НАЦІОНАЛЬНИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ УКРАЇНИ

“КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ ІМЕНІ ІГОРЯ СІКОРСЬКОГО”

Факультет інформатики та обчислювальної техніки

Кафедра обчислювальної техніки

Лабораторна робота №5

з дисципліни

“Програмування мобільних систем”

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Скріншоти роботи додатку

(**Варіант 8224 % 6 + 1 = 5**)

Лістинг коду

**Lab5.java**

package ua.kpi.comsys.iv8224.pms.lab5;

import android.app.Activity;

import android.content.Intent;

import android.graphics.Color;

import android.net.Uri;

import android.os.Bundle;

import android.view.LayoutInflater;

import android.view.View;

import android.view.ViewGroup;

import android.widget.Button;

import android.widget.ImageView;

import android.widget.LinearLayout;

import android.widget.ScrollView;

import androidx.annotation.NonNull;

import androidx.constraintlayout.widget.ConstraintLayout;

import androidx.constraintlayout.widget.ConstraintSet;

import androidx.constraintlayout.widget.Guideline;

import androidx.fragment.app.Fragment;

import java.util.ArrayList;

import ua.kpi.comsys.iv8224.pms.R;

public class Lab5 extends Fragment {

private static final int *RESULT\_LOAD\_IMAGE* = 2;

private View root;

private ScrollView scrollView;

private LinearLayout scrollMain;

private ArrayList<ImageView> allImages;

private ArrayList<ArrayList<Object>> placeholderList;

public View onCreateView(@NonNull LayoutInflater inflater,

ViewGroup container, Bundle savedInstanceState) {

root = inflater.inflate(R.layout.*lab5*, container, false);

scrollView = root.findViewById(R.id.*scrollview\_gallery*);

scrollMain = root.findViewById(R.id.*linear\_main*);

allImages = new ArrayList<>();

placeholderList = new ArrayList<>();

Button btnAddImage = root.findViewById(R.id.*button\_add\_img*);

btnAddImage.setOnClickListener(v -> {

Intent gallery = new Intent(Intent.*ACTION\_GET\_CONTENT*);

gallery.setType("image/\*");

startActivityForResult(gallery, *RESULT\_LOAD\_IMAGE*);

});

return root;

}

@Override

public void onActivityResult(int requestCode, int resultCode, Intent data) {

super.onActivityResult(requestCode, resultCode, data);

if(requestCode == *RESULT\_LOAD\_IMAGE* && resultCode == Activity.*RESULT\_OK*){

Uri imageUri = data.getData();

addImage(scrollMain, allImages, placeholderList, scrollView, imageUri);

}

}

private void addImage(LinearLayout scrollMain,

ArrayList<ImageView> allImages,

ArrayList<ArrayList<Object>> placeholderList,

ScrollView scrollView, Uri imageUri) {

ImageView newImage = new ImageView(root.getContext());

newImage.setImageURI(imageUri);

newImage.setBackgroundColor(Color.*BLACK*);

ConstraintLayout.LayoutParams imageParams =

new ConstraintLayout.LayoutParams(ConstraintLayout.LayoutParams.*MATCH\_CONSTRAINT*,

ConstraintLayout.LayoutParams.*MATCH\_CONSTRAINT*);

imageParams.setMargins(3, 3, 3, 3);

imageParams.dimensionRatio = "1";

newImage.setLayoutParams(imageParams);

newImage.setId(newImage.hashCode());

ConstraintLayout tmpLayout = null;

ConstraintSet tmpSet = null;

if (allImages.size() > 0) {

tmpLayout = (ConstraintLayout) getConstraintArrayList(0, placeholderList);

tmpSet = (ConstraintSet) getConstraintArrayList(1, placeholderList);

tmpSet.clone(tmpLayout);

tmpSet.setMargin(newImage.getId(), ConstraintSet.*START*, 3);

tmpSet.setMargin(newImage.getId(), ConstraintSet.*TOP*, 3);

tmpSet.setMargin(newImage.getId(), ConstraintSet.*END*, 3);

tmpSet.setMargin(newImage.getId(), ConstraintSet.*BOTTOM*, 3);

