

Пермский филиал федерального государственного автономного
образовательного учреждения высшего образования
«Национальный исследовательский университет
«Высшая школа экономики»

Факультет экономики, менеджмента и бизнес-информатики

Чепокhov Елизар Сергеевич

ПРОЕКТ 2

Отчет

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Руководитель:

А.В. Яборов

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Постановка задачи

1. Использовать разрешения для доступа к камере, чтобы добавить аватар пользователя. Если ранее картинку сохранили, то показывать ее при открытии экрана;
2. Использовать параметры датчика освещённости и вывести в настройках динамическое значение освещённости;
3. Доработать работу с полем name. Сохранять его в преференсы и считывать при открытии экрана по аналогии с работой с путем до фото;
4. Вывести в настройках список всех доступных датчиков;

1 Задание

Задача: Использовать разрешения для доступа к камере, чтобы добавить аватар пользователя. Если ранее картинку сохранили, то показывать ее при открытии экрана.

Создаем новый экран activity_settings:

```
<?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">

    <LinearLayout
        android:id="@+id/linearLayout3"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="10dp"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="10dp"
        android:layout_marginEnd="10dp"
        android:layout_marginRight="10dp"
        android:orientation="horizontal"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <LinearLayout
            android:layout_width="170dp"
            android:layout_height="wrap_content"
            android:orientation="vertical">

            <TextView
                style="@style/Common_text_style"
                android:id="@+id/textView"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="@string/photo_textView" />

            <ImageView
                android:id="@+id/photo"
                android:layout_width="150dp"
                android:layout_height="170dp"
                android:layout_gravity="center"
                android:contentDescription="@string/user_avatar"
                tools:srcCompat="@tools:sample/avatars" />

            <Button
                android:id="@+id/button_photo"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_gravity="center"
                android:text="@string/take_photo_button_ru" />
        </LinearLayout>

    </LinearLayout>
```

```

        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:gravity="center"
        android:orientation="vertical">

        <EditText
            android:id="@+id/name"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:ems="10"
            android:inputType="textPersonName"
            android:hint="@string/name_editView"
            android:autofillHints="" />

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:orientation="vertical">

            <TextView
                style="@style/Common_text_style"
                android:id="@+id/textView2"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:text="@string/light_textView" />

            <TextView
                style="@style/Common_text_style"
                android:id="@+id/sensor_light"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:text="00 lux" />

        </LinearLayout>
    </LinearLayout>
</LinearLayout>

<Button
    android:id="@+id/button_save"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="160dp"
    android:layout_marginLeft="160dp"
    android:layout_marginTop="20dp"
    android:layout_marginEnd="160dp"
    android:layout_marginRight="160dp"
    android:text="@string/save_button_ru"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout3" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Добавляем кнопку на главный экран (изменения выделены красным):

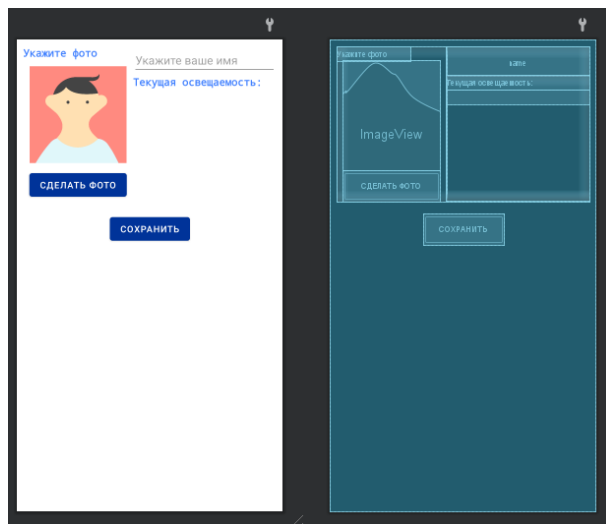


Рисунок 1.1 – Результат

```
<?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">

    <ImageView
        android:id="@+id/Logo"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:layout_marginLeft="25dp"
        android:layout_marginTop="20dp"
        android:layout_marginEnd="25dp"
        android:layout_marginRight="25dp"
        android:layout_marginBottom="80dp"
        android:gravity="center_horizontal"
        android:orientation="vertical"
        android:scaleX="1.3"
        android:scaleY="1.3"
        app:layout_constraintBottom_toTopOf="@+id/button_student"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:srcCompat="@drawable/logo" />

    <Button
        android:id="@+id/button_student"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="55dp"
        android:layout_marginLeft="55dp"
        android:layout_marginEnd="55dp"
        android:layout_marginRight="55dp"
        android:layout_marginBottom="20dp"
        android:gravity="center_horizontal"
        android:maxLines="1"
        android:text="@string/student_button_ru"
        android:textAppearance="@style/TextAppearance.AppCompat.Medium"
```

```

        app:layout_constraintBottom_toTopOf="@+id/button_teacher"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent" />

<Button
    android:id="@+id/button_teacher"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="31dp"
    android:layout_marginLeft="31dp"
    android:layout_marginEnd="31dp"
    android:layout_marginRight="31dp"
    android:layout_marginBottom="20dp"
    android:gravity="center"
    android:maxLines="1"
    android:text="@string/teacher_button_ru"
    android:textAppearance="@style/TextAppearance.AppCompat.Medium"
    app:layout_constraintBottom_toTopOf="@+id/button_settings"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toStartOf="parent" />

<Button
    android:id="@+id/button_settings"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="160dp"
    android:layout_marginLeft="160dp"
    android:layout_marginEnd="160dp"
    android:layout_marginRight="160dp"
    android:layout_marginBottom="40dp"
    android:gravity="center"
    android:maxLines="1"
    android:text="@string/settings_ru"
    android:textAppearance="@style/TextAppearance.AppCompat.Medium"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Добавляем выполнение по нажатию на кнопку в MainActivity (изменения выделены красным):

```

package org.hse.android;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import java.util.Objects;

public class MainActivity extends AppCompatActivity {

    private static final String TAG = "MainActivity";

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

        View button_student = findViewById(R.id.button_student);
    }
}

