Universitatea Tehnică a Moldovei
FCIM
Departamentul de Informatica si Inginerie Software

RAPORT

la lucrarea de laborator nr. 1

la disciplina PAM

Tema: "UI View Model - Lucrarea Nr.1"

A efectuat: Zavorot Daniel st. gr. TI-194

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Obiective: Dezvoltarea unei aplicații pe una din platformele stabilite la Laboratorul Nr.0 , utilizând mediul de dezvoltare corespunzător acesteia.

Scopul:
De prezentat o aplicație ce rulează pe un dispozitiv sau emulator, ce va conține pe interfața sa, următoarele elemente:

1. 4 butoane (ce vor executa condițiile de mai jos)
2. 1 TextBox (pentru input)
3. 2 Radio butoane (pentru camera față, spate)

Condiții:

De utilizat componentele UI pentru a realiza următoarele condiții:

1. De creat un **push notification** pe ecranul dispozitivului care se va trata peste **10s**.
2. De utilizat browserul intern al dispozitivului, pentru a inițializa **o căutare în Google**, conform **cuvântului cheie** introdus în **TextBox**.
3. De rulat **evenimentul de lucru a camerei** frontale și/sau spate la selectarea unuia din cele 2 radio butoane propuse.
4. De tratat **evenimentul de captare** a pozei executate cu una din cele doua camere, și de **afișat într-o altă Activitate**
5. Este un punct la dorința voastră (sau un brainstorming)