}

if (allImages.size() % 10 != 0)

tmpLayout.addView(newImage);

switch (allImages.size() % 10){

case 0:{

placeholderList.add(new ArrayList<>());

ConstraintLayout ConstLayout = new ConstraintLayout(root.getContext());

placeholderList.get(placeholderList.size()-1).add(ConstLayout);

ConstLayout.setLayoutParams(

new LinearLayout.LayoutParams(ViewGroup.LayoutParams.*MATCH\_PARENT*,

ViewGroup.LayoutParams.*WRAP\_CONTENT*));

scrollMain.addView(ConstLayout);

Guideline v\_25 = makeGuideline(ConstraintLayout.LayoutParams.*VERTICAL*, 0.25f);

Guideline v\_50 = makeGuideline(ConstraintLayout.LayoutParams.*VERTICAL*, 0.50f);

Guideline v\_75 = makeGuideline(ConstraintLayout.LayoutParams.*VERTICAL*, 0.75f);

Guideline h\_25 = makeGuideline(ConstraintLayout.LayoutParams.*HORIZONTAL*, 0.25f);

Guideline h\_50 = makeGuideline(ConstraintLayout.LayoutParams.*HORIZONTAL*, 0.5f);

Guideline h\_75 = makeGuideline(ConstraintLayout.LayoutParams.*HORIZONTAL*, 0.75f);

ConstLayout.addView(v\_25, 0);

ConstLayout.addView(v\_50, 1);

ConstLayout.addView(v\_75, 2);

ConstLayout.addView(h\_25, 3);

ConstLayout.addView(h\_50, 4);

ConstLayout.addView(h\_75, 5);

ConstLayout.addView(newImage);

ConstraintSet newConstraintSet = new ConstraintSet();

placeholderList.get(placeholderList.size()-1).add(newConstraintSet);

newConstraintSet.clone(ConstLayout);

newConstraintSet.connect(newImage.getId(), ConstraintSet.*START*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*START*);

newConstraintSet.connect(newImage.getId(), ConstraintSet.*TOP*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*TOP*);

newConstraintSet.connect(newImage.getId(), ConstraintSet.*END*,

v\_25.getId(), ConstraintSet.*START*);

newConstraintSet.connect(newImage.getId(), ConstraintSet.*BOTTOM*,

h\_25.getId(), ConstraintSet.*TOP*);

newConstraintSet.applyTo(ConstLayout);

break;

}

case 1: {

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(0).getId(), 0.25f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(2).getId(), 0.75f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(4).getId(), 0.5f);

tmpSet.connect(newImage.getId(), ConstraintSet.*START*,

tmpLayout.getChildAt(0).getId(), ConstraintSet.*END*);

tmpSet.connect(newImage.getId(), ConstraintSet.*TOP*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*TOP*);

tmpSet.connect(newImage.getId(), ConstraintSet.*END*,

tmpLayout.getChildAt(2).getId(), ConstraintSet.*START*);

tmpSet.connect(newImage.getId(), ConstraintSet.*BOTTOM*,

tmpLayout.getChildAt(4).getId(), ConstraintSet.*TOP*);

tmpSet.applyTo(tmpLayout);

break;

}

case 2: {

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(2).getId(), 0.75f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(3).getId(), 0.25f);

tmpSet.connect(newImage.getId(), ConstraintSet.*START*,

tmpLayout.getChildAt(2).getId(), ConstraintSet.*END*);

tmpSet.connect(newImage.getId(), ConstraintSet.*TOP*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*TOP*);

tmpSet.connect(newImage.getId(), ConstraintSet.*END*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*END*);

tmpSet.connect(newImage.getId(), ConstraintSet.*BOTTOM*,

tmpLayout.getChildAt(3).getId(), ConstraintSet.*TOP*);

tmpSet.applyTo(tmpLayout);

break;

