

Экзаменационные вопросы и примерные практические задания по МДК.02.03 Разработка приложений управления

**Группы
Э-1-20, Э-2-20, Э-11-21**

Вопросы

1. Создание и настройка проекта в Android Studio.
2. Запуск проекта из Android Studio: на смартфоне и в эмуляторе.
3. Структура Android-приложения: файл активности и файл макета.
4. Механизм запуска приложения в среде Android Studio.
5. Понятие интента в Android-приложении; механизм использования.
6. Протоколы беспроводной связи, используемые в технологии Интернета вещей.
7. Решения для беспроводной связи с точки зрения радиуса действия.
8. Bluetooth API в составе платформы Android.
9. Класс BluetoothAdapter, установка его настроек в Android-приложении.
10. Класс BluetoothDevice, механизм его использования в Android-приложении.
11. Класс BluetoothSocket и механизм его использования в Android-приложении.
12. Android-приложение: состав папки src.
13. Android-приложение: состав папки java.
14. Android-приложение: состав папки res.
15. Android-приложение: объект Toast.

Примерные практические задания

Ознакомьтесь с программным кодом Android-приложения (см. Приложение к экзаменационным билетам № ...) и прокомментируйте используемые в нём классы и методы.

Задание 1

MainActivity.java

```
package com.example.practicum_1;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Spinner;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

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

    public void onClickGetAction(View view) {
        TextView devices = (TextView) findViewById(R.id.devices);
        Spinner actions = (Spinner) findViewById(R.id.actions);
```

```
        String chosen_action =
String.valueOf(actions.getSelectedItem());
        devices.setText(chosen_action);
    }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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"
    android:padding="16dp"
    android:orientation="vertical"
    tools:context=".MainActivity">

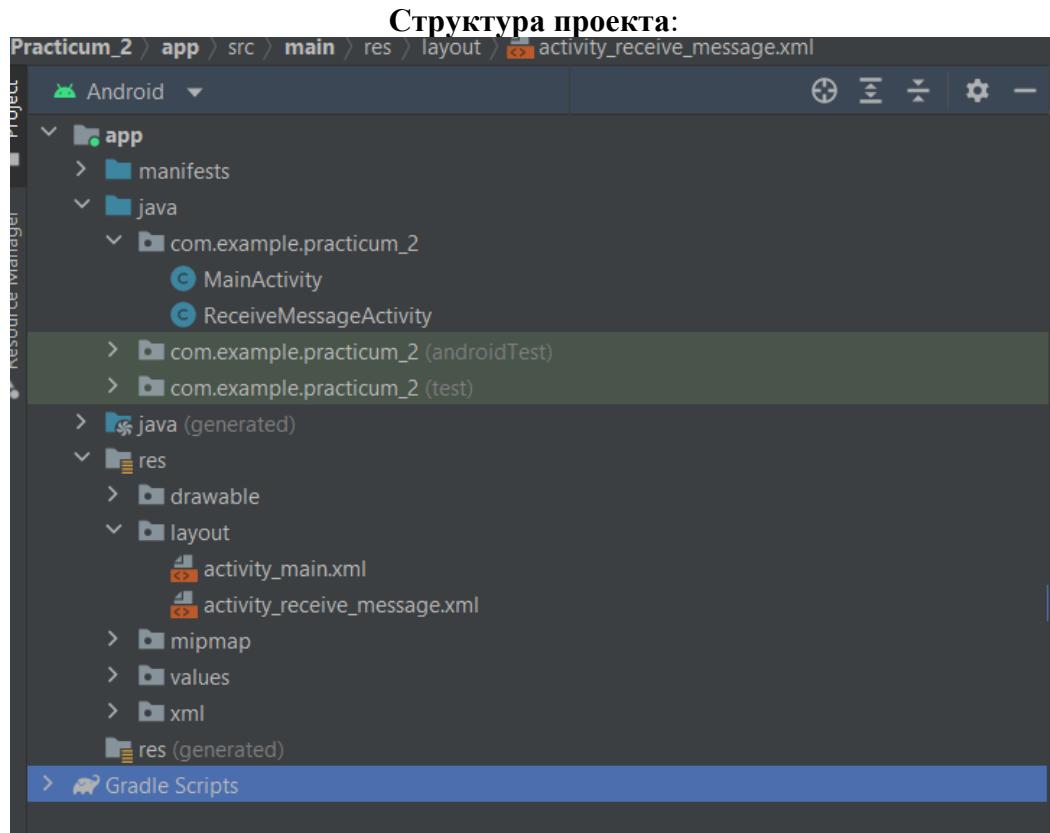
    <Spinner
        android:id="@+id/actions"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="40dp"
        android:layout_gravity="center"
        android:layout_margin="16dp"
        android:entries="@array/actions"/>

    <Button
        android:id="@+id/choose_action"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_margin="16dp"
        android:onClick="onClickGetAction"
        android:text="@string/choose_action" />

    <TextView
        android:id="@+id/devices"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/actions"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</LinearLayout>
```

