

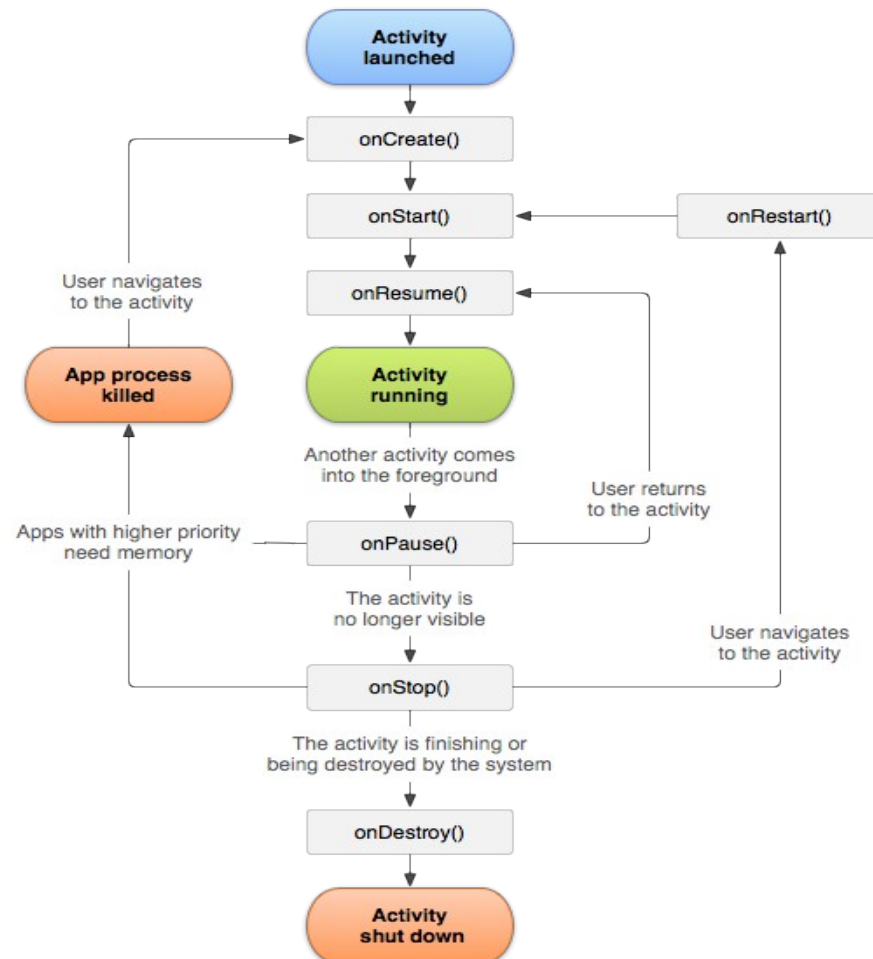
Android – Szkolenie Podstawowe

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Zad 1 - Utworzenie nowego projektu

Cykl życia aktywności



onCreate() – wywoływana gdy aktywność została utworzona po raz pierwszy. To jest miejsce gdzie należy wykonywać podstawowe czynności, jak tworzenie widoków, bindowanie danych itp.

onRestart() – wywoływana gdy aktywność została zatrzymana i uruchomiona ponownie

onStart() – wywoływana, gdy aktywność staje się widoczna dla użytkownika.

