ABOUT ANDROID

• Can use Java or Kotlin Programming Languages
• Doesn’t require Android Device ➔ Can use an emulator
• All development takes place in the Android Studio IDE
  • [https://developer.android.com/studio/](https://developer.android.com/studio/)
STARTING AN ACTIVITY

- Activity Class
- OnCreate
- Sets a layout

```java
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```
EDITING THE LAYOUT

• Text Mode vs. Design Mode
EDITING THE LAYOUT

• Text Mode vs. Design Mode
CONSTRAINT LAYOUTS

- Add Constraints based on surrounding objects
  - "Parents"
  - Other buttons
- Use layout margins as well

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>left_toLeftOf</td>
<td>parent</td>
</tr>
<tr>
<td>right_toLeftOf</td>
<td>@+id/button2</td>
</tr>
<tr>
<td>top_toBottomOf</td>
<td>@+id/question</td>
</tr>
</tbody>
</table>
ADDING TEXT AND BUTTONS

- Layout elements called "Views"
  - TextView
  - Button
- Add them by text or drag & drop

Who was the 3rd president of the United States?

John Adams  Thomas Jefferson
ADDING SCROLL TEXT

- Same as Textview, just edit some of the attributes
  - `android:scrollbars="vertical"`

```xml
<TextView
    android:id="@+id/scrollText"
    android:layout_width="8dp"
    android:layout_height="wrap_content"
    android:layout_marginBottom="38dp"
    android:layout_marginLeft="18dp"
    android:layout_marginRight="18dp"
    android:fadeScrollbars="false"
    android:scrollbarFadeDuration="0"
    android:scrollbarSize="8dp"
    android:scrollbarStyle="insideInset"
    android:scrollbarThumbVertical="@color/grey"
    android:maxHeight="108dp"
    android:scrollbars="vertical"
    android:text="The directions to this game are pretty simple. Get the ...."
    android:textSize="28dp"
    android:background="@color/colorPrimary"
    android:textColor="@android:color/primary_text_dark_mordable"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent" />
```
DESIGNING A POPUP

- Create a separate layout
USING STYLES, COLORS, AND STRINGS
• All about refactoring code

```xml
<resources>
    <!-- Colors -->
    <color name="colorPrimary">#F51B5</color>
    <color name="colorPrimaryDark">#303f9f</color>
    <color name="colorAccent">#FF4081</color>
    <color name="yellow">#FFFF00</color>
    <color name="teal">#009952</color>
    <color name="red">#FF0000</color>
    <color name="grey">#BBBBBB</color>
</resources>

<!-- Strings -->
<string name="app_name">TriviaGame</string>
<string name="question1">Who was the 3rd president of the United States?</string>
<string name="question2">Who was the 5th president of the United States?</string>
<string name="question3">Who was the US president after James Polk?</string>
<string name="answer1a">John Adams</string>
<string name="answer1b">Thomas Jefferson</string>
<string name="answer2a">James Monroe</string>
<string name="answer2b">Abraham Lincoln</string>
<string name="answer3a">Zachary Taylor</string>
<string name="answer3b">John Tyler</string>
<string name="close">x</string>
<string name="rules">The directions to this game are pretty simple. Get the right answer, get 10 points. Get the wrong answer, get no points. When you run out of questions, you'll see your score. That's it. Good luck!</string>
</resources>
```
GLOBAL VARIABLES

```
ImageView result;
int score = 0;
int question;
String[] answers = {"Thomas Jefferson", "James Monroe", "Zachary Taylor"};
```
FINDING AND SETTING VIEWS

```java
final Button button1 = findViewById(R.id.button1);
final Button button2 = findViewById(R.id.button2);
final TextView questionText = findViewById(R.id.question);

button1.setText("John Adams");
button2.setText("Thomas Jefferson");
questionText.setText("Who was the 3rd president of the United States?");
```
SETTING BUTTON FUNCTIONALITY

• OnClick Listeners

```java
button1.setOnClickListener((view) -> {
    if (answers[question - 1].equals(button1.getText().toString())){
        showPopup();
        result.setImageResource(R.mipmap.checkmark);
        score += 10;
    } else {
        showPopup();
        result.setImageResource(R.mipmap.xmark);
    }
});
```
public void showPopup(){
    LayoutInflater layoutInflater = (LayoutInflater) MainActivity.this.getSystemService(Context.LAYOUT_INFLATER_SERVICE);
    View customView = layoutInflater.inflate(R.layout.popup, (ViewGroup) findViewById(R.id.layout_root));

    Button closePopupBtn = (Button) customView.findViewById(R.id.button3);

    // instantiate popup window
    final PopupWindow popupWindow = new PopupWindow(customView, ViewGroup.LayoutParams.WRAP_CONTENT, ViewGroup.LayoutParams.WRAP_CONTENT);

    ConstraintLayout constraintLayout = findViewById(R.id.constraintLayout1);

    // display the popup window
    popupWindow.showAtLocation(constraintLayout, Gravity.CENTER, 0, 0);
ADDING POPUP LOGIC

closePopupBtn.setOnClickListener((v) -> {
    popupWindow.dismiss();

    question++;
    if (question == 2) {
        button1.setText("James Monroe");
        button2.setText("Abraham Lincoln");
        questionText.setText("Who was the 5th president of the United States?"感);
    }
    else if (question == 3) {
        button1.setText("Zachary Taylor");
        button2.setText("John Tyler");
        questionText.setText("Who was the US president after James Polk?感");
    }
    else {
        button1.setVisibility(View.INVISIBLE);
        button2.setVisibility(View.INVISIBLE);
        questionText.setText("Score: " + score);
    }
});