How to Create a Quiz App In Android?

Last Updated : 31 Mar, 2025

Android is an **operating system** which is basically made for Mobile phones. It is based on the Linux Kernel and other open-source software and is developed by **Google**. Android is very popular nowadays among students and students are now choosing Android for their projects. It's very much important for a beginner to build basic Android apps to learn Android Development. In this article let's create a simple Quiz App in Android using **Java** and **Kotlin**. A simple **Quiz App** that contains a set of curated questions and their answers and checks for the score at the end.

Step by Step Implementation

Step 1: Creating a new project

To create a new project in the Android Studio, please refer to How to Create/Start a New Project in Android Studio?

Step 2: Working with activity_main.xml

Add the below code in the **activity_main.xml** file. Here the parent layout is a LinearLayout whose orientation is set to vertical. Inside it, there is one **ImageView**, one **TextView**, two **Buttons**, and two **ImageButton**. The Button and ImageButton are inside a child LinearLayout for horizontal orientation. ImageView is used for displaying image and TextView is used to display the question and Button is used to indicate true/false and ImageButton for navigating to next/previous question.

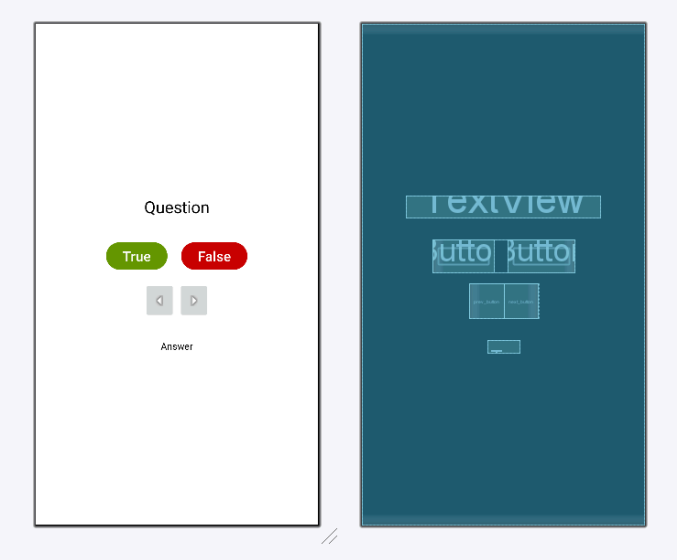
activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<!--Using linear layout with vertical orientation and center gravity -->
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
```

```
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:background="#FFFFFF"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    tools:context=".MainActivity">

    <!--ImageView used for showing pictures along with questions-->
    <ImageView
        android:id="@+id/myimage"
        android:layout_width="wrap_content"
        android:src="@drawable/f1"
        android:layout_height="wrap_content"/>

    <!--TextView used for showing questions on screen-->
    <TextView
        android:id="@+id/answer_text_view"
        android:text="@string/a"
        android:textColor="@android:color/black"
        android:textSize="30sp"
        android:padding="10dp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

    <!--Using another LinearLayout for showing buttons
        in horizontal orientation-->
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content">

        <!--TrueButton-->
        <Button
            android:id="@+id/true_button"
            android:layout_marginRight="20dp"
            android:backgroundTint="#5BD91B"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:textSize="20sp"
            android:text="@string/true_text" />

        <!--FalseButton-->
        <Button
            android:id="@+id/false_button"
            android:layout_marginLeft="20dp"
            android:layout_width="wrap_content"
            android:backgroundTint="#E33328"
            android:layout_height="wrap_content"
            android:textSize="20sp"
            android:text="@string/false_text" />

    </LinearLayout>

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content">

        <!--PreviousButton-->
```

```
        <ImageButton
            android:id="@+id/prev_button"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:src="@drawable/baseline_keyboard_arrow_left_black_18dp"
            android:backgroundTint="#DFD2D1"
            android:text="@string/prev_text" />

        <!--NextButton-->
        <ImageButton
            android:id="@+id/next_button"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:backgroundTint="#DFD2D1"
            android:src="@drawable/baseline_keyboard_arrow_right_black_18dp"
            android:text="@string/next_text" />

    </LinearLayout>
</LinearLayout>
```

Design UI:



Step 3: Working with strings.xml

Navigate to **app > res > values > strings.xml** and make the following changes. We will be adding 6 questions and fetch them later in MainActivity file.

strings.xml:

```
<resources>
    <string name="app_name">Demo</string>

    <string name="a">New Delhi is the capital of India</string>
    <string name="b">West Bengal is located in the west of India</string>
```

