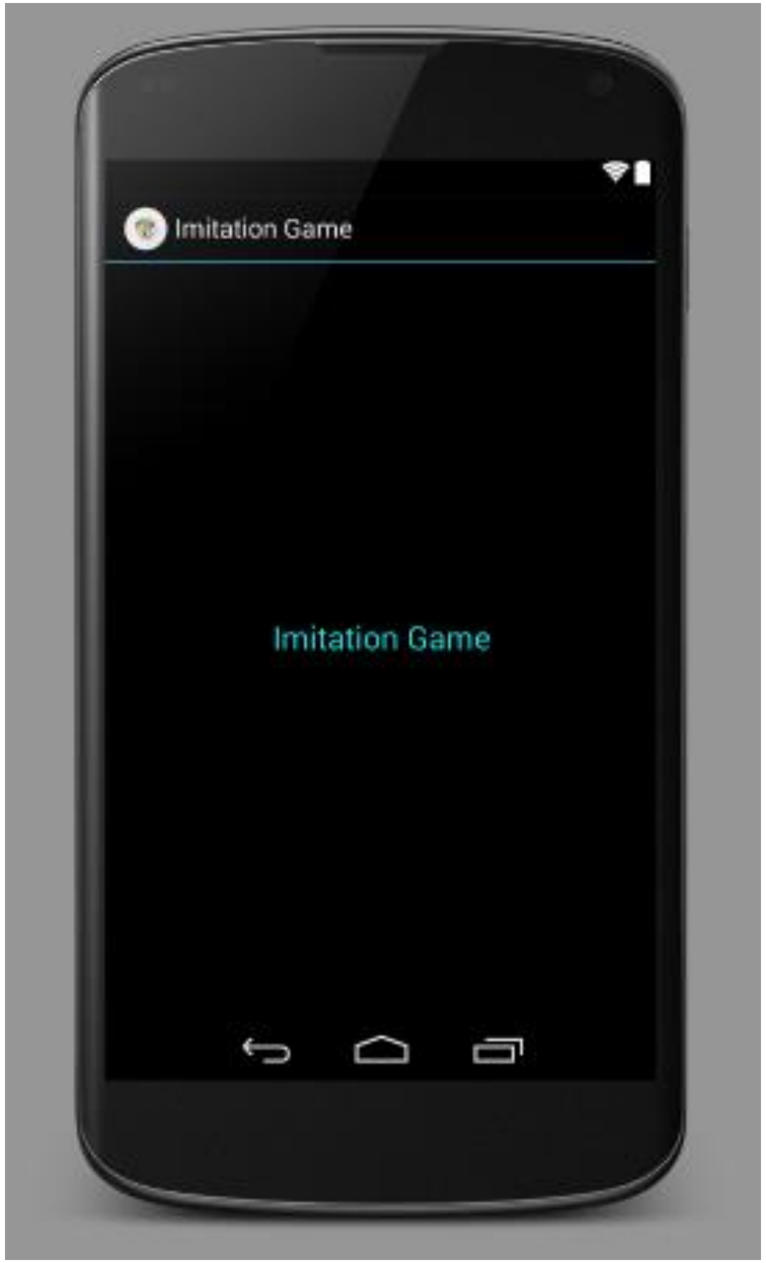
- The java folder contains Java code for the app activities.

- Gradle is a custom build tool used to build android packages (apk files) by managing dependencies and providing custom build logic. (Basically, gradle is a build system for android studio)

