activity.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:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".MainActivity">

<LinearLayout

android:id="@+id/layout\_ChooseMode"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent">

<Button

android:id="@+id/btn\_Singleplayer"

android:layout\_width="0dp"

android:layout\_height="50dp"

android:layout\_weight="1"

android:text="Single Player" />

<Button

android:id="@+id/btn\_Multiplayer"

android:layout\_width="0dp"

android:layout\_height="50dp"

android:layout\_weight="1"

android:text="Multi Player"/>

</LinearLayout>

<LinearLayout

android:id="@+id/layout\_DetailPlayer"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="20dp"

app:layout\_constraintTop\_toBottomOf="@+id/layout\_ChooseMode">

<LinearLayout

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_weight="1">

<TextView

android:id="@+id/tView\_P1"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_weight="4"

android:gravity="right"

android:text="P1: "

android:textSize="20dp"/>

<TextView

android:id="@+id/tView\_ScoreP1"

android:layout\_width="0dp"

android:layout\_weight="3"

android:layout\_height="wrap\_content"

android:gravity="left"

android:textSize="20dp"/>

</LinearLayout>

<LinearLayout

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_weight="1">

<TextView

android:id="@+id/tView\_P2"

android:layout\_width="0dp"

android:layout\_weight="10"

android:layout\_height="wrap\_content"

android:gravity="right"

android:text="P2: "

android:textSize="20dp"/>

<TextView

android:id="@+id/tView\_ScoreP2"

android:layout\_width="0dp"

android:layout\_weight="9"

android:layout\_height="wrap\_content"

android:gravity="left"

android:textSize="20dp"/>

</LinearLayout>

</LinearLayout>

<RelativeLayout

android:id="@+id/layout\_Cards"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

app:layout\_constraintTop\_toBottomOf="@id/layout\_DetailPlayer">

<LinearLayout

android:id="@+id/layout\_1"

android:layout\_width="match\_parent"

android:layout\_height="110dp">

<Button

android:id="@+id/btn\_1"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

<Button

android:id="@+id/btn\_2"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

<Button

android:id="@+id/btn\_3"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

</LinearLayout>

<LinearLayout

android:id="@+id/layout\_2"

android:layout\_width="match\_parent"

android:layout\_height="110dp"

android:layout\_below="@id/layout\_1">

<Button

android:id="@+id/btn\_4"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

<Button

android:id="@+id/btn\_5"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

<Button

android:id="@+id/btn\_6"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

</LinearLayout>

<LinearLayout

android:id="@+id/layout\_3"

android:layout\_width="match\_parent"

android:layout\_height="110dp"

android:layout\_below="@id/layout\_2">

<Button

android:id="@+id/btn\_7"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

<Button

android:id="@+id/btn\_8"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

<Button

android:id="@+id/btn\_9"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

</LinearLayout>

<LinearLayout

android:id="@+id/layout\_4"

android:layout\_width="match\_parent"

android:layout\_height="110dp"

android:layout\_below="@id/layout\_3">

<Button

android:id="@+id/btn\_10"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

<Button

android:id="@+id/btn\_11"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

<Button

android:id="@+id/btn\_12"

android:layout\_width="0dp"

android:layout\_height="match\_parent"

android:layout\_weight="1"

android:layout\_marginLeft="2dp"

android:layout\_marginBottom="2dp"/>

</LinearLayout>

</RelativeLayout>

</androidx.constraintlayout.widget.ConstraintLayout>

color.xml

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

<resources>

<color name="colorPrimary">#008577</color>

<color name="colorPrimaryDark">#00574B</color>

<color name="colorAccent">#D81B60</color>

<color name="red">#ff0000</color>

<color name="blue">#0000ff</color>

<color name="yellow">#ffff00</color>

<color name="green">#008000</color>

<color name="black">#000000</color>

<color name="orange">#ffa500</color>

</resources>

MainActivity.java

package com.nix.mdpm1\_6615;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.TextView;

import android.widget.Toast;

import android.os.Handler;

import java.util.ArrayList;

import java.util.Random;

public class MainActivity extends AppCompatActivity {

Random r;