```

```

View button_teacher = findViewById(R.id.button_teacher);
View button_settings = findViewById(R.id.button_settings);

button_student.setOnClickListener(v -> Student_pressed());
button_teacher.setOnClickListener(v -> Teacher_pressed());
button_settings.setOnClickListener(v -> Settings_pressed());
}

private void Student_pressed(){
    Intent intent = new Intent(MainActivity.this, StudentActivity.class);
    startActivity(intent);
}

private void Teacher_pressed(){
    Intent intent = new Intent(MainActivity.this, TeacherActivity.class);
    startActivity(intent);
}

private void Settings_pressed(){
    Intent intent = new Intent(MainActivity.this, SettingsActivity.class);
    startActivity(intent);
}
}

```

Прописываем разрешения и provider в AndroidManifest (изменения выделены красным):

```

<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="org.hse.android">

    <!-- <uses-permission android:name="android.permission.BLUETOOTH"/> -->
    <!-- <uses-permission android:name="android.permission.BLUETOOTH_ADMIN"/> -->
    <uses-permission android:name="android.permission.CAMERA" />
    <uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE" />
    <uses-permission android:name="android.permission.INTERNET" />
    <uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />
    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />

    <uses-feature
        android:name="android.hardware.camera"
        android:required="true" />

    <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.HSE">
        <meta-data
            android:name="com.google.android.actions"
            android:resource="@xml/file_paths" />

        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <activity android:name=".StudentActivity" />
    </application>
</manifest>

```



```

        <activity android:name=".TeacherActivity" />
        <activity android:name=".SettingsActivity" />

        <provider
            android:name="androidx.core.content.FileProvider"
            android:authorities="org.hse.android.provider"
            android:exported="false"
            android:grantUriPermissions="true">
            <meta-data
                android:name="android.support.FILE_PROVIDER_PATHS"
                android:resource="@xml/file_paths" />
            </provider>
        </application>
    </manifest>

```

Прописываем путь для файлов в созданном файле file_path.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<paths>
    <files-path
        name="files"
        path="external_files">
    </files-path>
</paths>

```

Добавляем обработчик события нажатия на кнопку создания изображения:

```

View buttonPhoto = findViewById(R.id.button_photo);
buttonPhoto.setOnClickListener(v -> checkPermission());

```

Для создания фото сначала проверяем разрешения:

```

public void checkPermission(){
    int permissionsCheck = ActivityCompat.checkSelfPermission(this, PERMISSION);
    if (permissionsCheck != PackageManager.PERMISSION_GRANTED) {
        if (ActivityCompat.shouldShowRequestPermissionRationale(this, PERMISSION)) {
            AlertDialog.Builder builder = new AlertDialog.Builder(this);
            builder.setTitle("Нужно предоставить права")
                .setMessage("Для съятия фото нужно предоставить права на фото")
                .setPositiveButton(android.R.string.ok, (dialog, id) ->
                    requestPermissions(PERMISSION, REQUEST_PERMISSION_CODE));
            builder.create().show();
        }
        else { requestPermissions(PERMISSION, REQUEST_PERMISSION_CODE); }
    }
    else { dispatchTakePictureIntent(); }
}

```

При отсутствии разрешений запрашиваем их:

```

private void requestPermissions(String permissionName, int permissionRequestCode) {
    ActivityCompat.requestPermissions(this, new String[]{permissionName},
    permissionRequestCode);
}

```

При их наличии делаем фото:

```

@SuppressLint("QueryPermissionsNeeded")
private void dispatchTakePictureIntent() {
    Intent takePictureIntent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
    if (takePictureIntent.resolveActivity(getPackageManager()) != null) {
        //Create a file to store the image
        File photoFile = null;
        try { photoFile = createImageFile(); }
        catch (IOException ex) { Log.e(TAG, "Create file", ex); }
        if (photoFile != null) {

```

```

        Uri photoURI = FileProvider.getUriForFile(this,
BuildConfig.APPLICATION_ID + ".provider", photoFile);
        takePictureIntent.putExtra(MediaStore.EXTRA_OUTPUT,
            photoURI);
        try { startActivityForResult(takePictureIntent, REQUEST_IMAGE_CAPTURE); }
        catch (ActivityNotFoundException e) { Log.e(TAG, "Start activity", e); }
    }
}
loadPhoto();
}

```

Сохраняем и получаем путь к файлу:

```

private File createImageFile() throws IOException {
    String timeStamp = new SimpleDateFormat("yyyyMMdd_HHmmss",
Locale.getDefault()).format(new Date());
    String imageFileName = "IMG_" + timeStamp + "_";

    imagePath = new File(getFilesDir(), "external_files");
    imagePath.mkdir();
    image = new File(imagePath.getPath(), String.format("%s.img", imageFileName));
    return image;
}

```

Возвращаемся к экрану.

Добавляем Обработчик события при нажатии на кнопку сохранения:

```

View buttonSave = findViewById(R.id.button_save);
buttonSave.setOnClickListener(v -> {
    loadPhoto();
    if(photo_changed) {
        preferenceManager.saveValue("photo", image.getPath());
    }
    Toast.makeText(SettingsActivity.this, "Фото сохранено",
Toast.LENGTH_SHORT).show();
});

```

Для чего загружаем фото в преференсы и отображаем само фото:

```

private void loadPhoto() { if(image != null)
Glide.with(this).load(image).into(photo); }

```

```

package org.hse.android;

import android.content.Context;
import android.content.SharedPreferences;

public class PreferenceManager {
    private final static String PREFERENCE_FILE = "org.hse.android.file";
    private final SharedPreferences sharedPref;

    public PreferenceManager(Context context) {
        sharedPref = context.getSharedPreferences(PREFERENCE_FILE,
Context.MODE_PRIVATE);
    }