Задание 2



MainActivity.java

```
package com.example.practicum_2;

import android.appcompat.app.AppCompatActivity;
import android.content.Intent;

import android.os.Bundle;
import android.view.View;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

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

    public void onSendMessage(View view) {
        EditText messageView = (EditText)
findViewByid(R.id.message);
        String messageText = messageView.getText().toString();
        Intent intent = new Intent(this,
ReceiveMessageActivity.class);
        intent.putExtra(ReceiveMessageActivity.EXTRA_MESSAGE,
messageText);
    }
}
```

```
        startActivity(intent);  
    }  
}
```

ReceiveMessageActivity.java

```
package com.example.practicum_2;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import android.annotation.SuppressLint;  
import android.os.Bundle;  
import android.content.Intent;  
import android.widget.TextView;  
  
public class ReceiveMessageActivity extends AppCompatActivity {  
    public static final String EXTRA_MESSAGE = "message";  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_receive_message);  
        Intent intent = getIntent();  
        String messageText = intent.getStringExtra(EXTRA_MESSAGE);  
        TextView messageView = (TextView)  
findViewById(R.id.message);  
        messageView.setText(messageText);  
    }  
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout  
    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"  
    android:orientation="vertical"  
    tools:context=".MainActivity">  
  
    <Button  
        android:id="@+id/send"  
        android:layout_width="match_parent"  
        android:layout_height="wrap_content"  
        android:text="@string/send"  
        android:onClick="onSendMessage"/>  
  
    <EditText
```

```
    android:id="@+id/message"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:ems="10"
    android:hint="@string/hint" />

</LinearLayout>
```

activity_receive_message.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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=".ReceiveMessageActivity"
    android:orientation="vertical">

    <TextView
        android:id="@+id/message"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        />
</LinearLayout>
```

Задание 3

MainActivity.java

```
package com.example.myapp1;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;

import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.bluetooth.*;
import android.widget.TextView;

import static com.example.myapp1.R.id.name;

public class MainActivity extends AppCompatActivity {
    BluetoothAdapter bluetooth =
    BluetoothAdapter.getDefaultAdapter();

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        TextView btYES = (TextView) findViewById(R.id.btYES);

        if (bluetooth != null) {
            btYES.setText("Bluetooth модуль в устройстве есть.");
        }

        if (bluetooth.isEnabled()) {
            btYES.setText("Bluetooth модуль включен.");
        } else if (ActivityCompat.checkSelfPermission(this,
Manifest.permission.BLUETOOTH_CONNECT)
        != PackageManager.PERMISSION_GRANTED) {
            bluetooth.enable();
            btYES.setText("Bluetooth теперь включен.");
        }
    }
}
```

activity_main.xml

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

<TextView
    android:id="@+id/btYES"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello World!"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<TextView
    android:id="@+id/name"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="Имя устройства" />

<TextView
    android:id="@+id/address"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="MAC адрес устройства" />

</LinearLayout>
```

Задание 4

MainActivity.java

```
package com.example.bt_4;

import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;

import android.Manifest;
import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CompoundButton;
import android.widget.Switch;
import android.widget.TextView;
import android.widget.Toast;

import java.util.Set;

public class MainActivity extends AppCompatActivity implements
    CompoundButton.OnCheckedChangeListener,
    View.OnClickListener {

    private static final int REQ_ENABLE_BT = 10;
    private Switch switchEnableBt;
    private Button btEnableSearch;
    private Button btnNameMac;
    private TextView tvBtOff;
    private TextView tvName;
    private TextView tvAddress;

    private Button btnGetPairedDevices;
    private TextView tvFoundDeviceName;
    private TextView tvFoundDeviceAddress;

    private TextView tvDiscoveredDeviceName;
    private TextView tvDiscoveredDeviceAddress;

    private BluetoothAdapter bluetoothAdapter;

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