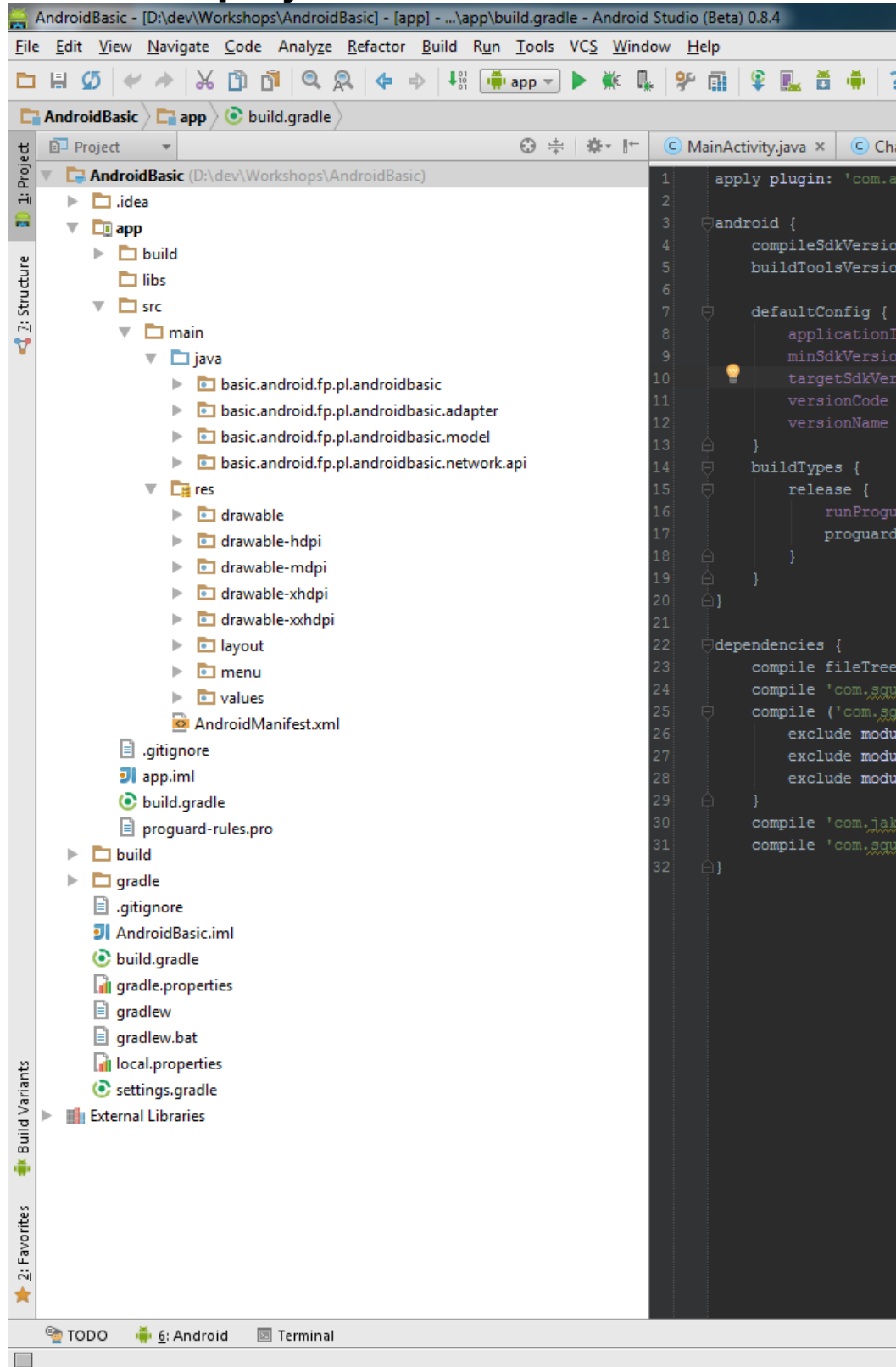
onResume() – wywoływana gdy aktywność rozpoczyna interakcję z użytkownikiem. W tym momencie aktywność jest na szczycie stosu aktywności.

onPause() - wywoływana, gdy system rozpoczyna przywracanie poprzedniej aktywności. Jest zazwyczaj używana do zapisania trwałych danych, zatrzymania animacji i innych rzeczy, które mogą obciążać procesor.

onStop() – wywoływana gdy aktywność przestaje być widoczna dla użytkownik. Dzieje się tak zazwyczaj gdy otwierana jest nowa aktywność lub aktualna zostaje zniszczona.

onDestroy() – Ostatnia metoda wywoływana przed zniszczeniem aktywności.

Struktura projektu



Gradle

Plik `gradle.build` w module:

apply plugin: 'com.android.application'

```
android {  
    compileSdkVersion 22  
    buildToolsVersion "22.0.1"  
  
    defaultConfig {  
        applicationId "basic.android.fp.pl.androidbasic"  
        minSdkVersion 15  
        targetSdkVersion 22  
        versionCode 1  
        versionName "1.0"  
    }  
    buildTypes {  
        release {  
            minifyEnabled false  
            proguardFiles getDefaultProguardFile('proguard-android.txt'), 'proguard-rules.pro'  
        }  
    }  
}  
  
dependencies {  
    compile fileTree(dir: 'libs', include: ['*.jar'])  
}
```

AndroidManifest

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

    <uses-permission android:name="android.permission.INTERNET" />

    <application
        android:allowBackup="true"
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name"
        android:theme="@style/AppTheme">
        <activity
            android:name=".MainActivity"
            android:label="@string/app_name">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

</manifest>
```

Zad 2 - Modyfikujemy pierwszą aktywność

Pamiętaj: Każda aktywność musi być zadeklarowana w manifeście!!

MainActivity:

activity_main.xml:

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center">

    <Button
        android:id="@+id/listCurrenciesButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/open_exchange_rates_list" />

    <Button
        android:id="@+id/rateChangeButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/change_rate_manually" />

</LinearLayout>
```