    ///////////////////////////////////////////////////

    public void savePhotoValue(String key, String value) {
        SharedPreferences.Editor editor = sharedPref.edit();
        editor.putString(key, value);
        editor.apply();
    }
}

```

```

public String getPhotoValue(String key) {
    return sharedPref.getString(key, "");
}

private void saveValue(String key, String value) {
    SharedPreferences.Editor editor = sharedPref.edit();
    editor.putString(key, value);
    editor.apply();
}

private String getValue(String key, String defaultValue) {
    return sharedPref.getString(key, defaultValue);
}
}

```

При паузе и продолжении проверяем наличие фото:

```

@Override
protected void onResume() {
    super.onResume();

    File imgFile = new File(preferenceManager.getPhotoValue("photo"));
    if (imgFile.exists()) { Glide.with(this).load(imgFile).into(photo); }
    else { photo.setImageResource(R.drawable.no_image); }

    sensorManager.registerListener(this, light, SensorManager.SENSOR_DELAY_NORMAL);
}

@Override
protected void onPause() {
    super.onPause();

    File imgFile = new File(preferenceManager.getPhotoValue("photo"));
    if (imgFile.exists()) { Glide.with(this).load(imgFile).into(photo); }
    else { photo.setImageResource(R.drawable.no_image); }

    sensorManager.unregisterListener(this);
}

```



Рисунок 1.2 – Результат

2 Задание

Задача: Использовать параметры датчика освещённости и вывести в настройках динамическое значение освещённости.

Расширяем класс SettingsActivity:

```
public class SettingsActivity extends AppCompatActivity implements
SensorEventListener { . . . }
```

Объявляем сенсоры:

```
private SensorManager sensorManager;
private Sensor light;
private TextView sensorLight;
. . .
sensorLight = findViewById(R.id.sensor_light);
sensorManager = (SensorManager) getSystemService(Context.SENSOR_SERVICE);
light = sensorManager.getDefaultSensor(Sensor.TYPE_LIGHT);
```

Добавляем код который будет обновлять данные с датчика:

```
public final void onAccuracyChanged(Sensor sensor, int accuracy) { }

public final void onSensorChanged(SensorEvent event) {
    float lux = event.values[0];
    sensorLight.setText(String.format("%s lux", lux));
}
```

На паузу и продолжение работы приложения так же добавляем код для экономии ресурсов:

```
@Override
protected void onResume() {
    super.onResume();

    name.setText(preferenceManager.getValue("name"));

    File imgFile = new File(preferenceManager.getValue("photo"));
    if (imgFile.exists()) { Glide.with(this).load(imgFile).into(photo); }
    else { photo.setImageResource(R.drawable.no_image); }

    sensorManager.registerListener(this, light, SensorManager.SENSOR_DELAY_NORMAL);
}

@Override
protected void onPause() {
    super.onPause();

    name.setText(preferenceManager.getValue("name"));

    File imgFile = new File(preferenceManager.getValue("photo"));
    if (imgFile.exists()) { Glide.with(this).load(imgFile).into(photo); }
    else { photo.setImageResource(R.drawable.no_image); }

    sensorManager.unregisterListener(this);
}
```

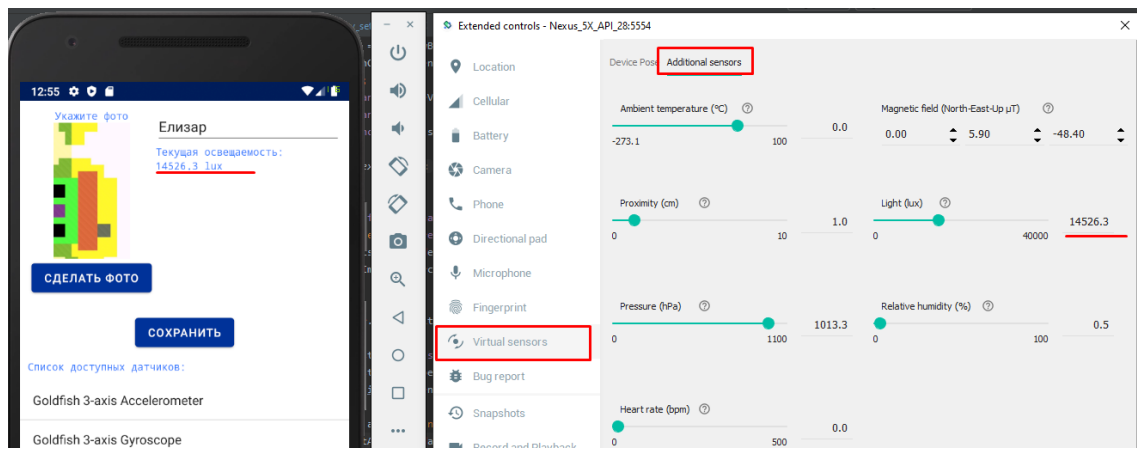


Рисунок 2.1 – Результат

3 Задание

Задача: Доработать работу с полем name. Сохранять его в преференсы и считывать при открытии экрана по аналогии с работой с путем до фото.

Добавляем сохранение имени по нажатию на кнопку сохранения (изменения выделены красным цветом):

```
View buttonSave = findViewById(R.id.button_save);
buttonSave.setOnClickListener(v -> {
    loadPhoto();
    preferenceManager.saveValue("name", name.getText().toString());
    if(photo_changed) {
        preferenceManager.saveValue("photo", image.getPath());
    }
    Toast.makeText(SettingsActivity.this, "Данные сохранены",
    Toast.LENGTH_SHORT).show();
});
```

Так же при запуске добавляем загрузку:

```
name.setText(preferenceManager.getValue("name"));
```

Аналогично для паузы и продолжения работы приложения



Рисунок 3.1 – Результат

4 Задание

Задача: Вывести в настройках список всех доступных датчиков.

Добавляем ListView на экран:

```
<ListView
    android:id="@+id/sensors_list"
    android:layout_width="wrap_content"
    android:layout_height="300dp"
    android:layout_marginStart="10dp"
    android:layout_marginLeft="10dp"
    android:layout_marginEnd="10dp"
    android:layout_marginRight="10dp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/sensors_list_label">
</ListView>
```

Заполняем лист в цикле и выводим через адаптер:

