**Computer Science Department**

**Midterm Exam- Summer- 2024**

**COMP 5450-AA Mobile Programming**

Github Link: <https://github.com/chandana-sree-krishna/Mobile-Programming-Midterm.git>

**Q1. Create a calculator app that can perform addition, subtraction, multiplication, and division. You must use the When statement.**

colors.xml

<?xml version="1.0" encoding="utf-8"?>  
<resources>  
 <color name="black">#FF000000</color>  
 <color name="white">#FFFFFFFF</color>  
 <color name="purple\_500">#6200EE</color>  
 <color name="purple\_700">#3700B3</color>  
</resources>

themes.xml

<resources xmlns:tools="http://schemas.android.com/tools">  
 <!-- Base application theme. -->  
 <style name="Base.Theme.Midterm\_Q1\_Calculator" parent="Theme.MaterialComponents.DayNight.DarkActionBar">  
 <!-- Customize your light theme here. -->  
 <item name="colorPrimary">@color/purple\_500</item>  
 <item name="colorPrimaryVariant">@color/purple\_700</item>  
 <item name="colorOnPrimary">@color/white</item>  
 <item name="android:statusBarColor">@color/purple\_700</item>  
 </style>  
  
 <style name="Theme.Midterm\_Q1\_Calculator" parent="Base.Theme.Midterm\_Q1\_Calculator" />  
</resources>

MainActivity.kt

package com.example.midterm\_q1\_calculator  
  
import android.os.Bundle  
import android.view.View  
import android.widget.AdapterView  
import android.widget.ArrayAdapter  
import android.widget.Button  
import android.widget.EditText  
import android.widget.Spinner  
import android.widget.TextView  
import androidx.activity.enableEdgeToEdge  
import androidx.appcompat.app.AppCompatActivity  
import androidx.core.view.ViewCompat  
import androidx.core.view.WindowInsetsCompat  
  
class MainActivity : AppCompatActivity() {  
 override fun onCreate(savedInstanceState: Bundle?) {  
 super.onCreate(savedInstanceState)  
 *enableEdgeToEdge*()  
 setContentView(R.layout.*activity\_main*)  
 val button: Button = findViewById(R.id.*btResult*)  
 val edtxt1: EditText = findViewById(R.id.*ednum1*)  
 val edtxt2: EditText = findViewById(R.id.*ednum2*)  
 val resultTV: TextView = findViewById(R.id.*textResult*)  
//global variable  
 var flag : String = "addition"  
//create a spinner items (options)  
 val spinnerVal : Spinner = findViewById(R.id.*spSelect*)  
 var options = *arrayOf*("addition","subtraction","multiplication","division")  
 spinnerVal.*adapter* = ArrayAdapter<String>(this,android.R.layout.*simple\_list\_item\_1*,options )  
 button.setOnClickListener**{** view **->** var x: Int = edtxt1.*text*.toString().*toInt*();  
 var y: Int = edtxt2.*text*.toString().*toInt*();  
  
 resultTV.*text* = when (flag) {  
 "addition" -> *add*(x, y)  
 "subtraction" -> *subtract*(x, y)  
 "multiplication" -> *multiply*(x, y)  
 "division" -> *divide*(x, y)  
 else -> "Invalid operation"  
 }  
 **}** spinnerVal.*onItemSelectedListener* = object : AdapterView.OnItemSelectedListener{  
 override fun onItemSelected(p0: AdapterView<\*>?, p1: View?, p2: Int, p3: Long) {  
 flag = options.get(p2) //p2 is the index of selected item  
 }  
 override fun onNothingSelected(p0: AdapterView<\*>?) {  
 *TODO*("Not yet implemented")  
 }  
 }  
 }  
}  
public fun add(a: Int, b: Int): String {  
 return (a+b).toString();  
}  
  
public fun subtract(a:Int, b:Int): String{  
 return (a-b).toString();  
}  
  
public fun multiply(a: Int, b: Int): String {  
 return (a\*b).toString();  
}  
  
public fun divide(a:Int, b:Int): String{  
 if(b==0){  
 return "Division by 0 not allowed";  
 }  
 else{  
 return (a.toFloat()/b.toFloat()).toString();  
 }  
}

activity\_main.xml

<?xml version="1.0" encoding="utf-8"?>  
<androidx.constraintlayout.widget.ConstraintLayout 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:id="@+id/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_marginStart="10dp"  
 android:layout\_marginTop="10dp"  
 android:layout\_marginEnd="10dp"  
 tools:context=".MainActivity">  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="20dp"  
 android:text="Calculations"  
 android:textSize="24sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.131" />  
  