MainActivity.java

```
public class MainActivity extends Activity {

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

        Button changeCurrencyButton = (Button) findViewById(R.id.listCurrenciesButton);
        Button changeCurrencyDialogButton = (Button) findViewById(R.id.rateChangeButton);
    }
}
```

Do pliku strings.xml należy dodać dwa teksty:

```
<string name="change_rate_manually">Zmien kurs ręcznie</string>
<string name="open_exchange_rates_list">Otwórz listę kursów</string>
```

Zmieniamy styl aplikacji w styles.xml na:

```
<style name="AppTheme" parent="android:Theme.Holo.Light.DarkActionBar">
```


Zad 3 - Odkrywamy magię cyklu życia

```
public class MainActivity extends Activity {

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

        Log.i("LIFECYCLE", "-OnCreate");

        Button changeCurrencyButton = (Button) findViewById(R.id.listCurrenciesButton);
        Button changeCurrencyDialogButton = (Button) findViewById(R.id.rateChangeButton);
    }

    @Override
    protected void onStart() {
        super.onStart();
        Log.i("LIFECYCLE", "--OnStart");
    }

    @Override
    protected void onResume() {
        super.onResume();
        Log.i("LIFECYCLE", "---OnResume");
    }

    @Override
    protected void onPause() {
        super.onPause();
        Log.i("LIFECYCLE", "---OnPause");
    }

    @Override
    protected void onStop() {
        super.onStop();
        Log.i("LIFECYCLE", "--OnStop");
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.i("LIFECYCLE", "-OnDestroy");
    }

    @Override
    protected void onRestart() {
        super.onRestart();
        Log.i("LIFECYCLE", "=====>OnRestart");
    }
}
```

Zad 4 - Tworzymy drugą aktywność z listą

Dodajemy nową aktywność o nazwie ListCurrenciesActivity

activity_change_currency.xml:

```
<ListView xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/list"
    android:layout_width="match_parent"
    android:layout_height="match_parent"/>
```

ListCurrenciesActivity.java :

```
public class ListCurrenciesActivity extends Activity {

    @InjectView(R.id.list)
    protected ListView currencyListView;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_change_currency);
        ButterKnife.inject(this);
    }
}
```

Dodajemy do build.gradle w tagu dependencies:

```
compile 'com.jakewharton:butterknife:+'
```

Dodajemy do MainActivity otwieranie nowej aktywności po naciśnięciu buttona. W metodzie onCreate() dodajemy:

```
changeCurrencyButton.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent i = new Intent(getApplicationContext(), ListCurrenciesActivity.class);
        startActivity(i);
    }
});
```

Dodajemy nową aktywność do manifestu.

```
<activity android:name=".ListCurrenciesActivity" />
```

Tworzymy layout dla pojedynczego elementu listy: item_currency_list.xml:

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="horizontal">

    <ImageView
        android:id="@+id/flag"
        android:layout_width="36dp"
        android:layout_height="36dp"
        android:src="@drawable/money" />

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

        <TextView
            android:id="@+id/currencyName"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:paddingLeft="6dp"
            android:text="Name"
            android:textAppearance="?android:attr/textAppearanceMedium"/>

        <TextView
            android:id="@+id/averageRate"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:paddingLeft="6dp"
            android:text="1 EUR 4 PLN"
            android:textAppearance="?android:attr/textAppearanceSmall"/>
    </LinearLayout>
</LinearLayout>
```

Grafika money dostępna jest na serwerze z zadaniami.

JSON otrzymywany z serwisu:

```
{
  "date" : "2015-04-20",
  "base" : {
    "currency" : "Dollar",
    "country" : "United States"
  },
  "rates" : [{
    "currency" : "Rupiah",
    "rate" : 13001.44,
    "country" : "Indonesia"
  }
]
```

Na podstawie json’a tworzymy klasy modelu:

ExchangeRate:

```
public class ExchangeRate implements Serializable {  
  
    private final String currency;  
    private final String country;  
    private Float rate;  
  
    public ExchangeRate(String currency, String country, Float rate) {  
        this.currency = currency;  
        this.country = country;  
        this.rate = rate;  
    }  
  
    public String getCurrency() {  
        return currency;  
    }  
  
    public String getCountry() {  
        return country;  
    }  
  
    public Float getRate() {  
        return rate;  
    }  
  
    public void setRate(Float rate) {  
        this.rate = rate;  
    }  
}
```

RatesList:

```
public class RatesList {  
  
    private final String date;  
    private final ExchangeRate base;  
    private final List<ExchangeRate> rates;  
  
    public RatesList(String date, ExchangeRate base, List<ExchangeRate> exchangeRates) {  
        this.date = date;  
        this.base = base;  
        this.rates = exchangeRates;  
    }  
  
    public List<ExchangeRate> getExchangeRates() {  
        return rates;  
    }  
}
```

Tworzymy adapter dla listy: CurrencyListAdapter:

```
public class CurrencyListAdapter extends BaseAdapter {

    private final Context context;
    private final List<ExchangeRate> exchangeRates;
    private final LayoutInflater inflater;

    public CurrencyListAdapter(Context context, RatesList ratesList) {
        this.context = context;
        exchangeRates = ratesList.getExchangeRates();
        inflater = (LayoutInflater) context.getSystemService(Context.LAYOUT_INFLATER_SERVICE);
    }

    @Override
    public int getCount() {
        return exchangeRates.size();
    }

    @Override
    public ExchangeRate getItem(int position) {
        return exchangeRates.get(position);
    }

    @Override
    public long getItemId(int position) {
        return position;
    }

    @Override
    public View getView(int position, View convertView, ViewGroup parent) {
        return convertView;
    }
}
```

Dodajemy klasę wewnętrzną. ViewHolder:

```
protected class ViewHolder {
    @InjectView(R.id.currencyName)
    TextView currencyName;
    @InjectView(R.id.averageRate)
    TextView averageRate;

    private ViewHolder(View rootView) {
        ButterKnife.inject(this, rootView);
    }

    protected void populate(ExchangeRate exchangeRate) {
        currencyName.setText(exchangeRate.getCountry() + " " + exchangeRate.getCurrency());
        averageRate.setText(exchangeRate.getRate().toString());
    }
}
```

**Definiujemy jak wypełniany ma być element listy.
W metodzie getView() dodajemy:**

```
@Override
public View getView(int position, View convertView, ViewGroup parent) {
    ViewHolder vh;
    if (convertView == null) {
        convertView = inflater.inflate(R.layout.item_currency_list, parent, false);
        vh = new ViewHolder(convertView);
        convertView.setTag(vh);
    } else {
        vh = (ViewHolder) convertView.getTag();
    }

    ExchangeRate exchangeRate = getItem(position);
    vh.populate(exchangeRate);

    return convertView;
}
```

Ważne, by przy inflate'owaniu podać „false” jako wartość parametru attachToRoot (pogrubione w powyższym listingu), ponieważ adapter pod spodem robi to za nas, więc podpięcie samodzielnie spowalnia cały proces.

Tworzymy dane testowe i dodajemy adapter do listy w ListCurrenciesActivity w metodzie onCreate():
MockData:

```
public class MockData {

    private static RatesList ratesList;

    public static RatesList getListOfRates() {
        if (ratesList == null) {
            List<ExchangeRate> rates = new ArrayList<>();
            rates.add(new ExchangeRate("Dollar", "Australia", 0.3431f));
            rates.add(new ExchangeRate("Lev", "Bulgaria", 0.4724f));
            rates.add(new ExchangeRate("Real", "Brazil", 0.7974f));
            rates.add(new ExchangeRate("Dollar", "Canada", 0.3326f));
            rates.add(new ExchangeRate("Franc", "Switzerland", 0.2584f));
            rates.add(new ExchangeRate("Yuan Renminbi", "China", 1.676f));
            rates.add(new ExchangeRate("Koruna", "Czech Republic", 6.6242f));
            rates.add(new ExchangeRate("Krone", "Denmark", 1.8007f));
            rates.add(new ExchangeRate("Pound", "United Kingdom", 0.1752f));
            rates.add(new ExchangeRate("Dollar", "Hong Kong", 2.0737f));
            rates.add(new ExchangeRate("Kuna", "Croatia", 1.85f));
            rates.add(new ExchangeRate("Forint", "Hungary", 73.764f));
            rates.add(new ExchangeRate("Rupiah", "Indonesia", 3469.59f));
            rates.add(new ExchangeRate("Shekel", "Israel", 1.0694f));
            rates.add(new ExchangeRate("Rupee", "India", 16.646f));
            rates.add(new ExchangeRate("Yen", "Japan", 32.152f));
            rates.add(new ExchangeRate("Won", "Korea (South)", 294.43f));
            rates.add(new ExchangeRate("Peso", "Mexico", 4.0236f));
            rates.add(new ExchangeRate("Ringgit", "Malaysia", 0.9763f));
            rates.add(new ExchangeRate("Krone", "Norway", 2.0644f));
            rates.add(new ExchangeRate("Dollar", "New Zealand", 0.357f));
            rates.add(new ExchangeRate("Peso", "Philippines", 11.8f));
            rates.add(new ExchangeRate("New Leu", "Romania", 1.0738f));
            rates.add(new ExchangeRate("Ruble", "Russia", 16.332f));
            rates.add(new ExchangeRate("Krona", "Sweden", 2.2258f));
            rates.add(new ExchangeRate("Dollar", "Singapore", 0.3661f));
            rates.add(new ExchangeRate("Baht", "Thailand", 8.6685f));
            rates.add(new ExchangeRate("Lira", "Turkey", 0.6924f));
            rates.add(new ExchangeRate("Rand", "South Africa", 3.1443f));
            rates.add(new ExchangeRate("Euro", "Euro Member", 0.2416f));
            ratesList = new RatesList("2015-03-07", new ExchangeRate("Zloty", "Poland", 0f),
rates);
        }
        return ratesList;
    }
}
```

Dodajemy dane do adaptera.

W klasie ListCurrenciesActivity, metodzie onCreate():