```
if(sensorManager.getDefaultSensor(Sensor.TYPE_LIGHT) == null) {
    sensorLight.setText("Нет датчика освещенности"); }

List<Sensor> listSensor = sensorManager.getSensorList(Sensor.TYPE_ALL);
List<String> listSensorType = new ArrayList<>();
for (int i = 0; i < listSensor.size(); i++) {
    listSensorType.add(listSensor.get(i).getName()); }

ArrayAdapter<?> adapter = new ArrayAdapter<>(this,
    android.R.layout.simple_list_item_1, listSensorType);
sensors_list.setAdapter(adapter);
```

Список доступных датчиков:

Goldfish 3-axis Accelerometer
Goldfish 3-axis Gyroscope
Goldfish 3-axis Magnetic field sensor
Goldfish Orientation sensor
Goldfish Ambient Temperature sensor
Goldfish Proximity sensor

Рисунок 4.1 – Результат

Приложение А. Листинг «MainActivity»

```
package org.hse.android;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import java.util.Objects;

public class MainActivity extends AppCompatActivity {

    private static final String TAG = "MainActivity";

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

        View button_student = findViewById(R.id.button_student);
        View button_teacher = findViewById(R.id.button_teacher);
        View button_settings = findViewById(R.id.button_settings);

        Log.d(TAG, "Startup");

        button_student.setOnClickListener(v -> Student_pressed());
        button_teacher.setOnClickListener(v -> Teacher_pressed());
        button_settings.setOnClickListener(v -> Settings_pressed());
    }

    private void Student_pressed(){
        Intent intent = new Intent(MainActivity.this, StudentActivity.class);
        startActivity(intent);
    }

    private void Teacher_pressed(){
        Intent intent = new Intent(MainActivity.this, TeacherActivity.class);
        startActivity(intent);
    }

    private void Settings_pressed(){
        Intent intent = new Intent(MainActivity.this, SettingsActivity.class);
        startActivity(intent);
    }
}
```


Приложение Б. Листинг «StudentActivity»

```
package org.hse.android;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ArrayAdapter;
import android.widget.Spinner;
import android.widget.TextView;
import java.text.DateFormatSymbols;
import java.text.SimpleDateFormat;
import java.util.ArrayList;
import java.util.Date;
import java.util.List;
import java.util.Locale;
import java.util.Objects;

public class StudentActivity extends AppCompatActivity {

    private static final String TAG = "StudentActivity";

    private TextView time, status, subject, cabinet, corp, teacher;
    public Date currentTime;

    @Override protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_student);
        Objects.requireNonNull(getSupportActionBar()).hide();

        final Spinner spinner = findViewById(R.id.groupList);

        List<Group> groups = new ArrayList<>();
        initGroupList(groups);

        ArrayAdapter<?> adapter = new ArrayAdapter<>(this,
        android.R.layout.simple_spinner_item, groups);

        adapter.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);

        spinner.setAdapter(adapter);

        spinner.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            public void onItemClick(AdapterView<?> parent, View itemSelected, int
            selectedItemPosition, long selectedId) {
                Object item = adapter.getItem(selectedItemPosition);
                Log.d(TAG, "selectedItem: " + item);
            }
            public void onNothingSelected(AdapterView<?> parent) { }
        });

        time = findViewById(R.id.time);
        initTime();

        status = findViewById(R.id.status);
        subject = findViewById(R.id.subject);
    }
}
```

```

        cabinet = findViewById(R.id.cabinet);
        corp = findViewById(R.id.corp);
        teacher = findViewById(R.id.teacher);

        initData();
    }

    private void initGroupList(List<Group> groups){
        String[] pr = { "ПИ", "БИ", "УБ", "Э", "И", "Ю" };
        String[] yr = { "16", "17", "18", "19", "20" };
        int i=0;
        for (String p : pr) {
            for (String y : yr) {
                for (int z = 1; z < 5; z++) {
                    i++;
                    groups.add(new Group(i, p + "-" + y + "-" + z));
                }
            }
        }
    }

    private void initTime(){
        currentTime = new Date();
        String[] Week_days = { "", "Воскресенье", "Понедельник", "Вторник", "Среда",
"Четверг", "Пятница", "Субота" };
        DateFormatSymbols symbols = new DateFormatSymbols( new Locale("en", "US"));
        symbols.setShortWeekdays(Week_days);

        @SuppressWarnings("SimpleDateFormat") SimpleDateFormat simpleDateFormat = new
SimpleDateFormat("HH:mm", ' E', symbols);
        time.setText(simpleDateFormat.format(currentTime));
    }

    private void initData(){
        status.setText("Нет пар");

        subject.setText("Дисциплина");
        cabinet.setText("Кабинет");
        corp.setText("Корпус");
        teacher.setText("Преподаватель");
    }

    static class Group{
        private Integer id;
        private String name;

        public Group(Integer id, String name){
            this.id = id;
            this.name = name;
        }

        public Integer getId(){ return id; }
        public void setId(Integer id) { this.id = id; }
        @Override public String toString() { return name; }
        public String getName() { return name; }
        public void setName(String name){ this.name = name; }
    }
}

```

Приложение В. Листинг «TeacherActivity»

```
package org.hse.android;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ArrayAdapter;
import android.widget.Spinner;
import android.widget.TextView;
import java.text.DateFormatSymbols;
import java.text.SimpleDateFormat;
import java.util.ArrayList;
import java.util.Date;
import java.util.List;
import java.util.Locale;
import java.util.Objects;

public class TeacherActivity extends AppCompatActivity {

    private static final String TAG = "TeacherActivity";

    private TextView time, status, subject, cabinet, corp, teacher;
    public Date currentTime;

    @Override protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_teacher);
        Objects.requireNonNull(getSupportActionBar()).hide();

        final Spinner spinner = findViewById(R.id.groupList);