 <EditText  
 android:id="@+id/ednum1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:ems="10"  
 android:inputType="number"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
 <EditText  
 android:id="@+id/ednum2"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:ems="10"  
 android:inputType="number"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.644" />  
  
 <TextView  
 android:id="@+id/textResult"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Result"  
 android:textSize="24sp"  
 app:layout\_constraintBottom\_toTopOf="@+id/btResult"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.501"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/ednum2"  
 app:layout\_constraintVertical\_bias="0.697" />  
  
 <Button  
 android:id="@+id/btResult"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="RESULT"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/ednum2"  
 app:layout\_constraintVertical\_bias="0.7" />  
  
 <Spinner  
 android:id="@+id/spSelect"  
 android:layout\_width="300dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="10dp"  
 android:layout\_marginTop="56dp"  
 android:layout\_marginEnd="10dp"  
 app:layout\_constraintBottom\_toTopOf="@+id/ednum1"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/textView"  
 app:layout\_constraintVertical\_bias="0.153" />  
  
  
</androidx.constraintlayout.widget.ConstraintLayout>

A screenshot of a calculator

Description automatically generated

Figure 1: Design

A screen shot of a phone

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A screenshot of a cell phone

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**Q2. Create an app of your choice(do not repeat question 1) as a topic that uses several views with at least a Button and Spinner with their Listeners (setOnClickListener and onItemSelectedListener), accordingly.**

FlashFrancais is a simple Android application for learning French vocabulary through flashcards.

**Features**

Display French words and their English translations on interactive flashcards.

Toggle between French and English by tapping on the flashcard text.

Supports multiple categories: colors, days of the week, greetings, animals, and more.

**A screenshot of a phone

Description automatically generated A screen shot of a phone

Description automatically generated A screen shot of a phone

Description automatically generated**

**A cell phone with a message on it

Description automatically generated A cell phone with a blue square and white text

Description automatically generated A screenshot of a cell phone

Description automatically generated** **A screen shot of a cell phone

Description automatically generated**

MainActivity.kt

package com.example.midterm\_q2\_flashfrancais  
  
import android.os.Bundle  
import android.view.View  
import android.widget.AdapterView  
import android.widget.ArrayAdapter  
import android.widget.Button  
import android.widget.Spinner  
import android.widget.TextView  
import androidx.activity.enableEdgeToEdge  
import androidx.appcompat.app.AppCompatActivity  
import androidx.core.view.ViewCompat  
import androidx.core.view.WindowInsetsCompat  
  
class MainActivity : AppCompatActivity() {  
  
 private lateinit var flashcardsMap: Map<String, List<Flashcard>>  
 private var currentCardIndex = 0  
 private lateinit var currentCategory: String  
  
 override fun onCreate(savedInstanceState: Bundle?) {  
 super.onCreate(savedInstanceState)  
 *enableEdgeToEdge*()  
 setContentView(R.layout.*activity\_main*)  
  
  
 val categorySpinner: Spinner = findViewById(R.id.*category\_spinner*)  
 val nextFlashcardButton: Button = findViewById(R.id.*next\_flashcard\_button*)  
  
 // Set up Spinner  
 categorySpinner.*adapter* = ArrayAdapter.createFromResource(  
 this,  
 R.array.*french\_categories*,  
 android.R.layout.*simple\_spinner\_item* )  
 categorySpinner.setAdapter(categorySpinner.*adapter*)  
  