```
switchEnableBt = findViewById(R.id.switch_enable_bt);
btnNameMac = findViewById(R.id.btn_name_Mac);

tvBtOff = findViewById(R.id.tv_bt_off);
tvName = findViewById(R.id.tv_name);
tvAddress = findViewById(R.id.tv_address);

btnGetPairedDevices = findViewById(R.id.btn_paired_devices);
tvFoundDeviceName = findViewById(R.id.found_device_name);
tvFoundDeviceAddress =
findViewById(R.id.found_device_address);

btEnableSearch = findViewById(R.id.btn_enable_search);
tvDiscoveredDeviceName =
findViewById(R.id.discovered_device_name);
tvDiscoveredDeviceAddress =
findViewById(R.id.discovered_device_address);

switchEnableBt.setOnCheckedChangeListener(this);
btEnableSearch.setOnClickListener(this);
btnNameMac.setOnClickListener(this);

IntentFilter filter = new IntentFilter();
filter.addAction(BluetoothAdapter.ACTION_DISCOVERY_STARTED);

filter.addAction(BluetoothAdapter.ACTION_DISCOVERY_FINISHED);
filter.addAction(BluetoothDevice.ACTION_FOUND);
registerReceiver(receiver, filter);

bluetoothAdapter = BluetoothAdapter.getDefaultAdapter();

if (bluetoothAdapter == null) {
    Toast.makeText(this, R.string.bluetooth_not_supported,
Toast.LENGTH_SHORT);
    finish();
}

if (bluetoothAdapter.isEnabled()) {
    btEnableSearch.setVisibility(View.VISIBLE);
    switchEnableBt.setChecked(true);
}

btnGetPairedDevices.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View view) {
        if
(ActivityCompat.checkSelfPermission(getApplicationContext(),
Manifest.permission.BLUETOOTH_CONNECT) !=
PackageManager.PERMISSION_GRANTED) {
```

```

        Set<BluetoothDevice> pairedDevices =
bluetoothAdapter.getBondedDevices();
        if (pairedDevices.size() > 0) {
            for (BluetoothDevice device : pairedDevices)
{
                String deviceName = device.getName();
                String macAddress = device.getAddress();

                tvFoundDeviceName.append(deviceName + "\n");
                tvFoundDeviceAddress.append(macAddress + "\n");
            }
        }
    });

}

@Override
protected void onActivityResult(int requestCode, int resultCode,
@Nullable Intent data) {
    super.onActivityResult(requestCode, resultCode, data);
    if (requestCode == REQ_ENABLE_BT) {
        if (resultCode == RESULT_OK &&
bluetoothAdapter.isEnabled()) {
            tvBtOff.setVisibility(View.GONE);
            btEnableSearch.setVisibility(View.VISIBLE);
        } else if (resultCode == RESULT_CANCELED) {
            enableBt(false);
            switchEnableBt.setChecked(false);
        }
    }
}

private void enableBt(boolean flag) {
    if (flag) {
        Intent intent = new
Intent(BluetoothAdapter.ACTION_REQUEST_ENABLE);
        startActivityForResult(intent, REQ_ENABLE_BT);
    } else {
        if (ActivityCompat.checkSelfPermission(this,
Manifest.permission.BLUETOOTH_CONNECT) !=
PackageManager.PERMISSION_GRANTED) {
            return;
        }
        bluetoothAdapter.disable();
    }
}

@Override

```

```
public void onClick(View view) {
    if (view.equals(btnNameMac)) {
        if (ActivityCompat.checkSelfPermission(this,
Manifest.permission.BLUETOOTH_CONNECT) != PackageManager.PERMISSION_GRANTED) {
            String myDeviceName = bluetoothAdapter.getName();
            tvName.setText(myDeviceName);
            String myDeviceAddress =
bluetoothAdapter.getAddress();
            tvAddress.setText(myDeviceAddress);
            return;
        } else {
            Toast.makeText(this, "Bluetooth выключен",
Toast.LENGTH_SHORT);
        }
    }

    if (view.equals(btEnableSearch)) {
        btEnableSearch.setText("Начат поиск");
        if (ActivityCompat.checkSelfPermission(this,
Manifest.permission.BLUETOOTH_SCAN) != PackageManager.PERMISSION_GRANTED) {

            if (bluetoothAdapter.isDiscovering()) {
                bluetoothAdapter.cancelDiscovery();
            } else {
                bluetoothAdapter.startDiscovery();
            }
        }
    }
}