        List<StudentActivity.Group> groups = new ArrayList<>();
        initGroupList(groups);

        ArrayAdapter<?> adapter = new ArrayAdapter<>(this,
        android.R.layout.simple_spinner_item, groups);

        adapter.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);

        spinner.setAdapter(adapter);

        spinner.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            public void onItemClick(AdapterView<?> parent, View itemSelected, int
            selectedItemPosition, long selectedId) {
                Object item = adapter.getItem(selectedItemPosition);
                Log.d(TAG, "selectedItem: " + item);
            }
            public void onNothingSelected(AdapterView<?> parent) { }
        });

        time = findViewById(R.id.time);
        initTime();

        status = findViewById(R.id.status);
        subject = findViewById(R.id.subject);
    }
}
```

```

        cabinet = findViewById(R.id.cabinet);
        corp = findViewById(R.id.corp);
        teacher = findViewById(R.id.teacher);

        initData();
    }
    private void initGroupList(List<StudentActivity.Group> groups){
        groups.add(new StudentActivity.Group(1,"Преподаватель 1"));
        groups.add(new StudentActivity.Group(2,"Преподаватель 2"));
    }
    private void initTime(){
        currentTime = new Date();
        String[] Week_days = { "", "Воскресенье", "Понедельник", "Вторник", "Среда",
"Четверг", "Пятница", "Суббота" };
        DateFormatSymbols symbols = new DateFormatSymbols( new Locale("en", "US"));
        symbols.setShortWeekdays(Week_days);

        @SuppressWarnings("SimpleDateFormat")
        SimpleDateFormat simpleDateFormat = new SimpleDateFormat("HH:mm", ' E",
symbols);
        time.setText(simpleDateFormat.format(currentTime));
    }
    private void initData(){
        status.setText("Нет пар");

        subject.setText("Дисциплина");
        cabinet.setText("Кабинет");
        corp.setText("Корпус");
        teacher.setText("Преподаватель");
    }
}

```

Приложение Г. Листинг «SettingsActivity»

```
package org.hse.android;

import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.FileProvider;
import android.Manifest;
import android.annotation.SuppressLint;
import android.content.ActivityNotFoundException;
import android.content.Context;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.hardware.Sensor;
import android.hardware.SensorEvent;
import android.hardware.SensorEventListener;
import android.hardware.SensorManager;
import android.net.Uri;
import android.os.Bundle;
import android.provider.MediaStore;
import android.util.Log;
import android.view.View;
import android.widget.AdapterView;
import android.widget.EditText;
import android.widget.ImageView;
import android.widget.ListView;
import android.widget.TextView;
import android.widget.Toast;
import java.io.File;
import java.io.IOException;
import java.text.SimpleDateFormat;
import java.util.ArrayList;
import java.util.Date;
import java.util.List;
import java.util.Locale;
import java.util.Objects;
import com.bumptech.glide.Glide;

public class SettingsActivity extends AppCompatActivity implements
SensorEventListener {

    private final static String TAG = "SettingsActivity";

    private static final int REQUEST_IMAGE_CAPTURE = 10;
    private static final int REQUEST_PERMISSION_CODE = 1;

    private final static String PERMISSION = Manifest.permission.CAMERA;

    private ImageView photo;
    private EditText name;

    private PreferenceManager preferenceManager;
    private SensorManager sensorManager;
    private Sensor light;
    private TextView sensorLight;

    File imagePath;
```

```

File image;
Boolean photo_changed = false;

@Override protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_settings);
    Objects.requireNonNull(getSupportActionBar()).hide();

    preferenceManager = new PreferenceManager(this);
    ListView sensors_list = findViewById(R.id.sensors_list);
    name = findViewById(R.id.name);
    photo = findViewById(R.id.photo);
    sensorLight = findViewById(R.id.sensor_light);
    sensorManager = (SensorManager) getSystemService(Context.SENSOR_SERVICE);
    light = sensorManager.getDefaultSensor(Sensor.TYPE_LIGHT);

    View buttonPhoto = findViewById(R.id.button_photo);
    buttonPhoto.setOnClickListener(v -> checkPermission());

    View buttonSave = findViewById(R.id.button_save);
    buttonSave.setOnClickListener(v -> {
        loadPhoto();
        preferenceManager.saveValue("name", name.getText().toString());
        if(photo_changed) {
            preferenceManager.saveValue("photo", image.getPath());
        }
        Toast.makeText(SettingsActivity.this, "Данные сохранены",
Toast.LENGTH_SHORT).show();
    });

    name.setText(preferenceManager.getValue("name"));
    File imgFile = new File(preferenceManager.getValue("photo"));
    if(imgFile.exists()){ Glide.with(this).load(imgFile).into(photo); }
    else{ photo.setImageResource(R.drawable.no_image); }
    loadPhoto();

    if(sensorManager.getDefaultSensor(Sensor.TYPE_LIGHT) == null) {
sensorLight.setText("Нет датчика освещенности"); }

    List<Sensor> listSensor = sensorManager.getSensorList(Sensor.TYPE_ALL);
    List<String> listSensorType = new ArrayList<>();
    for (int i = 0; i < listSensor.size(); i++) {
listSensorType.add(listSensor.get(i).getName()); }

    ArrayAdapter<?> adapter = new ArrayAdapter<>(this,
android.R.layout.simple_list_item_1, listSensorType);
    sensors_list.setAdapter(adapter);
}

@Override
protected void onResume() {
    super.onResume();

    name.setText(preferenceManager.getValue("name"));

    File imgFile = new File(preferenceManager.getValue("photo"));
    if (imgFile.exists()) { Glide.with(this).load(imgFile).into(photo); }
    else { photo.setImageResource(R.drawable.no_image); }

    sensorManager.registerListener(this, light,
SensorManager.SENSOR_DELAY_NORMAL);
}

```

```

@Override
protected void onPause() {
    super.onPause();

    name.setText(preferenceManager.getValue("name"));