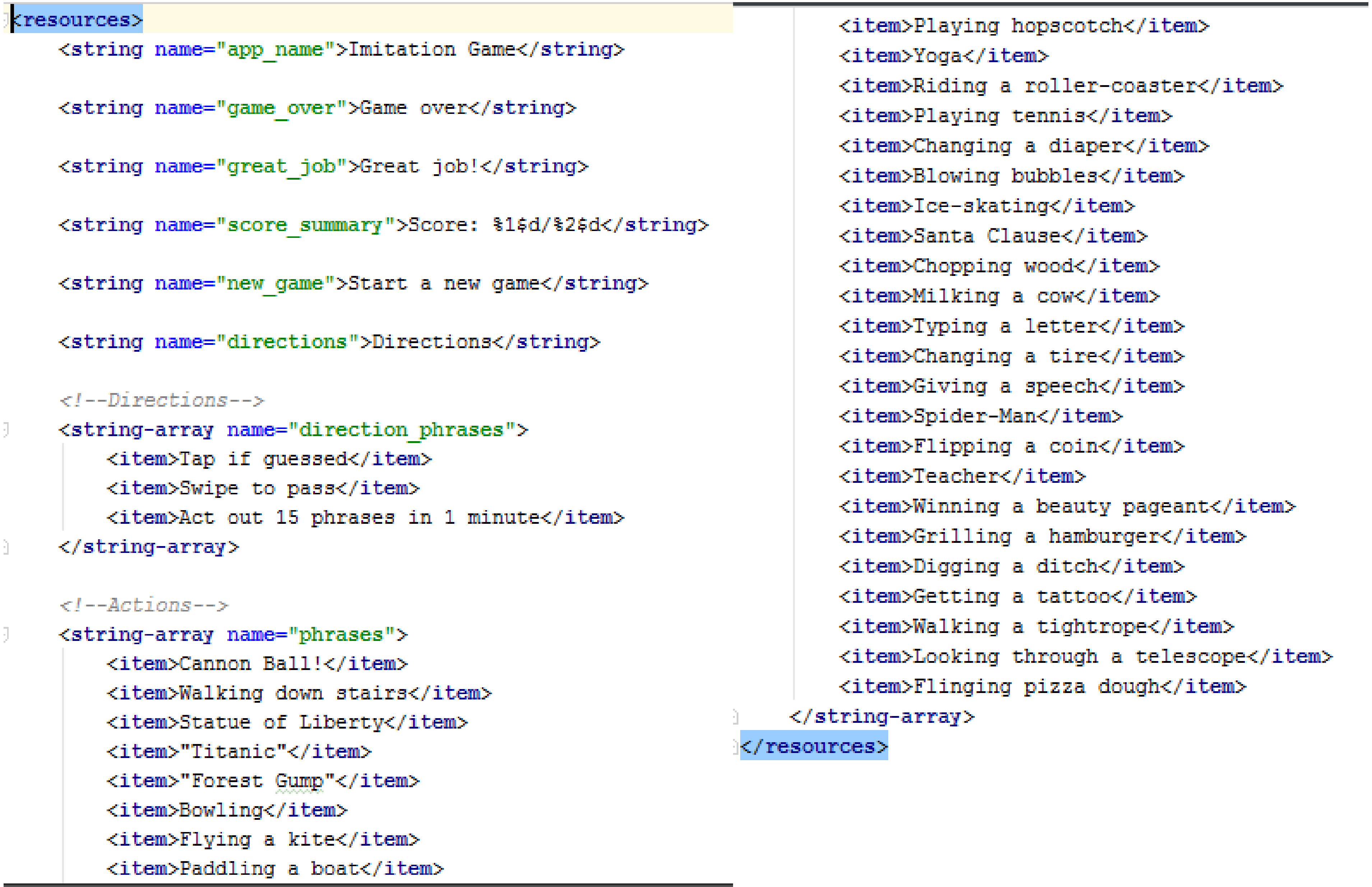
Layout example



```xml
<?xml version="1.0" encoding="utf-8"?>

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginLeft="40px"
    android:layout_marginRight="40px"
    android:keepScreenOn="true">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Imitation Game"
        android:layout_centerInParent="true"
        android:textColor="#1ce4e7"
        android:textAppearance="?android:attr/textAppearanceLarge"/>


    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/tap_for_options"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="33px"
        android:textAppearance="?android:attr/textAppearanceSmall" />

</RelativeLayout>
```