 // Initialize flashcards map with data  
 flashcardsMap = *mapOf*(  
 "Colors" *to listOf*(  
 Flashcard("Rouge", "Red"),  
 Flashcard("Vert", "Green"),  
 Flashcard("Bleu", "Blue"),  
 Flashcard("Jaune", "Yellow"),  
 Flashcard("Noir", "Black"),  
 Flashcard("Blanc", "White"),  
 Flashcard("Gris", "Gray"),  
 Flashcard("Orange", "Orange"),  
 Flashcard("Violet", "Purple"),  
 Flashcard("Rose", "Pink"),  
 Flashcard("Marron", "Brown"),  
 Flashcard("Turquoise", "Turquoise"),  
 Flashcard("Argenté", "Silver"),  
 Flashcard("Doré", "Gold"),  
 Flashcard("Bordeaux", "Maroon"),  
 // Add more colors as needed  
 ),  
 "Days" *to listOf*(  
 Flashcard("Lundi", "Monday"),  
 Flashcard("Mardi", "Tuesday"),  
 Flashcard("Mercredi", "Wednesday"),  
 Flashcard("Jeudi", "Thursday"),  
 Flashcard("Vendredi", "Friday"),  
 Flashcard("Samedi", "Saturday"),  
 Flashcard("Dimanche", "Sunday")  
 // All days of the week  
 ),  
 "Greetings" *to listOf*(  
 Flashcard("Bonjour", "Hello"),  
 Flashcard("Salut", "Hi"),  
 Flashcard("Bonsoir", "Good evening"),  
 Flashcard("Bon après-midi", "Good afternoon"),  
 Flashcard("Bonne nuit", "Good night"),  
 Flashcard("Bienvenue", "Welcome"),  
 Flashcard("Coucou", "Hey there")  
 // Add more greetings as needed  
 ),  
 "Animals" *to listOf*(  
 Flashcard("Chat", "Cat"),  
 Flashcard("Chien", "Dog"),  
 Flashcard("Oiseau", "Bird"),  
 Flashcard("Lapin", "Rabbit"),  
 Flashcard("Poisson", "Fish"),  
 Flashcard("Cheval", "Horse"),  
 Flashcard("Vache", "Cow"),  
 Flashcard("Souris", "Mouse"),  
 Flashcard("Éléphant", "Elephant"),  
 Flashcard("Girafe", "Giraffe"),  
 Flashcard("Serpent", "Snake"),  
 Flashcard("Tigre", "Tiger"),  
 Flashcard("Lion", "Lion"),  
 Flashcard("Renard", "Fox"),  
 Flashcard("Abeille", "Bee"),  
 Flashcard("Poule", "Chicken"),  
 Flashcard("Cochon", "Pig"),  
 Flashcard("Papillon", "Butterfly"),  
 Flashcard("Coccinelle", "Ladybug"),  
 Flashcard("Loup", "Wolf")  
 // Add more animals as needed  
 )  
 )  
  
 // Set default category  
 //currentCategory = "Colors"  
 //displayFlashcard()  
  
 // Set up Spinner onItemSelectedListener  
 categorySpinner.*onItemSelectedListener* = object : AdapterView.OnItemSelectedListener {  
 override fun onItemSelected(parent: AdapterView<\*>?, view: View?, position: Int, id: Long) {  
 currentCategory = parent?.getItemAtPosition(position).*toString*()  
 currentCardIndex = 0 // Reset index when category changes  
 displayFlashcard()  
 }  
  
 override fun onNothingSelected(parent: AdapterView<\*>?) {  
 // Handle case where nothing is selected  
 }  
 }  
  
 // Set up Button onClickListener  
 nextFlashcardButton.setOnClickListener **{** currentCardIndex = (currentCardIndex + 1) % flashcardsMap[currentCategory]!!.size  
 displayFlashcard()  
 **}** }  
  
 private fun displayFlashcard() {  
 val flashcard = flashcardsMap[currentCategory]!currentCardIndex]  
 val frenchWordTextView: TextView = findViewById(R.id.*french\_word*)  
 val englishTranslationTextView: TextView = findViewById(R.id.*english\_translation*)  
  
  
 frenchWordTextView.*text* = flashcard.frenchWord  
 englishTranslationTextView.*text* = flashcard.englishTranslation  
  