Handler handler;

boolean singleplayer, multiplayer;

ArrayList<Integer> colors;

ArrayList<Card> cards;

Player p1, p2;

TextView p1Label, p2Label;

TextView p1Score, p2Score;

Button[] modes, bodies;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

r= new Random();

handler= new Handler();

colors= new ArrayList<Integer>();

cards= new ArrayList<Card>();

singleplayer= false;

multiplayer= false;

p1Label= findViewById(R.id.tView\_P1);

p2Label= findViewById(R.id.tView\_P2);

p1Score= findViewById(R.id.tView\_ScoreP1);

p2Score= findViewById(R.id.tView\_ScoreP2);

modes= new Button[] {

findViewById(R.id.btn\_Singleplayer),

findViewById(R.id.btn\_Multiplayer)

};

bodies= new Button[] {

findViewById(R.id.btn\_1),

findViewById(R.id.btn\_2),

findViewById(R.id.btn\_3),

findViewById(R.id.btn\_4),

findViewById(R.id.btn\_5),

findViewById(R.id.btn\_6),

findViewById(R.id.btn\_7),

findViewById(R.id.btn\_8),

findViewById(R.id.btn\_9),

findViewById(R.id.btn\_10),

findViewById(R.id.btn\_11),

findViewById(R.id.btn\_12),

};

initialize();

for (final Button mode : modes) {

mode.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

if (mode.getId() == R.id.btn\_Singleplayer) {

singleplayer= true;

multiplayer= false;

} else if (mode.getId() == R.id.btn\_Multiplayer) {

singleplayer= false;

multiplayer= true;

}

initialize();

}

});

}

for (final Card card: cards) {

card.getBody().setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

if (singleplayer) {

p1.open(card);

if (p1.getOpened().size() == 2) {

if (p1.isCardMatch()) {

handler.postDelayed(new Runnable() {

@Override

public void run() {

p1.removeCard();

}

}, 250);

} else {

handler.postDelayed(new Runnable() {

@Override

public void run() {

p1.discard();

}

}, 250);

}

}

if (p1.getMatches() == 6) {

singleplayer= false;

multiplayer= false;

initialize();

Toast.makeText(

MainActivity.this,

"You Win!",

Toast.LENGTH\_SHORT

).show();

}

} else if (multiplayer) {

if (p1.isTurn()) {

p1.open(card);

if (p1.getOpened().size() == 2) {

if (p1.isCardMatch()) {

p1.setScore(1);

handler.postDelayed(new Runnable() {

@Override

public void run() {

p1.removeCard();

}

}, 250);

} else {

handler.postDelayed(new Runnable() {

@Override

public void run() {

p1.discard();

}

}, 250);

}

p1.setTurn(false);

p2.setTurn(true);

}

} else if (p2.isTurn()) {

p2.open(card);

if (p2.getOpened().size() == 2) {

if (p2.isCardMatch()) {

p2.setScore(1);

handler.postDelayed(new Runnable() {

@Override

public void run() {

p2.removeCard();

}

}, 250);

} else {

handler.postDelayed(new Runnable() {

@Override

public void run() {

p2.discard();

}

}, 250);

}

p1.setTurn(true);

p2.setTurn(false);

}

}

if ((p1.getMatches() + p2.getMatches()) - 6 == 0) {

if (p1.getScore() > p2.getScore()) {

Toast.makeText(

MainActivity.this,

"Player 1 Win!",

Toast.LENGTH\_SHORT

).show();

} else if (p1.getScore() < p2.getScore()) {

Toast.makeText(

MainActivity.this,

"Player 2 Win!",

Toast.LENGTH\_SHORT

).show();

} else {

Toast.makeText(

MainActivity.this,

"Draw!",

Toast.LENGTH\_SHORT

).show();

}

singleplayer= false;

multiplayer= false;

initialize();

}

setTurnPlayer();

setScorePlayer();

}

}

});