```
CurrencyListAdapter adapter = new CurrencyListAdapter(this, MockData. getListOfRates());
currencyListView.setAdapter(adapter);
```

Zad 5 - Zapisanie wybranej waluty do pamięci trwałej

Dodajemy klasę pomocniczą do zapisu i odczytu z pamięci trwałej.

```
public class SharedPreferencesSupporter {

    private static final String CURRENCY_MAIN_KEY = SharedPreferencesSupporter.class.getName();
    private static final String CURRENCY = ".currency";
    private static final String COUNTRY = ".country";
    private static final String AVERAGE_RATE = ".averageRate";

    public static ExchangeRate loadCurrentRate(Context context) {
        SharedPreferences preferences = PreferenceManager.getDefaultSharedPreferences(context);
        float averageRate = preferences.getFloat(CURRENCY_MAIN_KEY + AVERAGE_RATE, 3.73f);
        String currency = preferences.getString(CURRENCY_MAIN_KEY + CURRENCY, "Dollar");
        String country = preferences.getString(CURRENCY_MAIN_KEY + COUNTRY, "United States");
        return new ExchangeRate(currency, country, averageRate);
    }

    public static void saveCurrentRate(ExchangeRate exchangeRate, Context context) {
        SharedPreferences preferences = PreferenceManager.getDefaultSharedPreferences(context);
        SharedPreferences.Editor editor = preferences.edit();
        editor.putFloat(CURRENCY_MAIN_KEY + AVERAGE_RATE, exchangeRate.getRate());
        editor.putString(CURRENCY_MAIN_KEY + CURRENCY, exchangeRate.getCurrency());
        editor.putString(CURRENCY_MAIN_KEY + COUNTRY, exchangeRate.getCountry());
        editor.apply();
    }
}
```

**Następnie obsługujemy kliknięcie na elemencie listy.
W klasie ListCurrenciesActivity w metodzie onCreate dodajemy:**

```
currencyListView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
    @Override
    public void onItemClick(AdapterView<?> parent, View view, int position, long id) {
        CurrencyListAdapter currencyAdapter = (CurrencyListAdapter) parent.getAdapter();
        ExchangeRate exchangeRate = currencyAdapter.getItem(position);
        SharedPreferencesSupporter.saveCurrentRate(exchangeRate, ListCurrenciesActivity.this);
        Toast.makeText(ListCurrenciesActivity.this, "Currency saved to SharedPreferences",
            Toast.LENGTH_SHORT).show(); }
});
```

Lub używając Butterknife'a:

```
@OnClick(R.id.list)
void onListItemClick(AdapterView<?> parent, View view, int position){
    CurrencyListAdapter currencyAdapter = (CurrencyListAdapter) parent.getAdapter();
    ExchangeRate exchangeRate = currencyAdapter.getItem(position);
    SharedPreferencesSupporter.saveCurrentRate(exchangeRate, this);
    Toast.makeText(this, "Currency saved to SharedPreferences", Toast.LENGTH_SHORT).show();
}
```


Zad 6 - Odczyt z pamięci

By zobaczyć rezultat zapisu w pamięci dodamy pole tekstowe w MainActivity z aktualnie wybraną walutą.

Edytujemy activity_main.xml:

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center">
    <TextView
        android:id="@+id/currentCurrency"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="20sp"
        android:textStyle="bold" />
    <Button
        android:id="@+id/listCurrenciesButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/open_exchange_rates_list" />
    <Button
        android:id="@+id/rateChangeButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/change_rate_manually" />
</LinearLayout>
```