  
 // Hide all text views except the first one (French word) initially  
 frenchWordTextView.*visibility* = View.*VISIBLE* englishTranslationTextView.*visibility* = View.*GONE* // Set up click listener to switch between views  
 frenchWordTextView.setOnClickListener **{** toggleVisibility(frenchWordTextView, englishTranslationTextView)  
 **}** englishTranslationTextView.setOnClickListener **{** toggleVisibility(englishTranslationTextView, frenchWordTextView)  
 **}** }  
  
 private fun toggleVisibility(viewToHide: TextView, viewToShow: TextView) {  
 viewToHide.*visibility* = View.*GONE* viewToShow.*visibility* = View.*VISIBLE* }  
  
}

activity\_main.xml

<?xml version="1.0" encoding="utf-8"?>  
<androidx.constraintlayout.widget.ConstraintLayout 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:id="@+id/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
  
 <TextView  
 android:id="@+id/french\_word"  
 android:layout\_width="333dp"  
 android:layout\_height="304dp"  
 android:background="@color/colorSecondary"  
 android:gravity="center"  
 android:textColor="@color/colorOnSecondary"  
 android:textSize="56sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.785"  
 tools:text="Bonjour" />  
  
 <TextView  
 android:id="@+id/english\_translation"  
 android:layout\_width="333dp"  
 android:layout\_height="304dp"  
 android:background="@color/colorPrimaryVariant"  
 android:gravity="center"  
 android:textColor="@color/colorOnPrimary"  
 android:textSize="56sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.785"  
 tools:text="Hello" />  
  
 <TextView  
 android:id="@+id/title\_text"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="20dp"  
 android:gravity="center"  
 android:text="@string/french\_vocab\_flashcards"  
 android:textSize="24sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.0"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.141" />  
  
 <Spinner  
 android:id="@+id/category\_spinner"  
 android:layout\_width="184dp"  
 android:layout\_height="60dp"  
 android:dropDownWidth="match\_parent"  
 android:dropDownHeight="match\_parent"  
 android:entries="@array/french\_categories"  
 android:prompt="@string/select\_category\_prompt"  
 android:scrollbarSize="26dp"  
 android:textAlignment="center"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.497"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.292" />  
  
 <Button  
 android:id="@+id/next\_flashcard\_button"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:text="Next Flashcard"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintTop\_toTopOf="@+id/title\_text"  
 app:layout\_constraintVertical\_bias="0.97"  
 tools:layout\_editor\_absoluteX="0dp" />  
</androidx.constraintlayout.widget.ConstraintLayout>

Strings.xml

<resources>  
 <string name="app\_name">Midterm\_Q2\_FlashFrancais</string>  
 <string name="select\_category\_prompt">Select a category</string>  
 <string name="french\_vocab\_flashcards">French Vocabulary Flashcards</string>  
 <!-- Categories for French vocabulary -->  
 <string-array name="french\_categories">  
 <item>Colors</item>  
 <item>Days</item>  
 <item>Greetings</item>  
 <item>Animals</item>  
 <!-- Add more categories as needed -->  
 </string-array>  
</resources>

Flashcard.kt

package com.example.midterm\_q2\_flashfrancais  
  
data class Flashcard(  
 val frenchWord: String,  
 val englishTranslation: String,  
 )

**Q3. Create an app on your choice of topic that uses an activity that calls the previous two apps and sends data using putExtra.**

In the 3rd app, I have created 2 buttons to open the two apps. When the buttons are clicked, corresponding apps are opened and a message is displayed “Launching <app\_name>”.

Press back button to go back to the previous page to select the 2nd app.

![A screenshot of a cell phone

Description automatically generated A screen shot of a phone

Description automatically generated

The message Launching Flash Francais is displayed.