}

}

private void createColors() {

colors.add(getResources().getColor(R.color.red));

colors.add(getResources().getColor(R.color.red));

colors.add(getResources().getColor(R.color.blue));

colors.add(getResources().getColor(R.color.blue));

colors.add(getResources().getColor(R.color.yellow));

colors.add(getResources().getColor(R.color.yellow));

colors.add(getResources().getColor(R.color.green));

colors.add(getResources().getColor(R.color.green));

colors.add(getResources().getColor(R.color.black));

colors.add(getResources().getColor(R.color.black));

colors.add(getResources().getColor(R.color.orange));

colors.add(getResources().getColor(R.color.orange));

}

private void initialize() {

p1= new Player(true);

p2= new Player(false);

colors.clear();

cards.clear();

createColors();

for (Button body : bodies) {

cards.add(new Card(body, getRandomColor()));

}

setTurnPlayer();

setScorePlayer();

}

private int getRandomColor() {

int color= 0;

int index= r.nextInt(colors.size());

color= colors.get(index);

colors.remove(index);

return color;

}

private void setTurnPlayer() {

if (p1.isTurn()) {

p1Label.setTextColor(getResources().getColor(R.color.red));

p1Score.setTextColor(getResources().getColor(R.color.red));

p2Label.setTextColor(getResources().getColor(R.color.black));

p2Score.setTextColor(getResources().getColor(R.color.black));

} else if (p2.isTurn()) {

p1Label.setTextColor(getResources().getColor(R.color.black));

p1Score.setTextColor(getResources().getColor(R.color.black));

p2Label.setTextColor(getResources().getColor(R.color.blue));

p2Score.setTextColor(getResources().getColor(R.color.blue));

}

}

private void setScorePlayer() {

String score1= p1.getScore() + "";

String score2= p2.getScore() + "";

p1Score.setText(score1);

p2Score.setText(score2);

}

}

Card.java

package com.nix.mdpm1\_6615;

import android.graphics.Color;

import android.view.View;

import android.widget.Button;

class Card {

private Button body;

private int currentColor;

private int defaultColor;

Card(Button body, int currentColor) {

this.body= body;

this.currentColor= currentColor;

this.defaultColor= Color.WHITE;

this.initialize();

}

public Button getBody() { return this.body; }

public int getColor() { return this.currentColor; }

public void initialize() {

this.body.setText("?");

this.body.setTextSize(24);

this.body.setEnabled(true);

this.body.setVisibility(View.VISIBLE);

this.body.setBackgroundColor(this.defaultColor);

}

public void setColor() {

this.body.setText("");

this.body.setEnabled(false);

this.body.setBackgroundColor(this.currentColor);

}

public void close() {

this.body.setText("?");

this.body.setEnabled(true);

this.body.setBackgroundColor(defaultColor);

}

public void removeBody() {

this.body.setEnabled(false);

this.body.setVisibility(View.INVISIBLE);

}

}

Player.java

package com.nix.mdpm1\_6615;

import java.util.ArrayList;

class Player {

private int score;

private int matches;

private boolean turn;

private ArrayList<Card> opened;

Player(boolean turn) {

this.score= 0;

this.matches= 0;

this.turn= turn;

this.opened= new ArrayList<>();

}

public int getScore() { return this.score; }

public int getMatches() { return this.matches; }

public boolean isTurn() { return this.turn; }

public ArrayList<Card> getOpened() { return this.opened; }

public boolean isCardMatch() {

if (this.opened.get(0).getColor() == this.opened.get(1).getColor()) {

this.matches+= 1;

return true;

}

return false;

}

public void setScore(int score) { this.score += score; }

public void setTurn(boolean turn) { this.turn = turn; }

public void open(Card card) {

if (this.opened.size() < 2) {

card.setColor();

this.opened.add(card);

}

}

public void discard() {

for (Card card : opened) {

card.close();

}

opened.clear();

}

public void removeCard() {

for (Card card : opened) {

card.removeBody();

}

opened.clear();

}

}