Oraz obsługujemy pobieranie z pamięci w MainActivity:

Dodajemy do klasy pole:

```
private TextView currentCurrency;
```

W metodzie onCreate dodajemy wyszukiwanie nowego widoku:

```
currentCurrency = (TextView) findViewById(R.id.currentCurrency);
```

Dodajemy do klasy pole:

```
private ExchangeRate currentExchangeRate;
```

Dodajemy metodę:

```
@Override
protected void onResume() {
    super.onResume();
    currentExchangeRate = SharedPreferencesSupporter.loadCurrentRate(this);
    currentCurrency.setText("Twoja waluta to: " + currentExchangeRate.getCountry() + " " +
        currentExchangeRate.getCurrency() + "\nKurs: " + currentExchangeRate.getRate());
}
```

Zad 7 - Asynchroniczne ładowanie bitmap

Do pliku build.gradle w tagu dependencies dodajemy:

```
compile 'com.squareup.picasso:picasso:+'
```

Następnie dodajemy klasę pomocniczą dostarczającą adresy poszczególnych flag:

```
public class FlagAddressBuilder {

    public static String obtainAddress(Context context, ExchangeRate rate) {
        String ws_url = context.getString(R.string.webservice_url);
        String port = context.getString(R.string.webservice_port);
        return ws_url + ":" + port + "/static/images/" + rate.getCountry().toLowerCase().replace(" ", "")
+ ".png";
    }
}
```

Do zasobów strings.xml dodajemy adres i port webserwisu:

```
<string name="webservice_url">http://... ip zostanie podane na warsztacie</string>
<string name="webservice_port">8086</string>
```

Uaktualniamy ViewHolder

```
protected class ViewHolder {
    @InjectView(R.id.currencyName)
    TextView currencyName;
    @InjectView(R.id.averageRate)
    TextView averageRate;
    @InjectView(R.id.flag)
    ImageView flag;

    private ViewHolder(View rootView) {
        ButterKnife.inject(this, rootView);
    }

    protected void populate(ExchangeRate exchangeRate) {
        currencyName.setText(exchangeRate.getCountry() + " " + exchangeRate.getCurrency());
        averageRate.setText(exchangeRate.getRate().toString());
    }
}
```

W metodzie populate dodajemy pobranie obrazków za pomocą Picasso:

```
Picasso.with(context).load(FlagAddressBuilder.obtainAddress(context,
exchangeRate)).placeholder(R.drawable.money).into(flag);
```

By móc komunikować się z internetem należy nadać aplikacji pozwolenie w manifestcie.

```
<uses-permission android:name="android.permission.INTERNET" />
```

Zad 8 – Pobieranie walut z internetu i parsowanie json’a

W Build gradle należy dodać linijkę:

```
compile 'com.squareup.retrofit:retrofit:+'
```

Tworzymy API które definiuje punkty dostępu do serwisu.

```
public interface JsonRatesService {  
    @GET("/list/USD")  
    RatesList getCurrencyTable();  
}
```

W ListCurrenciesActivity w metodzie onCreate() konfigurujemy adapter serwisu.

```
RestAdapter restAdapter = new RestAdapter.Builder().  
    setEndpoint(getString(R.string.webservice_url) + ":" + getString(R.string.webservice_port)).  
    build();  
  
service = restAdapter.create(JsonRatesService.class);
```

Musimy jeszcze dodać pole:

```
private JsonRatesService service;
```

Niejawnie używamy biblioteki GSON do parsowania JSON.

Pobieranie z Internetu wywoływane musi być na osobnym wątku, inaczej wyrzucony zostanie wyjątek `NetworkOnMainThreadException`. Dlatego zdefiniujemy wewnętrzną klasę rozszerzającą `AsyncTask`.

```
private class GetCurrencyTableTask extends AsyncTask<Void, Void, RatesList> {

    private final ProgressDialog dialog;

    public GetCurrencyTableTask(Context context) {
        dialog = new ProgressDialog(context);
        dialog.setMessage(getString(R.string.please_wait));
    }

    @Override
    protected void onPreExecute() {
        super.onPreExecute();
        dialog.show();
    }

    @Override
    protected RatesList doInBackground(Void... param) {
        return service.getCurrencyTable();
    }

    @Override
    protected void onPostExecute(RatesList currencies) {
        super.onPostExecute(currencies);
        dialog.dismiss();
        currencyListView.setAdapter(new CurrencyListAdapter(ListCurrenciesActivity.this, currencies));
    }
}
```