A screen shot of a cell phone

Description automatically generated

After going back and clicking on the “OPEN CALCULATOR” button, the message is displays the message “Launching Calculator”

After opening the apps, it functions the same

CalculatorActivity.kt

package com.example.midterm\_q3  
  
import android.content.Intent  
import android.os.Bundle  
import android.view.View  
import android.widget.AdapterView  
import android.widget.ArrayAdapter  
import android.widget.Button  
import android.widget.EditText  
import android.widget.Spinner  
import android.widget.TextView  
import android.widget.Toast  
import androidx.activity.enableEdgeToEdge  
import androidx.appcompat.app.AppCompatActivity  
  
class CalculatorActivity : AppCompatActivity() {  
 override fun onCreate(savedInstanceState: Bundle?) {  
 super.onCreate(savedInstanceState)  
 *enableEdgeToEdge*()  
 setContentView(R.layout.*activity\_first*)  
  
 val bundle: Bundle? = *intent*.*extras* bundle?.*let* **{** val msg = bundle.getString("extra\_data")  
 Toast.makeText(this,msg,Toast.*LENGTH\_SHORT*).show()  
 **}** val button: Button = findViewById(R.id.*btResult*)  
 val edtxt1: EditText = findViewById(R.id.*ednum1*)  
 val edtxt2: EditText = findViewById(R.id.*ednum2*)  
 val resultTV: TextView = findViewById(R.id.*textResult*)  
  
 var flag : String = "addition"  
//create a spinner items (options)  
 val spinnerVal : Spinner = findViewById(R.id.*spSelect*)  
 var options = *arrayOf*("addition","subtraction","multiplication","division")  
 spinnerVal.*adapter* = ArrayAdapter<String>(this,android.R.layout.*simple\_list\_item\_1*,options )  
 button.setOnClickListener**{** view **->** var x: Int = edtxt1.*text*.toString().*toInt*();  
 var y: Int = edtxt2.*text*.toString().*toInt*();  
  
 resultTV.*text* = when (flag) {  
 "addition" -> add(x, y)  
 "subtraction" -> subtract(x, y)  
 "multiplication" -> multiply(x, y)  
 "division" -> divide(x, y)  
 else -> "Invalid operation"  
 }  
 **}** spinnerVal.*onItemSelectedListener* = object : AdapterView.OnItemSelectedListener{  
 override fun onItemSelected(p0: AdapterView<\*>?, p1: View?, p2: Int, p3: Long) {  
 flag = options.get(p2) //p2 is the index of selected item  
 }  
 override fun onNothingSelected(p0: AdapterView<\*>?) {  
 *TODO*("Not yet implemented")  
 }  
 }  
 }  
  
 private fun add(a: Int, b: Int): String {  
 return (a+b).toString();  
 }  
  
 private fun subtract(a:Int, b:Int): String{  
 return (a-b).toString();  
 }  
  
 private fun multiply(a: Int, b: Int): String {  
 return (a\*b).toString();  
 }  
  
 private fun divide(a:Int, b:Int): String{  
 if(b==0){  
 return "Division by 0 not allowed";  
 }  
 else{  
 return (a.toFloat()/b.toFloat()).toString();  
 }  
 }  
  
}

MainActivity.kt

package com.example.midterm\_q3  
  
import android.content.Intent  
import android.os.Bundle  
import android.widget.Button  
import androidx.activity.enableEdgeToEdge  
import androidx.appcompat.app.AppCompatActivity  
import androidx.core.view.ViewCompat  
import androidx.core.view.WindowInsetsCompat  
  
class MainActivity : AppCompatActivity() {  
 override fun onCreate(savedInstanceState: Bundle?) {  
 super.onCreate(savedInstanceState)  
 *enableEdgeToEdge*()  
 setContentView(R.layout.*activity\_main*)  
 val btnCalculator: Button = findViewById(R.id.*btnCalculator*)  
 val btnColorSelector: Button = findViewById(R.id.*btnColorSelector*)  
  
 btnCalculator.setOnClickListener **{** val intent = Intent(this, CalculatorActivity::class.*java*)  
 intent.putExtra("extra\_data", "Launching Calculator")  
 startActivity(intent)  
 **}** btnColorSelector.setOnClickListener **{** val intent = Intent(this, SecondActivity::class.*java*)  
 intent.putExtra("extra\_data", "Launching Flash Francais")  
 startActivity(intent)  
 **}** }  
}