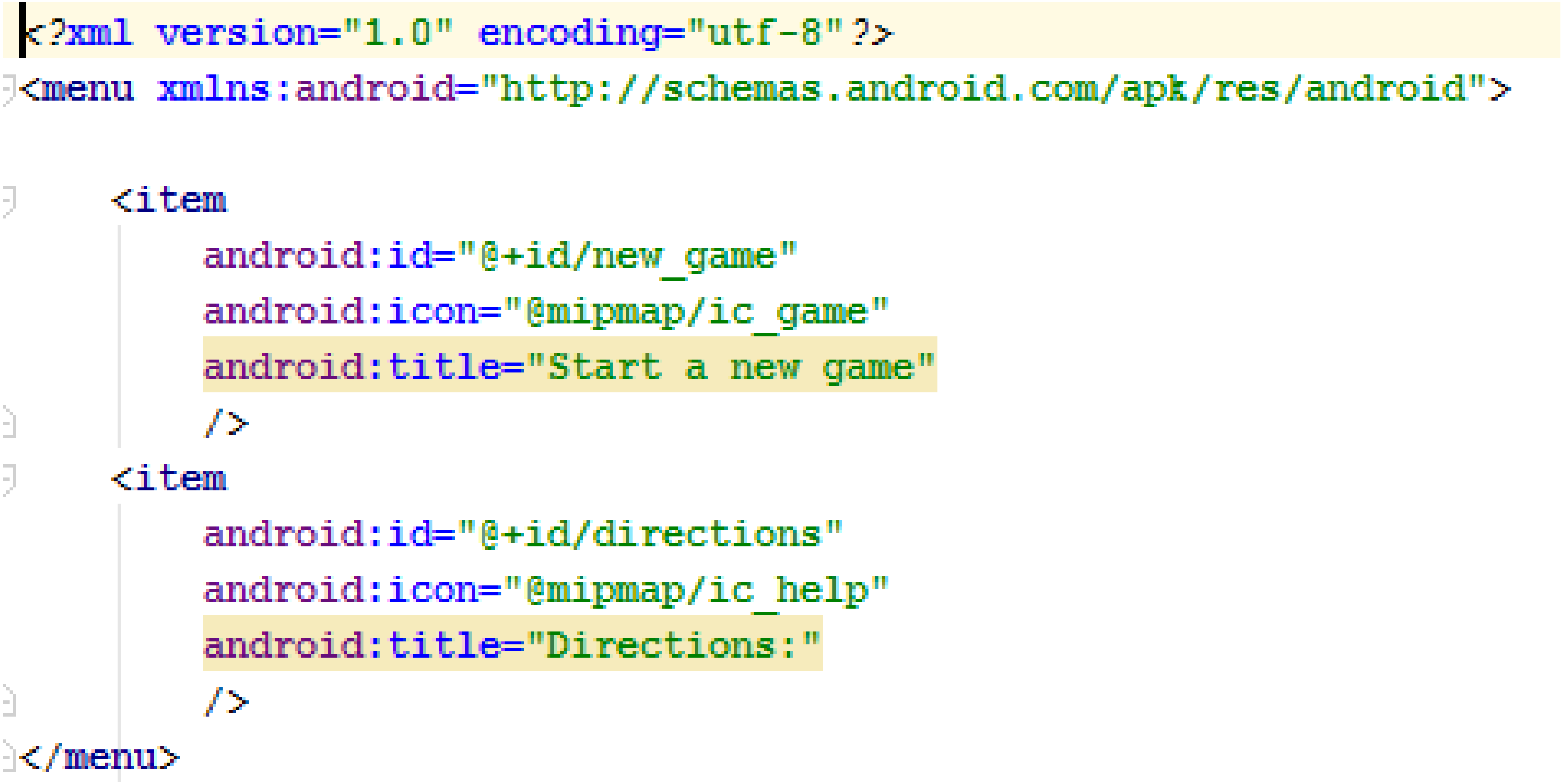


strings.xml



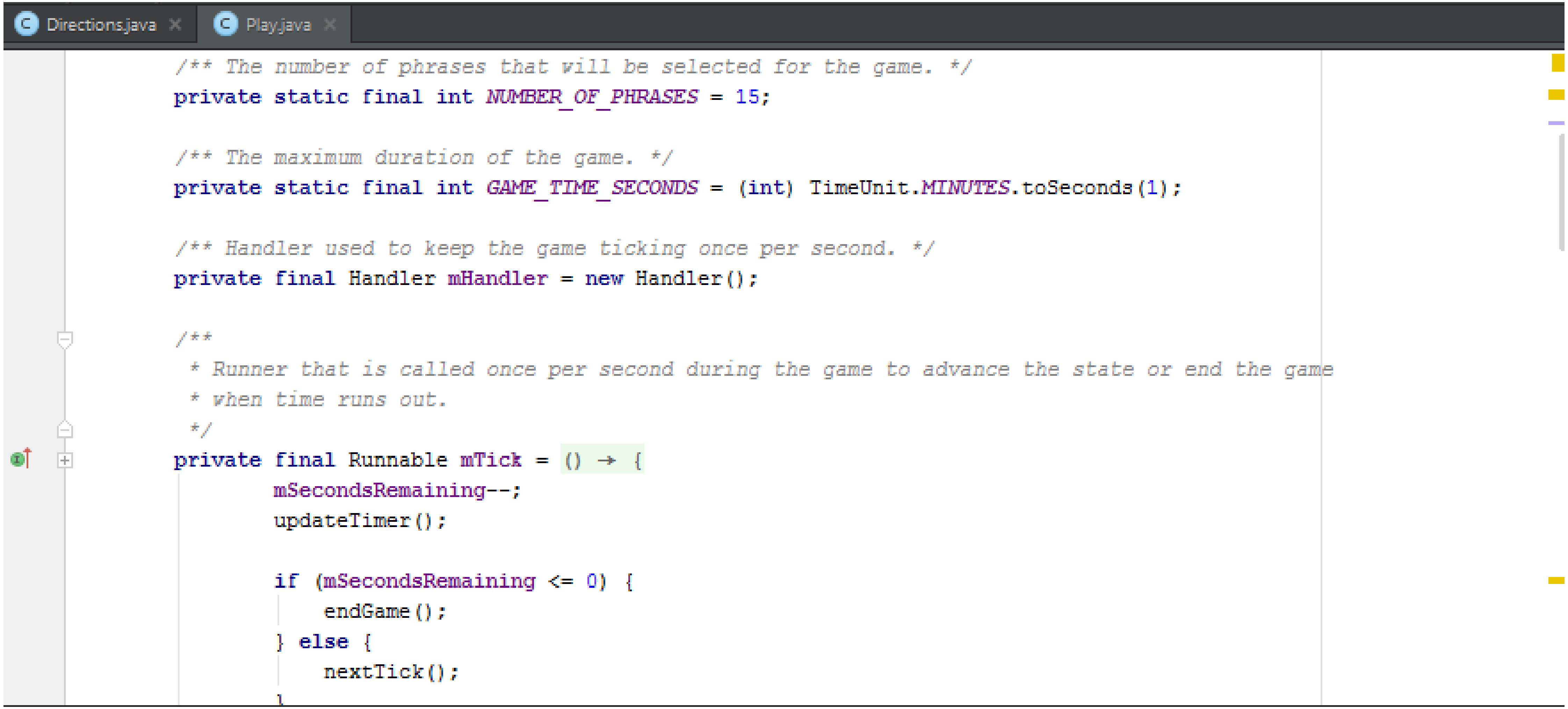
```
<resources>
    <string name="app_name">Imitation Game</string>

    <string name="game_over">Game over</string>

    <string name="great_job">Great job!</string>

    <string name="score_summary">Score: %1$d/%2$d</string>

    <string name="new_game">Start a new game</string>

    <string name="directions">Directions</string>

    <!--Directions-->
    <string-array name="direction_phrases">
        <item>Tap if guessed</item>
        <item>Swipe to pass</item>
        <item>Act out 15 phrases in 1 minute</item>
    </string-array>

    <!--Actions-->
    <string-array name="phrases">
        <item>Cannon Ball!</item>
        <item>Walking down stairs</item>
        <item>Statue of Liberty</item>
        <item>"Titanic"</item>
        <item>"Forest Gump"</item>
        <item>Bowling</item>
        <item>Flying a kite</item>
        <item>Paddling a boat</item>
        <item>Playing hopscotch</item>
        <item>Yoga</item>
        <item>Riding a roller-coaster</item>
        <item>Playing tennis</item>
        <item>Changing a diaper</item>
        <item>Blowing bubbles</item>
        <item>Ice-skating</item>
        <item>Santa Clause</item>
        <item>Chopping wood</item>
        <item>Milking a cow</item>
        <item>Typing a letter</item>
        <item>Changing a tire</item>
        <item>Giving a speech</item>
        <item>Spider-Man</item>
        <item>Flipping a coin</item>
        <item>Teacher</item>
        <item>Winning a beauty pageant</item>
        <item>Grilling a hamburger</item>
        <item>Digging a ditch</item>
        <item>Getting a tattoo</item>
        <item>Walking a tightrope</item>
        <item>Looking through a telescope</item>
        <item>Flinging pizza dough</item>
    </string-array>
</resources>
```