JAVA MainActivity:

```
package com.example.pam_lab1;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.camera.core.CameraSelector;
import androidx.camera.core.ImageCapture;
import androidx.camera.core.ImageCaptureException;
import androidx.camera.core.Preview;
import androidx.camera.lifecycle.ProcessCameraProvider;
import androidx.camera.view.PreviewView;
import androidx.core.app.NotificationCompat;
import androidx.core.app.NotificationManagerCompat;
import androidx.core.content.ContextCompat;
import androidx.lifecycle.LifecycleOwner;

import android.app.PendingIntent;
import android.content.Intent;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.net.Uri;
import android.os.Bundle;
import android.os.CountDownTimer;
import android.os.Environment;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.Toast;

import com.google.common.util.concurrent.ListenableFuture;

import java.io.ByteArrayOutputStream;
import java.io.File;
import java.util.Date;
import java.util.concurrent.Executor;

public class MainActivity extends AppCompatActivity {
    private ListenableFuture<ProcessCameraProvider> cameraProviderFuture;
    PreviewView previewView;
    private ImageCapture imageCapture;
    private RadioButton radioBack, radioFront;
    private EditText textbox;

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

        previewView = findViewById(R.id.previewView);
        previewView.setRotation(180);
        radioBack = findViewById(R.id.radioBack);
        radioBack.setChecked(true);
        radioFront = findViewById(R.id.radioFront);
        textbox = findViewById(R.id.textbox);



        cameraProviderFuture =
ProcessCameraProvider.getInstance(MainActivity.this);
        cameraProviderFuture.addListener(()-> {
            try {
```

```
                ProcessCameraProvider cameraProvider =
cameraProviderFuture.get();
                startCameraX(cameraProvider, 0);
            } catch (Exception e) {
                e.printStackTrace();
            }
        }, getExecutor());

        // Notification
        final Button button = findViewById(R.id.btn1);
        button.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {

                Intent resultIntent = new Intent(MainActivity.this,
MainActivity.class);
                PendingIntent resultPendingIntent =
PendingIntent.getActivity(MainActivity.this, 1, resultIntent,
PendingIntent.FLAG_UPDATE_CURRENT);


                NotificationCompat.Builder mBuilder = new
NotificationCompat.Builder(MainActivity.this, "My notification")
                        .setSmallIcon(R.drawable.ic_launcher_background)
                        .setContentTitle("PAM Lab.1")
                        .setContentText("Click pentru a deschide aplicatia.")
                        .setAutoCancel(true)
                        .setContentIntent(resultPendingIntent)
                        .setPriority(NotificationCompat.PRIORITY_MAX);

                Toast.makeText(MainActivity.this, "Notificarea va aparea
peste 10 secunde.", Toast.LENGTH_SHORT).show();
                    new CountDownTimer(10000, 1000){
                        public void onTick(long millisUntilFinished){

                        }
                        public  void onFinish(){
                            NotificationManagerCompat mng =
NotificationManagerCompat.from(MainActivity.this);
                            mng.notify(1, mBuilder.build());
                        }
                    }.start();
            }
        });



        // Browser
        final Button button3 = findViewById(R.id.btn3);
        button3.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                String key = textbox.getText().toString();
                if (key.equals("")) {
                    Toast.makeText(MainActivity.this, "Introduceti cuvantul
cheie.", Toast.LENGTH_SHORT).show();
                }
                else {
                    Intent browserIntent = new Intent(Intent.ACTION_VIEW,
Uri.parse("https://www.google.com/search?q=" + key));
                    startActivity(browserIntent);
                    textbox.setText("");
                }
            }
        });
```

```
        // Toggle
        final Button button2 = findViewById(R.id.btn2);
        button2.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                if(radioBack.isChecked()){
                    cameraProviderFuture.addListener(()-> {
                        try {
                            ProcessCameraProvider cameraProvider =
cameraProviderFuture.get();
                            startCameraX(cameraProvider, 0);
                        } catch (Exception e) {
                            e.printStackTrace();
                        }
                    }, getExecutor());

                }
                else {
                    if(radioFront.isChecked()) {
                        cameraProviderFuture.addListener(()-> {
                            try {
                                ProcessCameraProvider cameraProvider =
cameraProviderFuture.get();
                                startCameraX(cameraProvider, 1);
                            } catch (Exception e) {
                                e.printStackTrace();
                            }
                        }, getExecutor());
                    }
                }


            }

        });

        // Photo
        final Button button4 = findViewById(R.id.btn4);
        button4.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                capturePhoto();
            }
        });
    }

    private Executor getExecutor(){
        return ContextCompat.getMainExecutor(MainActivity.this);
    }

    private void startCameraX(ProcessCameraProvider cameraProvider, int id){
        cameraProvider.unbindAll();
        if(id == 0) {
            CameraSelector cameraSelector = new CameraSelector.Builder()
                    .requireLensFacing(CameraSelector.LENS_FACING_BACK)
                    .build();



            Preview preview = new Preview.Builder().build();
            preview.setSurfaceProvider(previewView.getSurfaceProvider());

            imageCapture = new ImageCapture.Builder()

.setCaptureMode(ImageCapture.CAPTURE_MODE_MINIMIZE_LATENCY)
                    .build();
```

```
            cameraProvider.bindToLifecycle((LifecycleOwner) this,
cameraSelector, preview, imageCapture);
        }
        else{
            CameraSelector cameraSelector = new CameraSelector.Builder()
                    .requireLensFacing(CameraSelector.LENS_FACING_FRONT)
                    .build();

            Preview preview = new Preview.Builder().build();
            preview.setSurfaceProvider(previewView.getSurfaceProvider());

            imageCapture = new ImageCapture.Builder()

.setCaptureMode(ImageCapture.CAPTURE_MODE_MINIMIZE_LATENCY)
                    .build();

            cameraProvider.bindToLifecycle((LifecycleOwner) this,
cameraSelector, preview, imageCapture);
        }

    }

    public void capturePhoto(){
        File photodir = new
File(Environment.getExternalStoragePublicDirectory(Environment.DIRECTORY_PICT
URES) + "/PAMLab");
        if(!photodir.exists()) {
            photodir.mkdir();
        }

        Date date = new Date();
        String timestamp = String.valueOf(date.getTime());
        String photoFilePath = photodir.getAbsolutePath() + "/" + timestamp +
".jpg";

        File photoFile = new File(photoFilePath);

        imageCapture.takePicture(
                new
ImageCapture.OutputFileOptions.Builder(photoFile).build(),
                getExecutor(),
                new ImageCapture.OnImageSavedCallback() {
                    @Override
                    public void onImageSaved(@NonNull
ImageCapture.OutputFileResults outputFileResults){
                        Toast.makeText(MainActivity.this, "Poza a fost
efectuata cu succes.", Toast.LENGTH_SHORT).show();

                        Bitmap bmp = BitmapFactory.decodeFile(photoFilePath);

                        ByteArrayOutputStream stream = new
ByteArrayOutputStream();
                        bmp.compress(Bitmap.CompressFormat.JPEG, 100,
stream);
                        byte[] byteArray = stream.toByteArray();

                        Intent changeActivity = new Intent(MainActivity.this,
SecondActivity.class);
                        changeActivity.putExtra("image", byteArray);
                        startActivity(changeActivity);
                    }

                    @Override
```

```
                    public void onError(@NonNull ImageCaptureException
exception){
                        Toast.makeText(MainActivity.this, "Error: " +
exception.getMessage(), Toast.LENGTH_SHORT).show();
                    }
                }

        );

    }

}
```