Dodajemy zasób tekstowy:

```
<string name="please_wait">Proszę czekać</string>
```

Dodajemy metodę:

```
private void loadData() {
    new GetCurrencyTableTask(this).execute();
}
```

Pozostaje w metodzie `onCreate` wywołać metodę `loadData`.

```
loadData();
```

Usuwanie dane testowe z metody `onCreate`:

```
CurrencyListAdapter adapter = new CurrencyListAdapter(this, MockData.getListOfRates());
currencyListView.setAdapter(adapter);
```

Zad 9 - Dodawanie menu kontekstowego oraz akcji do ActionBar'a

By zdefiniować menu kontekstowe oraz akcje w ActionBarze, należy utworzyć nowy plik w folderze menu.

change_currency.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item
        android:id="@+id/action_refresh"
        android:title="@string/action_refresh"
        android:showAsAction="always"
        android:icon="@drawable/ic_menu_refresh"/>
    <item
        android:id="@+id/menu_refresh"
        android:title="@string/action_refresh"
        android:showAsAction="never"
        android:icon="@drawable/ic_menu_refresh"/>
</menu>
```

Dodajemy zasób tekstowy:

```
<string name="action_refresh">Odśwież</string>
```

Wracamy do ListCurrenciesActivity i dodajemy metody:

```
@Override
public boolean onCreateOptionsMenu(Menu menu) {
    getMenuInflater().inflate(R.menu.change_currency, menu);
    return true;
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    int id = item.getItemId();
    if (id == R.id.action_refresh || id == R.id.menu_refresh) {
        loadData();
        return true;
    }
    return super.onOptionsItemSelected(item);
}
```

Zad 10 - Dialog do edycji aktualnej waluty

Dodajemy klasę definiującą dialog do edycji waluty:

```
public class RateChangeDialogFragment extends DialogFragment {

    private static final String CURRENCY_BUNDLE_KEY = "CURRENCY_BUNDLE_KEY";

    private OnCurrencyChangeListener onCurrencyChangeListener;
    private ExchangeRate currencyRate;

    private EditText inputEditText;

    public static RateChangeDialogFragment getInstance(ExchangeRate rate) {
        Bundle bundle = new Bundle();
        bundle.putSerializable(CURRENCY_BUNDLE_KEY, rate);

        RateChangeDialogFragment fragment = new RateChangeDialogFragment();
        fragment.setArguments(bundle);

        return fragment;
    }

    @Override
    public void onAttach(Activity activity) {
        super.onAttach(activity);

        // This makes sure that the container activity has implemented
        // the callback interface. If not, it throws an exception
        try {
            onCurrencyChangeListener = (OnCurrencyChangeListener) activity;
        } catch (ClassCastException e) {
            throw new ClassCastException(activity.toString() + " must implement
OnCurrencyChangeListener");
        }

        currencyRate = (ExchangeRate) getArguments().getSerializable(CURRENCY_BUNDLE_KEY);
    }

    @Override
    public Dialog onCreateDialog(Bundle savedInstanceState) {
        inputEditText = createInputEditText();

        return new AlertDialog.Builder(getActivity()) //
            .setIcon(R.mipmap.ic_launcher) //
            .setTitle(R.string.dialog_title) //
            .setMessage(R.string.dialog_message) //
            .setPositiveButton(R.string.ok, new PositiveOnClickListener()) //
            .setNegativeButton(R.string.cancel, null) //
            .setView(inputEditText) //
            .create();
    }

    private EditText createInputEditText() {
        EditText input = new EditText(getActivity());
        input.setInputType(InputType.TYPE_CLASS_NUMBER |
InputType.TYPE_NUMBER_FLAG_DECIMAL);
        input.addTextChangedListener(new CurrencyTextWatcher());
        input.setText(String.valueOf(currencyRate.getRate()));
        return input;
    }
}
```

```

    }

    private boolean isValid(String text) {
        try {
            Float.parseFloat(text);
            return true;
        } catch (NumberFormatException e) {
            return false;
        }
    }

    private class PositiveOnClickListener implements DialogInterface.OnClickListener {

        @Override
        public void onClick(DialogInterface dialog, int which) {
            changeExchangeRate();
        }
    }

    private void changeExchangeRate() {
        if (isValid(inputEditText.getText().toString())) {
            onCurrencyChangeListener.onRateChanged(currencyRate);
        } else {
            Toast.makeText(getActivity(), R.string.invalid, Toast.LENGTH_SHORT).show();
        }
    }

    private class CurrencyTextWatcher implements TextWatcher {

        @Override
        public void onTextChanged(CharSequence s, int start, int before, int count) {
        }