}

case 3: {

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(0).getId(), 0.25f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(3).getId(), 0.25f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(4).getId(), 0.5f);

tmpSet.connect(newImage.getId(), ConstraintSet.*START*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*START*);

tmpSet.connect(newImage.getId(), ConstraintSet.*TOP*,

tmpLayout.getChildAt(3).getId(), ConstraintSet.*BOTTOM*);

tmpSet.connect(newImage.getId(), ConstraintSet.*END*,

tmpLayout.getChildAt(0).getId(), ConstraintSet.*START*);

tmpSet.connect(newImage.getId(), ConstraintSet.*BOTTOM*,

tmpLayout.getChildAt(4).getId(), ConstraintSet.*TOP*);

tmpSet.applyTo(tmpLayout);

break;

}

case 4: {

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(2).getId(), 0.75f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(3).getId(), 0.25f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(4).getId(), 0.5f);

tmpSet.connect(newImage.getId(), ConstraintSet.*START*,

tmpLayout.getChildAt(2).getId(), ConstraintSet.*END*);

tmpSet.connect(newImage.getId(), ConstraintSet.*TOP*,

tmpLayout.getChildAt(3).getId(), ConstraintSet.*BOTTOM*);

tmpSet.connect(newImage.getId(), ConstraintSet.*END*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*END*);

tmpSet.connect(newImage.getId(), ConstraintSet.*BOTTOM*,

tmpLayout.getChildAt(4).getId(), ConstraintSet.*TOP*);

tmpSet.applyTo(tmpLayout);

break;

}

case 5: {

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(1).getId(), 0.5f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(4).getId(), 0.5f);

tmpSet.connect(newImage.getId(), ConstraintSet.*START*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*START*);

tmpSet.connect(newImage.getId(), ConstraintSet.*TOP*,

tmpLayout.getChildAt(4).getId(), ConstraintSet.*BOTTOM*);

tmpSet.connect(newImage.getId(), ConstraintSet.*END*,

tmpLayout.getChildAt(1).getId(), ConstraintSet.*START*);

tmpSet.connect(newImage.getId(), ConstraintSet.*BOTTOM*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*BOTTOM*);

tmpSet.applyTo(tmpLayout);

break;

}

case 6: {

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(1).getId(), 0.5f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(2).getId(), 0.75f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(4).getId(), 0.5f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(5).getId(), 0.75f);

tmpSet.connect(newImage.getId(), ConstraintSet.*START*,

tmpLayout.getChildAt(1).getId(), ConstraintSet.*END*);

tmpSet.connect(newImage.getId(), ConstraintSet.*TOP*,

tmpLayout.getChildAt(4).getId(), ConstraintSet.*BOTTOM*);

tmpSet.connect(newImage.getId(), ConstraintSet.*END*,

tmpLayout.getChildAt(2).getId(), ConstraintSet.*START*);

tmpSet.connect(newImage.getId(), ConstraintSet.*BOTTOM*,

tmpLayout.getChildAt(5).getId(), ConstraintSet.*TOP*);

tmpSet.applyTo(tmpLayout);

break;

}

case 7: {

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(2).getId(), 0.75f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(4).getId(), 0.5f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(5).getId(), 0.75f);

tmpSet.connect(newImage.getId(), ConstraintSet.*START*,

tmpLayout.getChildAt(2).getId(), ConstraintSet.*END*);

tmpSet.connect(newImage.getId(), ConstraintSet.*TOP*,

tmpLayout.getChildAt(4).getId(), ConstraintSet.*BOTTOM*);

tmpSet.connect(newImage.getId(), ConstraintSet.*END*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*END*);

tmpSet.connect(newImage.getId(), ConstraintSet.*BOTTOM*,

tmpLayout.getChildAt(5).getId(), ConstraintSet.*TOP*);

tmpSet.applyTo(tmpLayout);

break;