JAVA SecondActivity:

```
package com.example.pam_lab1;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.Toast;

public class SecondActivity extends AppCompatActivity {
    public ImageView imageee;
    private Button btn;
    public Bitmap photobit;

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

        imageee = findViewById(R.id.imageVieww);
        btn = findViewById(R.id.button);

        byte[] byteArray = getIntent().getByteArrayExtra("image");
        photobit = BitmapFactory.decodeByteArray(byteArray, 0,
byteArray.length);

        imageee.setImageBitmap(photobit);
        imageee.setRotation(90);


        // BACK
        btn.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                Intent changeActivity = new Intent(SecondActivity.this,
MainActivity.class);
                startActivity(changeActivity);
            }
        });
    }

}
```

AndroidManifest:

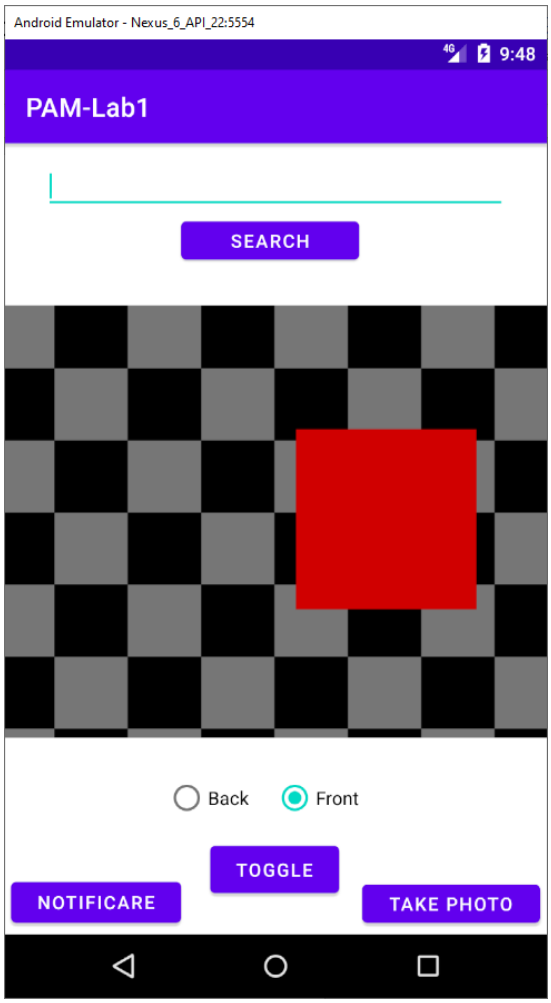
```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.pam_lab1">
    <uses-permission android:name="android.permission.CAMERA" />
    <uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"
/>
    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"
/>


    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.PAMLab1">
        <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>
    </application>

</manifest>
```