        @Override
        public void beforeTextChanged(CharSequence s, int start, int count, int after) {
        }

        @Override
        public void afterTextChanged(Editable s) {
            if (isValid(s.toString())) {
                currencyRate.setRate(Float.parseFloat(s.toString()));
            }
        }
    }

    public interface OnCurrencyChangeListener {

        void onRateChanged(ExchangeRate currency);
    }
}

```

Dodajemy zasoby tekstowe:

```

<string name="dialog_title">Zmiana waluty</string>
<string name="dialog_message">Zmieńmy wartość przelicznika</string>
<string name="ok">OK</string>
<string name="cancel">Cancel</string>
<string name="invalid">Nieprawidłowa liczba</string>

```

W MainActivity dodajemy obsługę klikania na drugi przycisk:

```
changeCurrencyDialogButton.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        RateChangeDialogFragment.getInstance(currentExchangeRate).show(getFragmentManager(), "tag");  
    }  
});
```

Oraz implementujemy interfejs OnCurrencyChangeListener w MainActivity

```
public class MainActivity extends Activity implements  
    RateChangeDialogFragment.OnCurrencyChangeListener
```

```
@Override  
public void onRateChanged(ExchangeRate exchangeRate) {  
    currentExchangeRate = exchangeRate;  
    currentCurrency.setText("Twoja waluta to: " + exchangeRate.getCountry() + " " +  
exchangeRate.getCurrency() + "\nKurs: " + exchangeRate.getRate());  
    SharedPreferencesSupporter.saveCurrentRate(exchangeRate, this);  
}
```


Zad 11 - Przeliczanie walut

Tworzymy nowe activity:

```
public class ExchangeActivity extends Activity {

    public static final String CURRENCY_BUNDLE_KEY = "CURRENCY_BUNDLE_KEY";

    @InjectView(R.id.newCurrency)
    protected TextView newCurrencyTextView;
    @InjectView(R.id.currency)
    protected TextView currencyTextView;

    private ExchangeRate exchangeRate;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_exchange);
        ButterKnife.inject(this);

        exchangeRate = (ExchangeRate) getIntent().getSerializableExtra(CURRENCY_BUNDLE_KEY);
        currencyTextView.setText("Aktualny kurs to:\t" + exchangeRate.getRate());
    }

    @OnTextChanged(value = R.id.currencyEditText, callback =
    OnTextChanged.Callback.AFTER_TEXT_CHANGED)
    protected void onTextChange(Editable text) {
        if (isValid(text.toString())) {
            float value = Float.parseFloat(text.toString()) * exchangeRate.getRate();
            newCurrencyTextView.setText("To\t" + value + "\t" + exchangeRate.getCurrency());
        } else {
            newCurrencyTextView.setText(R.string.invalid);
        }
    }

    private boolean isValid(String text) {
        try {
            Float.parseFloat(text);
            return true;
        } catch (NumberFormatException e) {
            return false;
        }
    }
}
```

Dodajemy layout activity_exchange.xml:

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:layout_margin="30dp">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="USD:"
        android:textSize="12sp"
```

```

        android:textStyle="bold" />

<EditText
    android:id="@+id/currencyEditText"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:inputType="number|numberDecimal" />

<TextView
    android:id="@+id/newCurrency"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="30dp" />

<TextView
    android:id="@+id/currency"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="30dp" />

</LinearLayout>

```

Do manifestu dodajemy nową aktywność.

```
<activity android:name=".ExchangeActivity" />
```

Edytujemy metodę onCreate() w MainActivity – dodajemy:

```

Button calculateCurrencyButton = (Button) findViewById(R.id.calculateCurrency);

calculateCurrencyButton.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent i = new Intent(getApplicationContext(), ExchangeActivity.class);
        i.putExtra(ExchangeActivity.CURRENCY_BUNDLE_KEY, currentExchangeRate);
        startActivity(i);
    }
});

```

Pozostaje dodanie nowego przycisku do activity_main.xml

```

<Button
    android:id="@+id/calculateCurrency"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/convert_currency" />

```

Oraz brakujący zasób tekstowy

```
<string name="convert_currency">Przelicz waluty</string>
```

Przydatne linki

- <http://square.github.io/retrofit/>
- <http://jakewharton.github.io/butterknife/>
- <http://square.github.io/picasso/>
- <http://gradleplease.appspot.com/>
- <http://developer.android.com/index.html>
- <https://www.future-processing.pl/blog/open-source-android-libraries-every-programmer-should-know/>