}

case 8: {

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(1).getId(), 0.5f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(2).getId(), 0.75f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(5).getId(), 0.75f);

tmpSet.connect(newImage.getId(), ConstraintSet.*START*,

tmpLayout.getChildAt(1).getId(), ConstraintSet.*END*);

tmpSet.connect(newImage.getId(), ConstraintSet.*TOP*,

tmpLayout.getChildAt(5).getId(), ConstraintSet.*BOTTOM*);

tmpSet.connect(newImage.getId(), ConstraintSet.*END*,

tmpLayout.getChildAt(2).getId(), ConstraintSet.*START*);

tmpSet.connect(newImage.getId(), ConstraintSet.*BOTTOM*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*BOTTOM*);

tmpSet.applyTo(tmpLayout);

break;

}

case 9: {

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(2).getId(), 0.75f);

tmpSet.setGuidelinePercent(tmpLayout.getChildAt(5).getId(), 0.75f);

tmpSet.connect(newImage.getId(), ConstraintSet.*START*,

tmpLayout.getChildAt(2).getId(), ConstraintSet.*END*);

tmpSet.connect(newImage.getId(), ConstraintSet.*TOP*,

tmpLayout.getChildAt(5).getId(), ConstraintSet.*BOTTOM*);

tmpSet.connect(newImage.getId(), ConstraintSet.*END*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*END*);

tmpSet.connect(newImage.getId(), ConstraintSet.*BOTTOM*,

ConstraintSet.*PARENT\_ID*, ConstraintSet.*BOTTOM*);

tmpSet.applyTo(tmpLayout);

break;

}

}

allImages.add(newImage);

scrollView.post(() -> scrollView.fullScroll(View.*FOCUS\_DOWN*));

}

private Guideline makeGuideline(int orientation, float percent){

Guideline guideline = new Guideline(root.getContext());

guideline.setId(guideline.hashCode());

ConstraintLayout.LayoutParams guideline\_Params =

new ConstraintLayout.LayoutParams(ConstraintLayout.LayoutParams.*WRAP\_CONTENT*,

ConstraintLayout.LayoutParams.*WRAP\_CONTENT*);

guideline\_Params.orientation = orientation;

guideline.setLayoutParams(guideline\_Params);

guideline.setGuidelinePercent(percent);

return guideline;

}

private Object getConstraintArrayList(int index, ArrayList<ArrayList<Object>> list){

return list.get(list.size()-1).get(index);

}

}

**MainActivity.java**

package ua.kpi.comsys.iv8224.pms;

import android.os.Bundle;

import androidx.appcompat.app.AppCompatActivity;

import androidx.navigation.NavController;

import androidx.navigation.Navigation;

import androidx.navigation.ui.AppBarConfiguration;

import androidx.navigation.ui.NavigationUI;

import com.google.android.material.bottomnavigation.BottomNavigationView;

public class MainActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.*activity\_main*);

BottomNavigationView navView = findViewById(R.id.*nav\_view*);

// Passing each menu ID as a set of Ids because each

// menu should be considered as top level destinations.

AppBarConfiguration appBarConfiguration = new AppBarConfiguration.Builder(

R.id.*navigation\_info*, R.id.*navigation\_dashboard*, R.id.*navigation\_videocam*).build();

NavController navController = Navigation.*findNavController*(this, R.id.*nav\_host\_fragment*);

NavigationUI.*setupActionBarWithNavController*(this, navController, appBarConfiguration);

NavigationUI.*setupWithNavController*(navView, navController);

if (getSupportActionBar() != null) {

getSupportActionBar().hide();

}

}

}

**Висновок**

В даній лабораторній роботі було удосконалено мобільний додаток, а саме:

* +1 нова вкладка, що слугує фото-галереєю
* можливість додавання фото з телефону

Програма працює коректно. Кінцева мета досягнута.