SecondActivity.kt

package com.example.midterm\_q3  
  
import android.os.Bundle  
import android.view.View  
import android.widget.AdapterView  
import android.widget.ArrayAdapter  
import android.widget.Button  
import android.widget.Spinner  
import android.widget.TextView  
import android.widget.Toast  
import androidx.activity.enableEdgeToEdge  
import androidx.appcompat.app.AppCompatActivity  
  
class SecondActivity : AppCompatActivity() {  
  
 private lateinit var flashcardsMap: Map<String, List<Flashcard>>  
 private var currentCardIndex = 0  
 private lateinit var currentCategory: String  
  
 override fun onCreate(savedInstanceState: Bundle?) {  
 super.onCreate(savedInstanceState)  
 *enableEdgeToEdge*()  
 setContentView(R.layout.*activity\_second*)  
  
 val bundle: Bundle? = *intent*.*extras* bundle?.*let* **{** val msg = bundle.getString("extra\_data")  
 Toast.makeText(this,msg,Toast.*LENGTH\_SHORT*).show()  
 **}** val categorySpinner: Spinner = findViewById(R.id.*category\_spinner*)  
 val nextFlashcardButton: Button = findViewById(R.id.*next\_flashcard\_button*)  
  
 // Set up Spinner  
 categorySpinner.*adapter* = ArrayAdapter.createFromResource(  
 this,  
 R.array.*french\_categories*,  
 android.R.layout.*simple\_spinner\_item* )  
 categorySpinner.setAdapter(categorySpinner.*adapter*)  
  
 // Initialize flashcards map with data  
 flashcardsMap = *mapOf*(  
 "Colors" *to listOf*(  
 Flashcard("Rouge", "Red"),  
 Flashcard("Vert", "Green"),  
 Flashcard("Bleu", "Blue"),  
 Flashcard("Jaune", "Yellow"),  
 Flashcard("Noir", "Black"),  
 Flashcard("Blanc", "White"),  
 Flashcard("Gris", "Gray"),  
 Flashcard("Orange", "Orange"),  
 Flashcard("Violet", "Purple"),  
 Flashcard("Rose", "Pink"),  
 Flashcard("Marron", "Brown"),  
 Flashcard("Turquoise", "Turquoise"),  
 Flashcard("Argenté", "Silver"),  
 Flashcard("Doré", "Gold"),  
 Flashcard("Bordeaux", "Maroon"),  
 // Add more colors as needed  
 ),  
 "Days" *to listOf*(  
 Flashcard("Lundi", "Monday"),  
 Flashcard("Mardi", "Tuesday"),  
 Flashcard("Mercredi", "Wednesday"),  
 Flashcard("Jeudi", "Thursday"),  
 Flashcard("Vendredi", "Friday"),  
 Flashcard("Samedi", "Saturday"),  
 Flashcard("Dimanche", "Sunday")  
 // All days of the week  
 ),  
 "Greetings" *to listOf*(  
 Flashcard("Bonjour", "Hello"),  
 Flashcard("Salut", "Hi"),  
 Flashcard("Bonsoir", "Good evening"),  
 Flashcard("Bon après-midi", "Good afternoon"),  
 Flashcard("Bonne nuit", "Good night"),  
 Flashcard("Bienvenue", "Welcome"),  
 Flashcard("Coucou", "Hey there")  
 // Add more greetings as needed  
 ),  
 "Animals" *to listOf*(  
 Flashcard("Chat", "Cat"),  
 Flashcard("Chien", "Dog"),  
 Flashcard("Oiseau", "Bird"),  
 Flashcard("Lapin", "Rabbit"),  
 Flashcard("Poisson", "Fish"),  
 Flashcard("Cheval", "Horse"),  
 Flashcard("Vache", "Cow"),  
 Flashcard("Souris", "Mouse"),  
 Flashcard("Éléphant", "Elephant"),  
 Flashcard("Girafe", "Giraffe"),  
 Flashcard("Serpent", "Snake"),  
 Flashcard("Tigre", "Tiger"),  
 Flashcard("Lion", "Lion"),  
 Flashcard("Renard", "Fox"),  
 Flashcard("Abeille", "Bee"),  
 Flashcard("Poule", "Chicken"),  
 Flashcard("Cochon", "Pig"),  
 Flashcard("Papillon", "Butterfly"),  
 Flashcard("Coccinelle", "Ladybug"),  
 Flashcard("Loup", "Wolf")  
 // Add more animals as needed  
 )  
 )  
  