    File imgFile = new File(preferenceManager.getValue("photo"));
    if(imgFile.exists()){ Glide.with(this).load(imgFile).into(photo); }
    else{ photo.setImageResource(R.drawable.no_image); }

    sensorManager.unregisterListener(this);
}

public final void onAccuracyChanged(Sensor sensor, int accuracy) { }

public final void onSensorChanged(SensorEvent event) {
    float lux = event.values[0];
    sensorLight.setText(String.format("%s lux", lux));
}

public void checkPermission(){
    int permissionsCheck = ActivityCompat.checkSelfPermission(this, PERMISSION);
    if (permissionsCheck != PackageManager.PERMISSION_GRANTED) {
        if(ActivityCompat.shouldShowRequestPermissionRationale(this, PERMISSION))
        {
            AlertDialog.Builder builder = new AlertDialog.Builder(this);
            builder.setTitle("Нужно предоставить права")
                .setMessage("Для снятия фото нужно предоставить права на
фото")
                .setPositiveButton(android.R.string.ok, (dialog, id) ->
                    requestPermissions(PERMISSION,
REQUEST_PERMISSION_CODE));
            builder.create().show();
        }
        else { requestPermissions(PERMISSION, REQUEST_PERMISSION_CODE); }
    }
    else { dispatchTakePictureIntent(); }
}

private void requestPermissions(String permissionName, int permissionRequestCode)
{
    ActivityCompat.requestPermissions(this, new String[]{permissionName},
permissionRequestCode);
}

@Override
public void onRequestPermissionsResult(int requestCode, @NonNull String[]
permissions, @NonNull int[] result) {
    if(requestCode == REQUEST_PERMISSION_CODE) {
        if(result.length > 0 && result[0] == PackageManager.PERMISSION_GRANTED) {
            dispatchTakePictureIntent();
        }
        else {
            Log.d(TAG, "Permission not granted");
            requestPermissions(PERMISSION, REQUEST_PERMISSION_CODE);
        }
    }
}

@Override
protected void onActivityResult(int requestCode, int resultCode, @Nullable Intent

```

```

data) {
    if (requestCode == REQUEST_IMAGE_CAPTURE && resultCode == RESULT_OK){
        loadPhoto();
        return;
    }
    super.onActivityResult(requestCode, resultCode, data);
}

private void loadPhoto() { if(image != null)
Glide.with(this).load(image).into(photo); }

@SuppressWarnings("QueryPermissionsNeeded")
private void dispatchTakePictureIntent() {
    Intent takePictureIntent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
    if(takePictureIntent.resolveActivity(getPackageManager()) != null) {
        //Create a file to store the image
        File photoFile = null;
        try { photoFile = createImageFile(); }
        catch (IOException ex) { Log.e(TAG, "Create file", ex); }
        if(photoFile != null) {
            Uri photoURI = FileProvider.getUriForFile(this,
BuildConfig.APPLICATION_ID + ".provider", photoFile);
            takePictureIntent.putExtra(MediaStore.EXTRA_OUTPUT,
                photoURI);
            try { startActivityForResult(takePictureIntent,
REQUEST_IMAGE_CAPTURE); }
            catch (ActivityNotFoundException e) { Log.e(TAG, "Start activity",
e); }
        }
    }
    loadPhoto();
}

private File createImageFile() throws IOException {
    String timeStamp = new SimpleDateFormat("yyyyMMdd_HHmmss",
Locale.getDefault()).format(new Date());
    String imageFileName = "IMG_" + timeStamp + "_";

    imagePath = new File(getFilesDir(), "external_files");
    imagePath.mkdir();
    image = new File(imagePath.getPath(), String.format("%s.img",
imageFileName));
    photo_changed = true;

    return image;
}
}

```


Приложение Д. Листинг «PreferenceManager»

```
package org.hse.android;

import android.content.Context;
import android.content.SharedPreferences;

public class PreferenceManager {
    private final static String PREFERENCE_FILE = "org.hse.android.file";
    private final SharedPreferences sharedPref;

    public PreferenceManager(Context context) {
        sharedPref = context.getSharedPreferences(PREFERENCE_FILE,
Context.MODE_PRIVATE);
    }

    //////////////////////////////////

    public void saveValue(String key, String value) {
        SharedPreferences.Editor editor = sharedPref.edit();
        editor.putString(key, value);
        editor.apply();
    }

    public String getValue(String key) {
        return sharedPref.getString(key, "");
    }
}
```

Приложение Е. Листинг «activity_main»

```
<?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">

    <ImageView
        android:id="@+id/Logo"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:layout_marginLeft="25dp"
        android:layout_marginTop="20dp"
        android:layout_marginEnd="25dp"
        android:layout_marginRight="25dp"
        android:layout_marginBottom="80dp"
        android:gravity="center_horizontal"
        android:orientation="vertical"
        android:scaleX="1.3"
        android:scaleY="1.3"
        app:layout_constraintBottom_toTopOf="@+id/button_student"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:srcCompat="@drawable/logo"
        android:contentDescription="@string/logo_of_hse" />

    <Button
        android:id="@+id/button_student"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="55dp"
        android:layout_marginLeft="55dp"
        android:layout_marginEnd="55dp"
        android:layout_marginRight="55dp"
        android:layout_marginBottom="20dp"
        android:gravity="center_horizontal"
        android:maxLines="1"
        android:text="@string/student_button_ru"
        android:textAppearance="@style/TextAppearance.AppCompat.Medium"
        app:layout_constraintBottom_toTopOf="@+id/button_teacher"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent" />

    <Button
        android:id="@+id/button_teacher"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="31dp"
        android:layout_marginLeft="31dp"
        android:layout_marginEnd="31dp"
        android:layout_marginRight="31dp"
        android:layout_marginBottom="20dp"
```

```

        android:gravity="center"
        android:maxLines="1"
        android:text="@string/teacher_button_ru"
        android:textAppearance="@style/TextAppearance.AppCompat.Medium"
        app:layout_constraintBottom_toTopOf="@+id/button_settings"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent" />