Simple Start Menu



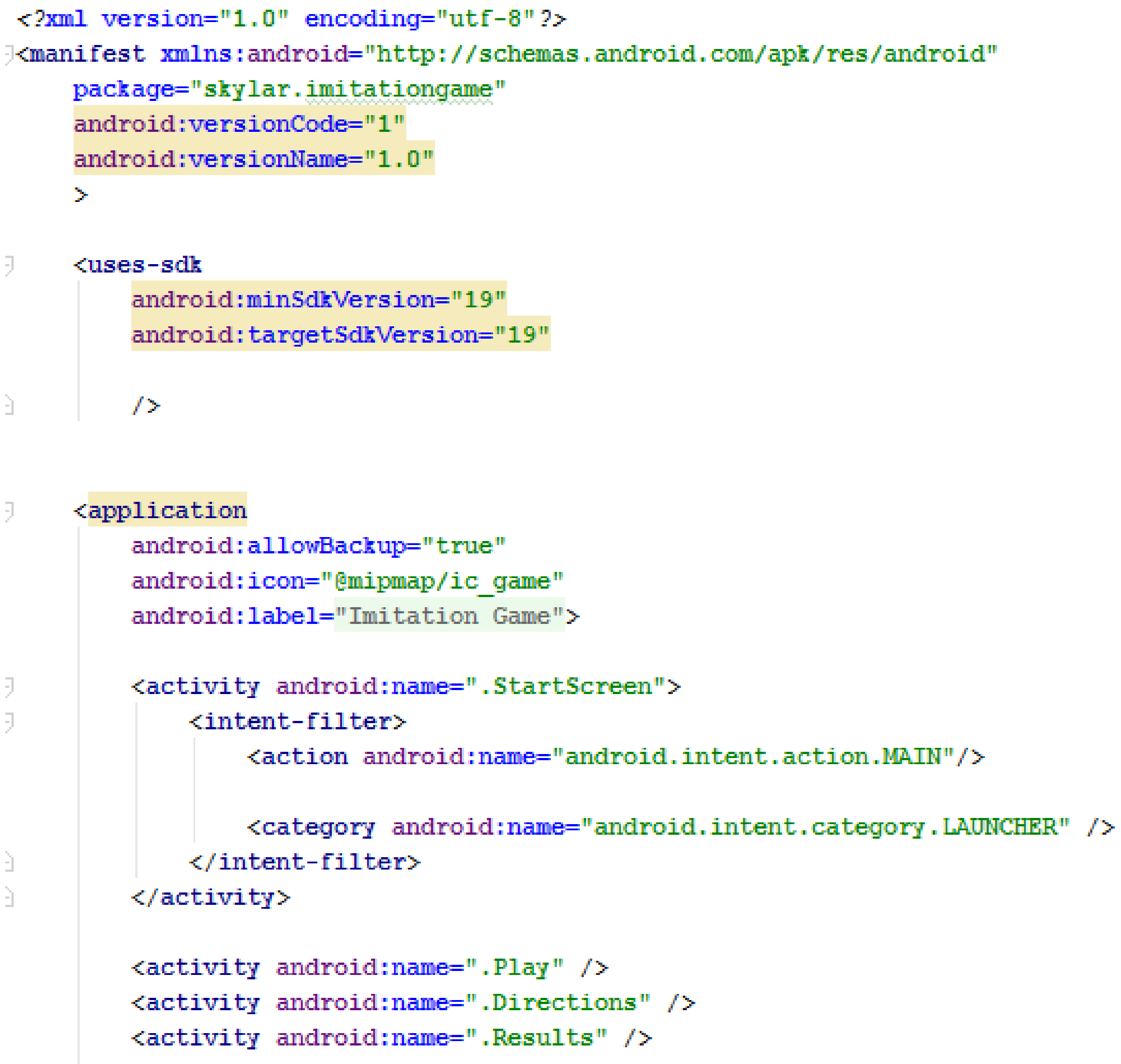
```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">

    <item
        android:id="@+id/new_game"
        android:icon="@mipmap/ic_game"
        android:title="Start a new game"
        />
    <item
        android:id="@+id/directions"
        android:icon="@mipmap/ic_help"
        android:title="Directions:"
        />
</menu>
```