 // Set default category  
 //currentCategory = "Colors"  
 //displayFlashcard()  
  
 // Set up Spinner onItemSelectedListener  
 categorySpinner.*onItemSelectedListener* = object : AdapterView.OnItemSelectedListener {  
 override fun onItemSelected(parent: AdapterView<\*>?, view: View?, position: Int, id: Long) {  
 currentCategory = parent?.getItemAtPosition(position).*toString*()  
 currentCardIndex = 0 // Reset index when category changes  
 displayFlashcard()  
 }  
  
 override fun onNothingSelected(parent: AdapterView<\*>?) {  
 // Handle case where nothing is selected  
 }  
 }  
  
 // Set up Button onClickListener  
 nextFlashcardButton.setOnClickListener **{** currentCardIndex = (currentCardIndex + 1) % flashcardsMap[currentCategory]!!.size  
 displayFlashcard()  
 **}** }  
  
 private fun displayFlashcard() {  
 val flashcard = flashcardsMap[currentCategory]!![currentCardIndex]  
 val frenchWordTextView: TextView = findViewById(R.id.*french\_word*)  
 val englishTranslationTextView: TextView = findViewById(R.id.*english\_translation*)  
  
  
 frenchWordTextView.*text* = flashcard.frenchWord  
 englishTranslationTextView.*text* = flashcard.englishTranslation  
  
  
 // Hide all text views except the first one (French word) initially  
 frenchWordTextView.*visibility* = View.*VISIBLE* englishTranslationTextView.*visibility* = View.*GONE* // Set up click listener to switch between views  
 frenchWordTextView.setOnClickListener **{** toggleVisibility(frenchWordTextView, englishTranslationTextView)  
 **}** englishTranslationTextView.setOnClickListener **{** toggleVisibility(englishTranslationTextView, frenchWordTextView)  
 **}** }  
  
 private fun toggleVisibility(viewToHide: TextView, viewToShow: TextView) {  
 viewToHide.*visibility* = View.*GONE* viewToShow.*visibility* = View.*VISIBLE* }  
  
}

flashcard.kt

package com.example.midterm\_q3  
  
data class Flashcard(  
 val frenchWord: String,  
 val englishTranslation: String,  
)

activity\_first.xml

<?xml version="1.0" encoding="utf-8"?>  
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 android:id="@+id/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_marginStart="10dp"  
 android:layout\_marginTop="10dp"  
 android:layout\_marginEnd="10dp"  
 tools:context=".MainActivity">  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="20dp"  
 android:text="Calculations"  
 android:textSize="24sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.131" />  
  
 <EditText  
 android:id="@+id/ednum1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:ems="10"  
 android:inputType="number"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
 <EditText  
 android:id="@+id/ednum2"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:ems="10"  
 android:inputType="number"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.644" />  
  
 <TextView  
 android:id="@+id/textResult"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Result"  
 android:textSize="24sp"  
 app:layout\_constraintBottom\_toTopOf="@+id/btResult"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.501"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/ednum2"  
 app:layout\_constraintVertical\_bias="0.697" />  
  
 <Button  
 android:id="@+id/btResult"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="RESULT"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/ednum2"  
 app:layout\_constraintVertical\_bias="0.7" />  
  
 <Spinner  
 android:id="@+id/spSelect"  
 android:layout\_width="300dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="10dp"  
 android:layout\_marginTop="56dp"  
 android:layout\_marginEnd="10dp"  
 app:layout\_constraintBottom\_toTopOf="@+id/ednum1"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/textView"  
 app:layout\_constraintVertical\_bias="0.153" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

Activity\_main.xml

<?xml version="1.0" encoding="utf-8"?>  
<androidx.constraintlayout.widget.ConstraintLayout 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:id="@+id/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <Button  
 android:id="@+id/btnCalculator"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginLeft="10dp"  
 android:layout\_marginRight="10dp"  
 android:text="Open Calculator"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.526"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.553" />  
  