<Button
    android:id="@+id/button_settings"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="160dp"
    android:layout_marginLeft="160dp"
    android:layout_marginEnd="160dp"
    android:layout_marginRight="160dp"
    android:layout_marginBottom="40dp"
    android:gravity="center"
    android:maxLines="1"
    android:text="@string/settings_ru"
    android:textAppearance="@style/TextAppearance.AppCompat.Medium"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Приложение Ж. Листинг «activity_student»

```
<?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"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TextView
        style="@style/Common_text_style"
        android:id="@+id/label"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="10dp"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="10dp"
        android:layout_marginEnd="10dp"
        android:layout_marginRight="10dp"
        android:text="@string/first_label_s_ru"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Spinner
        android:id="@+id/groupList"
        android:layout_width="150dp"
        android:layout_height="50dp"
        android:layout_marginStart="10dp"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="10dp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/label" />

    <LinearLayout
        android:id="@+id/linearLayout"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="10dp"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="10dp"
        android:layout_marginEnd="10dp"
        android:layout_marginRight="10dp"
        android:orientation="horizontal"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/groupList">

        <TextView
            style="@style/Common_text_style"
            android:id="@+id/now"
            android:layout_width="70dp"
            android:layout_height="match_parent"
            android:layout_weight="0"
            android:text="@string/now_label" />

        <TextView
            style="@style/Common_text_style"
            android:id="@+id/time"
            android:layout_width="wrap_content"
```

```

        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="@string/time_ru" />
</LinearLayout>

<TextView
    style="@style/Common_text_style"
    android:id="@+id/status"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginLeft="10dp"
    android:layout_marginTop="10dp"
    android:layout_marginEnd="10dp"
    android:layout_marginRight="10dp"
    android:text="@string/status_ru"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout" />

<LinearLayout
    android:id="@+id/linearLayout2"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginLeft="10dp"
    android:layout_marginTop="10dp"
    android:layout_marginEnd="10dp"
    android:layout_marginRight="10dp"
    android:orientation="vertical"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/status">

    <TextView
        style="@style/Common_text_style"
        android:id="@+id/subject"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/subject_ru" />

    <TextView
        style="@style/Common_text_style"
        android:id="@+id/cabinet"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/cabinet_ru" />

    <TextView
        style="@style/Common_text_style"
        android:id="@+id/corp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/corp_ru" />

    <TextView
        style="@style/Common_text_style"
        android:id="@+id/teacher"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/teacher_ru" />

```

```

</LinearLayout>

<Button
    android:id="@+id/day_cal_button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginLeft="10dp"
    android:layout_marginTop="10dp"
    android:minLines="1"
    android:text="Расписание\на день"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout2" />

<Button
    android:id="@+id/week_cal_button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginLeft="20dp"
    android:layout_marginTop="10dp"
    android:text="Расписание\на неделю"
    app:layout_constraintStart_toEndOf="@+id/day_cal_button"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout2" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Приложение 3. Листинг «activity_teacher»

```
<?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"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TextView
        style="@style/Common_text_style"
        android:id="@+id/label"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="10dp"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="10dp"
        android:layout_marginEnd="10dp"
        android:layout_marginRight="10dp"
        android:text="@string/first_label_t_ru"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Spinner
        android:id="@+id/groupList"
        android:layout_width="150dp"
        android:layout_height="50dp"
        android:layout_marginStart="10dp"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="10dp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/label" />

    <LinearLayout
        android:id="@+id/linearLayout"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="10dp"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="10dp"
        android:layout_marginEnd="10dp"
        android:layout_marginRight="10dp"
        android:orientation="horizontal"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/groupList">

        <TextView
            style="@style/Common_text_style"
            android:id="@+id/now"
            android:layout_width="70dp"
            android:layout_height="match_parent"
            android:layout_weight="0"
            android:text="@string/now_label" />

        <TextView
            style="@style/Common_text_style"
            android:id="@+id/time"
            android:layout_width="wrap_content"
```

```

        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="@string/time_ru" />
</LinearLayout>

<TextView
    style="@style/Common_text_style"
    android:id="@+id/status"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginLeft="10dp"
    android:layout_marginTop="10dp"
    android:layout_marginEnd="10dp"
    android:layout_marginRight="10dp"
    android:text="@string/status_ru"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout" />

<LinearLayout
    android:id="@+id/linearLayout2"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginLeft="10dp"
    android:layout_marginTop="10dp"
    android:layout_marginEnd="10dp"
    android:layout_marginRight="10dp"
    android:orientation="vertical"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/status">

    <TextView
        style="@style/Common_text_style"
        android:id="@+id/subject"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/subject_ru" />

    <TextView
        style="@style/Common_text_style"
        android:id="@+id/cabinet"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/cabinet_ru" />

    <TextView
        style="@style/Common_text_style"
        android:id="@+id/corp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/corp_ru" />

    <TextView
        style="@style/Common_text_style"
        android:id="@+id/teacher"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/teacher_ru" />
</LinearLayout>

```



```

<Button
    android:id="@+id/day_cal_button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginLeft="10dp"
    android:layout_marginTop="10dp"
    android:minLines="1"
    android:text="Расписание\на день"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout2" />