Game Play Example (Java)



```java
/** The number of phrases that will be selected for the game. */
private static final int NUMBER_OF_PHRASES = 15;

/** The maximum duration of the game. */
private static final int GAME_TIME_SECONDS = (int) TimeUnit.MINUTES.toSeconds(1);

/** Handler used to keep the game ticking once per second. */
private final Handler mHandler = new Handler();

/**
 * Runner that is called once per second during the game to advance the state or end the game
 * when time runs out.
 */
private final Runnable mTick = () → {
        mSecondsRemaining--;
        updateTimer();

        if (mSecondsRemaining <= 0) {
            endGame();
        } else {
            nextTick();
        }
```

Manifest.xml



```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="skylar.imitationgame"
    android:versionCode="1"
    android:versionName="1.0"
    >

    <uses-sdk
        android:minSdkVersion="19"
        android:targetSdkVersion="19"

        />


    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_game"
        android:label="Imitation Game">

        <activity android:name=".StartScreen">
            <intent-filter>
                <action android:name="android.intent.action.MAIN"/>

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

        <activity android:name=".Play" />
        <activity android:name=".Directions" />
        <activity android:name=".Results" />
```

“Hand” Free Gaming

- I implemented my own application using Android Studio and Google Glass.

- This project is similar to “Charades”; However, I titled mine “Imitation Game”.

- How to play: You will be given 15 phrases. Try to get the audience to guess all 15 in 1 minute! Tap for a correctly guessed phrase or swipe to pass. After the minute is up, you will be told how many phrases were guessed correctly and incorrectly!

How's the view up there?

just now

Demonstration!

Challenges

- Getting to know Android Studio
- Being able to see what was happening when the code was built – Android Studio does not have an emulator for Glass
- Understanding the layout of Android Studio
- Figuring out how to use Google Glass
- Running/installing app on Glass

Future Goals:

- In the future, I would like to work with different apps using Glass

- I would like to configure the end of the app to show each phrase and whether it was guessed correctly or incorrectly

- I would like to get more familiar with Android Studio