 <Button  
 android:id="@+id/btnColorSelector"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Open Flash Francais"  
 android:layout\_marginLeft="10dp"  
 android:layout\_marginRight="10dp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.342" />  
  
  
</androidx.constraintlayout.widget.ConstraintLayout>

Activity\_second.xml

<?xml version="1.0" encoding="utf-8"?>  
<androidx.constraintlayout.widget.ConstraintLayout 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:id="@+id/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
  
 <TextView  
 android:id="@+id/french\_word"  
 android:layout\_width="333dp"  
 android:layout\_height="304dp"  
 android:background="@color/colorSecondary"  
 android:gravity="center"  
 android:textColor="@color/colorOnSecondary"  
 android:textSize="56sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.785"  
 tools:text="Bonjour" />  
  
 <TextView  
 android:id="@+id/english\_translation"  
 android:layout\_width="333dp"  
 android:layout\_height="304dp"  
 android:background="@color/colorPrimaryVariant"  
 android:gravity="center"  
 android:textColor="@color/colorOnPrimary"  
 android:textSize="56sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.785"  
 tools:text="Hello" />  
  
 <TextView  
 android:id="@+id/title\_text"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="20dp"  
 android:gravity="center"  
 android:text="@string/french\_vocab\_flashcards"  
 android:textSize="24sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.0"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.141" />  
  
 <Spinner  
 android:id="@+id/category\_spinner"  
 android:layout\_width="184dp"  
 android:layout\_height="60dp"  
 android:dropDownWidth="match\_parent"  
 android:dropDownHeight="match\_parent"  
 android:entries="@array/french\_categories"  
 android:prompt="@string/select\_category\_prompt"  
 android:scrollbarSize="26dp"  
 android:textAlignment="center"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.497"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.292" />  
  
 <Button  
 android:id="@+id/next\_flashcard\_button"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:text="Next Flashcard"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintTop\_toTopOf="@+id/title\_text"  
 app:layout\_constraintVertical\_bias="0.97"  
 tools:layout\_editor\_absoluteX="0dp" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

Colors.xml

<?xml version="1.0" encoding="utf-8"?>  
<resources>  
 <color name="black">#FF000000</color>  
 <color name="white">#FFFFFFFF</color>  
 <color name="colorPrimary">#6200EE</color>  
 <color name="colorPrimaryVariant">#3700B3</color>  
 <color name="colorOnPrimary">#FFFFFF</color>  
 <color name="colorSecondary">#03DAC6</color>  
 <color name="colorSecondaryVariant">#018786</color>  
 <color name="colorOnSecondary">#000000</color>  
</resources>

Strings.xml

<resources>  
 <string name="app\_name">Midterm\_Q3</string>  
 <string name="select\_category\_prompt">Select a category</string>  
 <string name="french\_vocab\_flashcards">French Vocabulary Flashcards</string>  
 <!-- Categories for French vocabulary -->  
 <string-array name="french\_categories">  
 <item>Colors</item>  
 <item>Days</item>  
 <item>Greetings</item>  
 <item>Animals</item>  
 <!-- Add more categories as needed -->  
 </string-array>  
</resources>

AndroidManifest.xml

<?xml version="1.0" encoding="utf-8"?>  
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools">  
  
 <application  
 android:allowBackup="true"  
 android:dataExtractionRules="@xml/data\_extraction\_rules"  
 android:fullBackupContent="@xml/backup\_rules"  
 android:icon="@mipmap/ic\_launcher"  
 android:label="@string/app\_name"  
 android:roundIcon="@mipmap/ic\_launcher\_round"  
 android:supportsRtl="true"  
 android:theme="@style/Theme.Midterm\_Q3"  
 tools:targetApi="31">  
 <activity  
 android:name=".MainActivity"  
 android:exported="true">  
 <intent-filter>  
 <action android:name="android.intent.action.MAIN" />  
  
 <category android:name="android.intent.category.LAUNCHER" />  
 </intent-filter>  
 </activity>  
  
 <activity android:name="com.example.midterm\_q3.CalculatorActivity" />  
 <activity android:name="com.example.midterm\_q3.SecondActivity" />  
 </application>  
  
</manifest>