```
    <string name="c">Arunachal Pradesh is a state of India</string>
    <string name="d">Brazil is located in North America</string>
    <string name="e">HTML is a programming language</string>
    <string name="f">React is a web development framework</string>

</resources>
```

Step 4: Create a data class for questions

To create a new **data class** right-click a Java/Kotlin file or folder, and select **New > Java/Kotlin Class**. Now add the following code in the file.

Question.java Question.kt

```
package org.geeksforgeeks.demo;

public class Question {
    // Resource ID for the question text (stored in strings.xml)
    private int answerResId;
    // Correct answer (true or false)
    private boolean isAnswerTrue;

    public Question(int answerResId, boolean isAnswerTrue) {
        this.answerResId = answerResId;
        this.isAnswerTrue = isAnswerTrue;
```



```
    // Getter for answerResId
    public int getAnswerResId() {
        return answerResId;
    }

    // Setter for answerResId
    public void setAnswerResId(int answerResId) {
        this.answerResId = answerResId;
    }

    // Getter for isAnswerTrue
    public boolean isAnswerTrue() {
        return isAnswerTrue;
    }

    // Setter for isAnswerTrue
    public void setAnswerTrue(boolean answerTrue) {
        isAnswerTrue = answerTrue;
    }
}
```

Step 5: Working with MainActivity file

onCreate() method is invoked first when the app is launched. **Question[]** array is instantiated with question Id and right answer to the question. **setOnClickListener()** method is invoked whenever **Button/ImageButton** is clicked, so when the user clicks a button it checks for its **Id** by **getId()** method and performs actions as per our logic. **updateQuestion()** updates question by **settext()** method of **TextView** and changes images by keeping track of question number. **checkAnswer()** method checks the original answer with the button clicked and uses Toast to display text accordingly.

MainActivity.java MainActivity.kt

```
package org.geeksforgeeks.demo;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageButton;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    // UI components
    private Button falseButton;
    private Button trueButton;
    private ImageButton nextButton;
    private ImageButton prevButton;
    private TextView questionTextView;
    private TextView answerTextView;

    // Variable to track correct answers
    private int correct = 0;

    // Index to track the current question
    private int currentQuestionIndex = 0;

    // Array holding the questions and their correct answers
    private final Question[] questionBank = {
            new Question(R.string.a, true),
            new Question(R.string.b, false),
            new Question(R.string.c, true),
            new Question(R.string.d, false),
            new Question(R.string.e, false),
            new Question(R.string.f, true)
    };

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Initializing UI elements
        falseButton = findViewById(R.id.false_button);
        trueButton = findViewById(R.id.true_button);
```

```
        nextButton = findViewById(R.id.next_button);
        prevButton = findViewById(R.id.prev_button);
        questionTextView = findViewById(R.id.question);
        answerTextView = findViewById(R.id.answer);

        // Hide the answer text initially
        answerTextView.setVisibility(View.INVISIBLE);

        // Load the first question
        updateQuestion();

        // Button click listeners
        falseButton.setOnClickListener(v -> checkAnswer(false));
        trueButton.setOnClickListener(v -> checkAnswer(true));

        nextButton.setOnClickListener(v -> {
            answerTextView.setVisibility(View.INVISIBLE);

            // Check if there are more questions
            if (currentQuestionIndex < 7) {
                currentQuestionIndex++;

                // If all questions are completed, display the score
                if (currentQuestionIndex == 6) {
                    nextButton.setVisibility(View.GONE);
                    prevButton.setVisibility(View.GONE);
                    trueButton.setVisibility(View.GONE);
                    falseButton.setVisibility(View.GONE);

                    questionTextView.setText("Your Score: " + correct + "/6");
                } else {
                    updateQuestion();
                }
            }
        });

        prevButton.setOnClickListener(v -> {
            answerTextView.setVisibility(View.INVISIBLE);

            // Prevent going back before the first question
            if (currentQuestionIndex > 0) {
                currentQuestionIndex = (currentQuestionIndex - 1) %
questionBank.length;
                updateQuestion();
            }
        });
    }

    // Updates the displayed question
    private void updateQuestion() {

questionTextView.setText(questionBank[currentQuestionIndex].getAnswerResId());
    }

    // Checks the user's answer and updates the UI
    private void checkAnswer(boolean userChooseCorrect) {
        boolean answerIsTrue = questionBank[currentQuestionIndex].isAnswerTrue();
        String message;
```

```
        if (userChooseCorrect == answerIsTrue) {
            message = "That's correct";
            correct++;
        } else {
            message = "That's incorrect";
        }

        // Display feedback message
        answerTextView.setVisibility(View.VISIBLE);
        answerTextView.setText(message);
    }
}
```

Output:

0:00

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