@Override
public void onCheckedChanged(CompoundButton compoundButton,
boolean b) {
    if (compoundButton.equals(switchEnableBt)) {
        enableBt(b);

        if (!b) {
            tvBtOff.setVisibility(View.VISIBLE);
            if (ActivityCompat.checkSelfPermission(this,
Manifest.permission.BLUETOOTH_CONNECT) != PackageManager.PERMISSION_GRANTED) {
                bluetoothAdapter.disable();
                btEnableSearch.setVisibility(View.GONE);
                return;
            }
        }
    }
}
```

```

private BroadcastReceiver receiver = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        final String action = intent.getAction();

        switch (action) {
            case BluetoothAdapter.ACTION_DISCOVERY_STARTED:
                btEnableSearch.setText(R.string.stop_search);
                break;

            case BluetoothAdapter.ACTION_DISCOVERY_FINISHED:
                btEnableSearch.setText(R.string.enable_search);
                break;

            case BluetoothDevice.ACTION_FOUND:
                BluetoothDevice device =
intent.getParcelableExtra(BluetoothDevice.EXTRA_DEVICE);
                if (device != null)
                    if
(ActivityCompat.checkSelfPermission(getApplicationContext(),
Manifest.permission.BLUETOOTH_CONNECT) !=
PackageManager.PERMISSION_GRANTED) {
                        String discoveredDeviceName =
device.getName();
                        String discoveredDeviceAddress =
device.getAddress();
                        tvDiscoveredDeviceName.append(discoveredDeviceName + "\n");
                        tvDiscoveredDeviceAddress.append(discoveredDeviceAddress + "\n");
                    }
                break;
        }
    }
};

}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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"
    android:orientation="vertical"
    tools:context=".MainActivity">

```

```
<Switch
    android:id="@+id/switch_enable_bt"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:textSize="18sp"
    android:text="@string/bluetooth_on_off"/>

<Button
    android:id="@+id/btn_enable_search"
    android:layout_marginTop="8dp"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="@string/enable_search"
    android:layout_gravity="center_horizontal"
    android:visibility="gone"/>

<Button
    android:id="@+id/btn_name_Mac"
    android:layout_marginTop="8dp"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="@string/name_MAC"
    android:layout_gravity="center_horizontal"/>

<TextView
    android:id="@+id/tv_bt_off"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:textSize="24sp"
    android:textStyle="bold"
    android:text="@string/bluetooth_is_off"/>

<TextView
    android:id="@+id/tv_name"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="@string/device_name"/>

<TextView
    android:id="@+id/tv_address"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="@string/device_address"/>

<Button
    android:id="@+id/btn_paired_devices"
    android:layout_marginTop="8dp"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="@string/find_paired_devices"/>

<TextView
```

```
    android:id="@+id/found_device_name"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />

<TextView
    android:id="@+id/found_device_address"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"/>

<TextView
    android:id="@+id/discovered_device_name"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Найдено устройство"/>

<TextView
    android:id="@+id/discovered_device_address"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Найдено устройство"/>

</LinearLayout>
```

Задание 5

MainActivity.java

```
package com.example.bt_5;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;

public class MainActivity extends AppCompatActivity {

    String[] devices = {"device1", "device2", "device3", "device4",
    "device5"};

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

        ArrayAdapter<String> adapter = new
        ArrayAdapter<String>(this, android.R.layout.simple_list_item_1,
        devices);
        ListView lvMain = (ListView) findViewById(R.id.lvMain);
        lvMain.setAdapter(adapter);

    }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <ListView
        android:id="@+id/lvMain"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>

</LinearLayout>
```

Задание 6

MainActivity.java

```
package com.example.bt_6;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.KeyEvent;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.EditText;
import android.widget.ListView;

import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {

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

        ListView lvMain = (ListView) findViewById(R.id.lvMain);
        EditText et_add_item = (EditText)
        findViewById(R.id.et_add_items);
        ArrayList<String> items = new ArrayList<>();