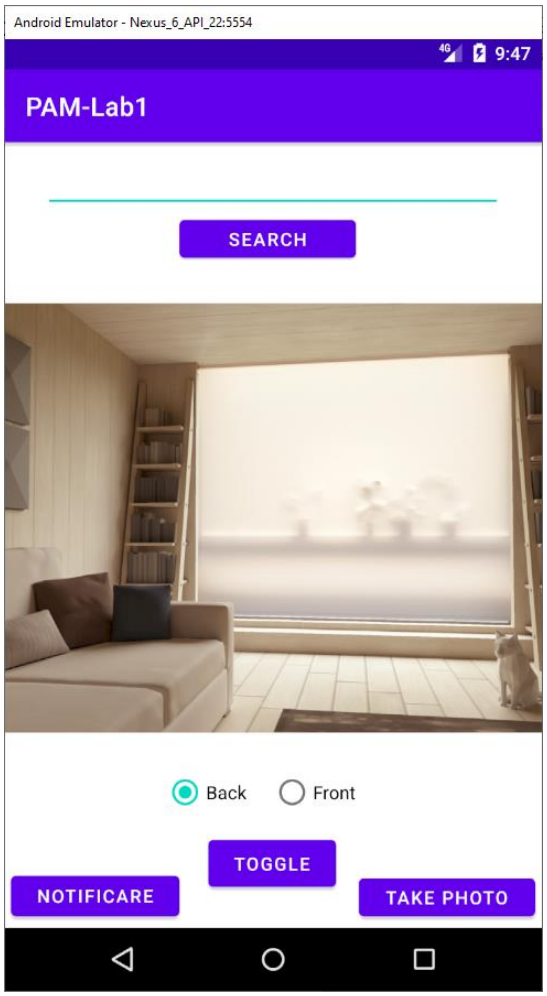
Build.gradle:

```
plugins {
    id 'com.android.application'
}

android {
    compileSdk 31

    defaultConfig {
        applicationId "com.example.pam_lab1"
        minSdk 21
        targetSdk 31
        versionCode 1
        versionName "1.0"

        testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"
    }

    buildTypes {
        release {
            minifyEnabled false
            proguardFiles getDefaultProguardFile('proguard-android-
optimize.txt'), 'proguard-rules.pro'
```

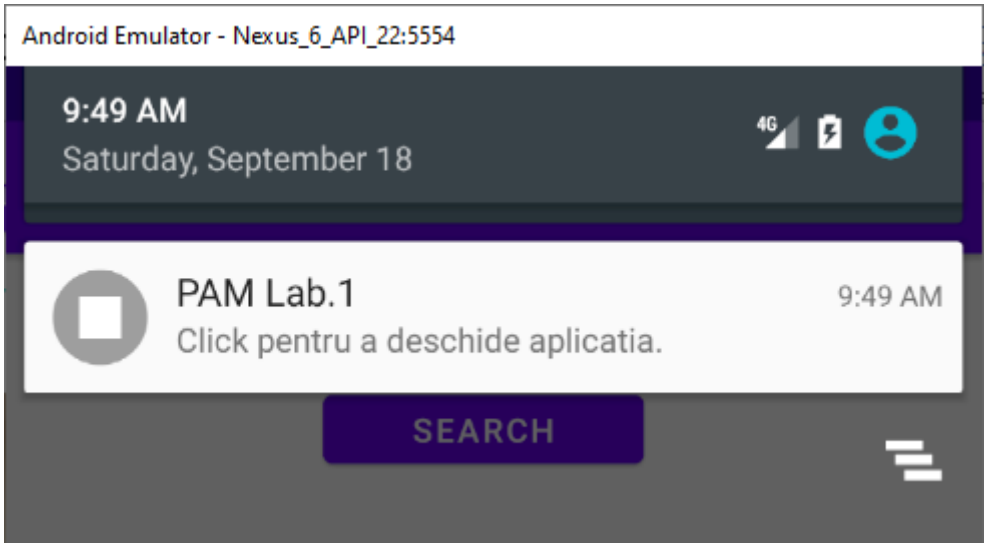
```
        }
    }
    compileOptions {
        sourceCompatibility JavaVersion.VERSION_1_8
        targetCompatibility JavaVersion.VERSION_1_8
    }
}

dependencies {

    implementation 'androidx.appcompat:appcompat:1.2.0'
    implementation 'com.google.android.material:material:1.3.0'
    implementation 'androidx.constraintlayout:constraintlayout:2.0.4'
    testImplementation 'junit:junit:4.+'
    androidTestImplementation 'androidx.test.ext:junit:1.1.2'
    androidTestImplementation 'androidx.test.espresso:espresso-core:3.3.0'

    // ------------------------------------------------

    def cameraxVersion = "1.1.0-alpha05"
    implementation "androidx.camera:camera-core:${cameraxVersion}"
    implementation "androidx.camera:camera-camera2:${cameraxVersion}"
    implementation "androidx.camera:camera-lifecycle:${cameraxVersion}"

    // CameraX View class
    implementation 'androidx.camera:camera-view:1.0.0-alpha25'

    // ------------------------------------------------

}
```

Camera (front + back):