<Button
    android:id="@+id/week_cal_button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginLeft="20dp"
    android:layout_marginTop="10dp"
    android:text="Расписание\на неделю"
    app:layout_constraintStart_toEndOf="@+id/day_cal_button"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout2" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Приложение II. Листинг «activity_settings»

```
<?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">

    <LinearLayout
        android:id="@+id/linearLayout3"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="10dp"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="10dp"
        android:layout_marginEnd="10dp"
        android:layout_marginRight="10dp"
        android:orientation="horizontal"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <LinearLayout
            android:layout_width="160dp"
            android:layout_height="wrap_content"
            android:orientation="vertical">

            <TextView
                android:id="@+id/textView"
                style="@style/Mini_text_style"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_gravity="center"
                android:text="@string/photo_textView" />

            <ImageView
                android:id="@+id/photo"
                android:layout_width="150dp"
                android:layout_height="170dp"
                android:layout_gravity="center"
                android:contentDescription="@string/user_avatar"
                tools:srcCompat="@tools:sample/avatars" />

            <Button
                android:id="@+id/button_photo"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_gravity="center"
                android:text="@string/take_photo_button_ru" />
        </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:gravity="center"
        android:orientation="vertical">

        <EditText
```

```

        android:id="@+id/name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="@string/name_editView"
        android:autofillHints="" />

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">

    <TextView
        style="@style/Mini_text_style"
        android:id="@+id/textView2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/light_textView" />

    <TextView
        style="@style/Mini_text_style"
        android:id="@+id/sensor_light"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="" />

</LinearLayout>
</LinearLayout>
</LinearLayout>

<Button
    android:id="@+id/button_save"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="160dp"
    android:layout_marginLeft="160dp"
    android:layout_marginTop="20dp"
    android:layout_marginEnd="160dp"
    android:layout_marginRight="160dp"
    android:text="@string/save_button_ru"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout3" />

<TextView
    android:id="@+id/sensors_list_label"
    style="@style/Mini_text_style"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginLeft="10dp"
    android:layout_marginTop="10dp"
    android:text="@string/sensors_list_label"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/button_save" />

<ListView
    android:id="@+id/sensors_list"
    android:layout_width="wrap_content"
    android:layout_height="300dp"
    android:layout_marginStart="10dp"
    android:layout_marginLeft="10dp"

```

```
        android:layout_marginEnd="10dp"
        android:layout_marginRight="10dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/sensors_list_label">
    </ListView>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Приложение К. Листинг «AndroidManifest»

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="org.hse.android">

    <!-- <uses-permission android:name="android.permission.BLUETOOTH"/> -->
    <!-- <uses-permission android:name="android.permission.BLUETOOTH_ADMIN"/> -->
    <uses-permission android:name="android.permission.CAMERA" />
    <uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE" />
    <uses-permission android:name="android.permission.INTERNET" />
    <uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />
    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />

    <uses-feature
        android:name="android.hardware.camera"
        android:required="true" />

    <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.HSE">
        <meta-data
            android:name="com.google.android.actions"
            android:resource="@xml/file_paths" />

        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <activity android:name=".StudentActivity" />
        <activity android:name=".TeacherActivity" />
        <activity android:name=".SettingsActivity" />

        <provider
            android:name="androidx.core.content.FileProvider"
            android:authorities="org.hse.android.provider"
            android:exported="false"
            android:grantUriPermissions="true">
            <meta-data
                android:name="android.support.FILE_PROVIDER_PATHS"
                android:resource="@xml/file_paths" />
        </provider>
    </application>
</manifest>
```

Приложение Л. Листинг «file_paths.xml»

```
<?xml version="1.0" encoding="utf-8"?>
<paths>
  <files-path
    name="files"
    path="external_files">
  </files-path>
</paths>
```

Приложение М. Листинг «strings.xml»

```
<resources>
    <string name="app_name">Timetable for HSE FE</string>
    <string name="about_main">Программа созданная в рамках курса "Мобильная
разработка" НИУ ВШЭ</string>
    <string name="about_stud_list">Timetable for HSE FE</string>
    <string name="about_teach_list">Timetable for HSE FE</string>

    <string name="teacher_button_ru">РАСПИСАНИЕ ДЛЯ ПРЕПОДОВАТЕЛЯ</string>
    <string name="student_button_ru">РАСПИСАНИЕ ДЛЯ СТУДЕНТОВ</string>
    <string name="settings_ru">НАСТРОЙКИ</string>
    <string name="take_photo_button_ru">Сделать фото</string>
    <string name="save_button_ru">Сохранить</string>
    <string name="logo_of_hse">Logo of HSE</string>

    <string name="first_label_s_ru">Выберите группу:</string>
    <string name="first_label_t_ru">Выберите преподавателя:</string>
    <string name="now_label">Сейчас:</string>
    <string name="time_ru">00:00</string>
    <string name="status_ru">Идет пара / Нет пар</string>
    <string name="subject_ru">Дисциплина</string>
    <string name="cabinet_ru">Кабинет</string>
    <string name="corp_ru">Корпус</string>
    <string name="teacher_ru">Преподаватель</string>

    <string name="photo_textView">Укажите фото</string>
    <string name="name_editView">Укажите ваше имя</string>
    <string name="light_textView">Текущая освещаемость:</string>
    <string name="user_avatar">User_avatar</string>
    <string name="sensors_list_label">Список доступных датчиков:</string>
</resources>
```

Приложение Н. Листинг «styles.xml»

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <style name="Common_text_style">
        <item name="android:textSize">16sp</item>
        <item name="android:textStyle">bold</item>
        <item name="android:textColor">@color/SecondaryHSE</item>
        <item name="android:typeface">monospace</item>
    </style>
    <style name="Mini_text_style">
        <item name="android:textSize">13sp</item>
        <item name="android:textColor">@color/SecondaryHSE</item>
        <item name="android:typeface">monospace</item>
    </style>
</resources>
```


Приложение О. Листинг «build.gradle»

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

android {
    compileSdkVersion 30
    buildToolsVersion "30.0.3"

    defaultConfig {
        applicationId "org.hse.android"
        minSdkVersion 16
        targetSdkVersion 30
        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'

    // Desugaring https://developer.android.com/studio/write/java8-support
    coreLibraryDesugaring 'com.android.tools:desugar_jdk_libs:1.1.1'

    testImplementation 'junit:junit:4.+'
    androidTestImplementation 'androidx.test.ext:junit:1.1.2'
    androidTestImplementation 'androidx.test.espresso:espresso-core:3.3.0'

    // Glide
    implementation 'com.github.bumptech.glide:glide:4.11.0'
    annotationProcessor 'com.github.bumptech.glide:compiler:4.11.0'
}
```