        ArrayAdapter<String> adapter;
        adapter = new ArrayAdapter<>(this,
        android.R.layout.simple_list_item_1, items);

        lvMain.setAdapter(adapter);

        et_add_item.setOnKeyListener(new View.OnKeyListener() {
            @Override
            public boolean onKey(View view, int i, KeyEvent
keyEvent) {
                if (keyEvent.getAction() == KeyEvent.ACTION_DOWN)
                    if (i == KeyEvent.KEYCODE_ENTER) {
                        items.add(0,
et_add_item.getText().toString());
                        adapter.notifyDataSetChanged();
                        et_add_item.setText("");
                        return true;
                    }
                return false;
            }
        });
    }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <ListView
        android:id="@+id/lvMain"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>

    <EditText
        android:id="@+id/et_add_items"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>

</LinearLayout>
```

Задание 7

MainActivity.java

```
package com.example.bt_8;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;

import android.Manifest;
import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;

import java.util.Set;

public class MainActivity extends AppCompatActivity {

    TextView tvName, tvMac;
    Button btn;
    BluetoothAdapter bAdapter;

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

        tvName = (TextView) findViewById(R.id.nameTv);
        tvMac = (TextView) findViewById(R.id.macAddress);
        btn = (Button) findViewById(R.id.btnGet);

        bAdapter = BluetoothAdapter.getDefaultAdapter();

        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                if (bAdapter == null) {
                    Toast.makeText(getApplicationContext(),
                    "Bluetooth не поддерживается", Toast.LENGTH_SHORT).show();
                } else {
                    if
(ActivityResultCompat.checkSelfPermission(MainActivity.this,
Manifest.permission.BLUETOOTH_CONNECT) !=
PackageManager.PERMISSION_GRANTED) {

```

```
        for (BluetoothDevice device :  
pairedDevices) {  
            String deviceName =  
device.getName();  
            String macAddress =  
device.getAddress();  
  
            tvName.append(deviceName + "\n");  
            tvMac.append(macAddress + "\n");  
        }  
    }  
}  
}  
}  
}  
}  
}  
}  
}  
}  
}  
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/btnGet"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Get Paired Device"
        android:layout_centerHorizontal="true"/>

    <RelativeLayout
        android:id="@+id/info"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/btnGet"
        android:layout_centerHorizontal="true"
        >

        <TextView
            android:id="@+id/nameTv"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Name"/>

        <TextView
            android:id="@+id/macAddress"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Mac Address"/>
    
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Address"
        android:layout_toRightOf="@+id/nameTv"/>

    </RelativeLayout>

</LinearLayout>
```

Задание 8

```
package com.example.myapplication;

import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.bluetooth.BluetoothSocket;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.support.annotation.Nullable;
import android.support.v7.app.AlertDialog;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.AdapterView;
import android.widget.Button;
import android.widget.ListView;
import android.widget.Toast;

import java.io.IOException;
import java.io.OutputStream;
import java.lang.reflect.Method;
import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {

    private static final int REQ_ENABLE_BLUETOOTH = 1001;
    private Button btn_ON;
    private Button btn_OFF;
    private BluetoothAdapter mBluetoothAdapter;
    private ArrayList<BluetoothDevice> mDevices = new ArrayList<>();
    private DeviceListAdapter mDeviceListAdapter;

    private BluetoothSocket mBluetoothSocket;
    private OutputStream mOutputStream;

    private ListView listDevices;

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

        btn_ON = findViewById(R.id.btn_ON);
        btn_OFF = findViewById(R.id.btn_OFF);
        btn_ON.setOnClickListener(clickListener);
        btn_OFF.setOnClickListener(clickListener);
    }
}
```

```
        mBluetoothAdapter = BluetoothAdapter.getDefaultAdapter();

        mDeviceListAdapter = new DeviceListAdapter(this,
R.layout.device_item, mDevices);

        enableBluetooth();
    }

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    getMenuInflater().inflate(R.menu.main_menu, menu);
    return super.onCreateOptionsMenu(menu);
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    switch (item.getItemId()) {
        case R.id.item_search:
            searchDevices();
            break;

        case R.id.item_exit:
            finish();
            break;
    }
    return super.onOptionsItemSelected(item);
}

private void searchDevices() {
    enableBluetooth();

    if (!mBluetoothAdapter.isDiscovering()) {
        mBluetoothAdapter.startDiscovery();