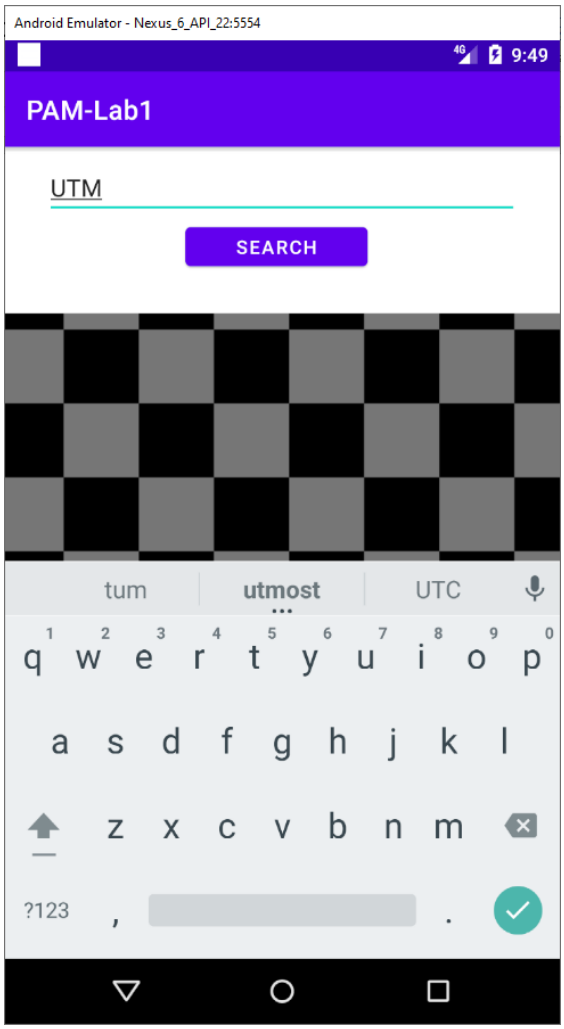


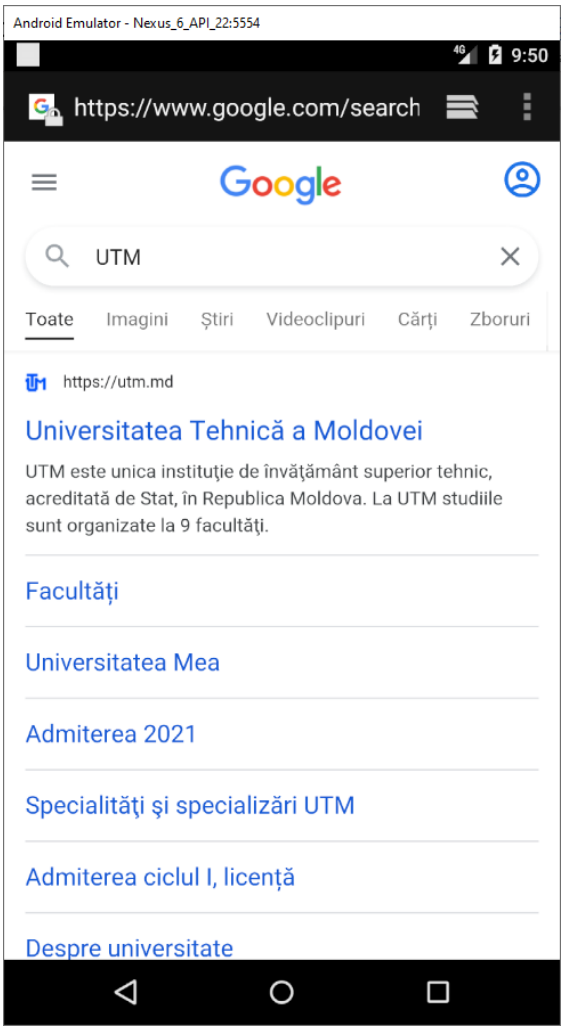


Notification:



Browser:


Android Emulator - Nexus_6_API_22:5554
9:49
PAM-Lab1
UTM
SEARCH
tum
utmost
UTC
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
?123


Android Emulator - Nexus_6_API_22:5554
9:50
https://www.google.com/search
Google
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Take photo:


Android Emulator - Nexus_6_API_22:5554
9:51
PAM-Lab1
Poza a fost efectuata cu succes.
BACK