        IntentFilter filter = new
IntentFilter(BluetoothAdapter.ACTION_DISCOVERY_STARTED);

filter.addAction(BluetoothAdapter.ACTION_DISCOVERY_FINISHED);
        filter.addAction(BluetoothDevice.ACTION_FOUND);
        registerReceiver(mRecevier, filter);
    }

    if (mBluetoothAdapter.isDiscovering()) {
        mBluetoothAdapter.cancelDiscovery();
        mBluetoothAdapter.startDiscovery();

        IntentFilter filter = new
IntentFilter(BluetoothAdapter.ACTION_DISCOVERY_STARTED);

filter.addAction(BluetoothAdapter.ACTION_DISCOVERY_FINISHED);
        filter.addAction(BluetoothDevice.ACTION_FOUND);
        registerReceiver(mRecevier, filter);
    }
}
```

```
        }

    }

private void showListDevices(){
    AlertDialog.Builder builder = new AlertDialog.Builder(this);
    builder.setTitle("Найденные устройства");

    View view =
getLayoutInflater().inflate(R.layout.list_devices_view, null);
    listDevices = view.findViewById(R.id.list_devices);
    listDevices.setAdapter(mDeviceListAdapter);
    listDevices.setOnItemClickListener(itemOnClickListener);

    builder.setView(view);
    builder.setNegativeButton("OK", null);
    builder.create();
    builder.show();
}

private void enableBluetooth(){
    if (!mBluetoothAdapter.isEnabled()){
        Intent intent = new
Intent(BluetoothAdapter.ACTION_REQUEST_ENABLE);
        startActivityForResult(intent, REQ_ENABLE_BLUETOOTH);
    }
}

private void setMessage(String command){
    byte[] buffer = command.getBytes();

    if (mOutputStream != null){

        try {
            mOutputStream.write(buffer);
            mOutputStream.flush();
        }catch (IOException e){
            showToastMessage("Ошибка передачи команды");
            e.printStackTrace();
        }
    }
}

private void startConnection(BluetoothDevice device){
    if (device != null){
        try {
            Method method =
device.getClass().getMethod("createRfcomSocket", new Class[]
{int.class});
            mBluetoothSocket = (BluetoothSocket)
method.invoke(device, 1);
            mBluetoothSocket.connect();
        }
    }
}
```

```
        mOutputStream = mBluetoothSocket.getOutputStream();

        showToastMessage("Подключение прошло успешно");
    } catch (Exception e) {
        showToastMessage("Ошибка подключения");
        e.printStackTrace();
    }

}

private void showToastMessage(String message) {
    Toast.makeText(this, message, Toast.LENGTH_SHORT).show();
}

@Override
protected void onActivityResult(int requestCode, int resultCode,
@Nullable Intent data) {
    super.onActivityResult(requestCode, resultCode, data);
    if (requestCode == REQ_ENABLE_BLUETOOTH) {
        if (!mBluetoothAdapter.isEnabled()) {
            enableBluetooth();
        }
    }
}

private View.OnClickListener clickListener = new
View.OnClickListener() {
    @Override
    public void onClick(View view) {
        String command = "";

        if (view.equals(btn_ON)) {
            command = "1";

        }

        if (view.equals(btn_OFF)) {
            command = "0";
        }
        setMessage(command);
    }
};

private AdapterView.OnItemClickListener itemOnItemClickListener =
new AdapterView.OnItemClickListener() {
    @Override
    public void onItemClick(AdapterView<?> parent, View view,
int position, long id) {
        BluetoothDevice device = mDevices.get(position);

        startConnection(device);
    }
};
```

```
        }
    } ;

private BroadcastReceiver mRecevier = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        final String action = intent.getAction();

        if
(action.equals(BluetoothAdapter.ACTION_DISCOVERY_STARTED)) {
            showToastMessage("Начат поиск устройств.");
        }

        if
(action.equals(BluetoothAdapter.ACTION_DISCOVERY_FINISHED)) {
            showToastMessage("Поиск устройств завершен.");

            showListDevices();
        }

        if (action.equals((BluetoothDevice.ACTION_FOUND))) {
            BluetoothDevice device =
intent.getParcelableExtra(BluetoothDevice.EXTRA_DEVICE);
            if (device != null) {
                if (!mDevices.contains(device))
                    mDeviceListAdapter.add(device);
            }
        }
    };
}
```