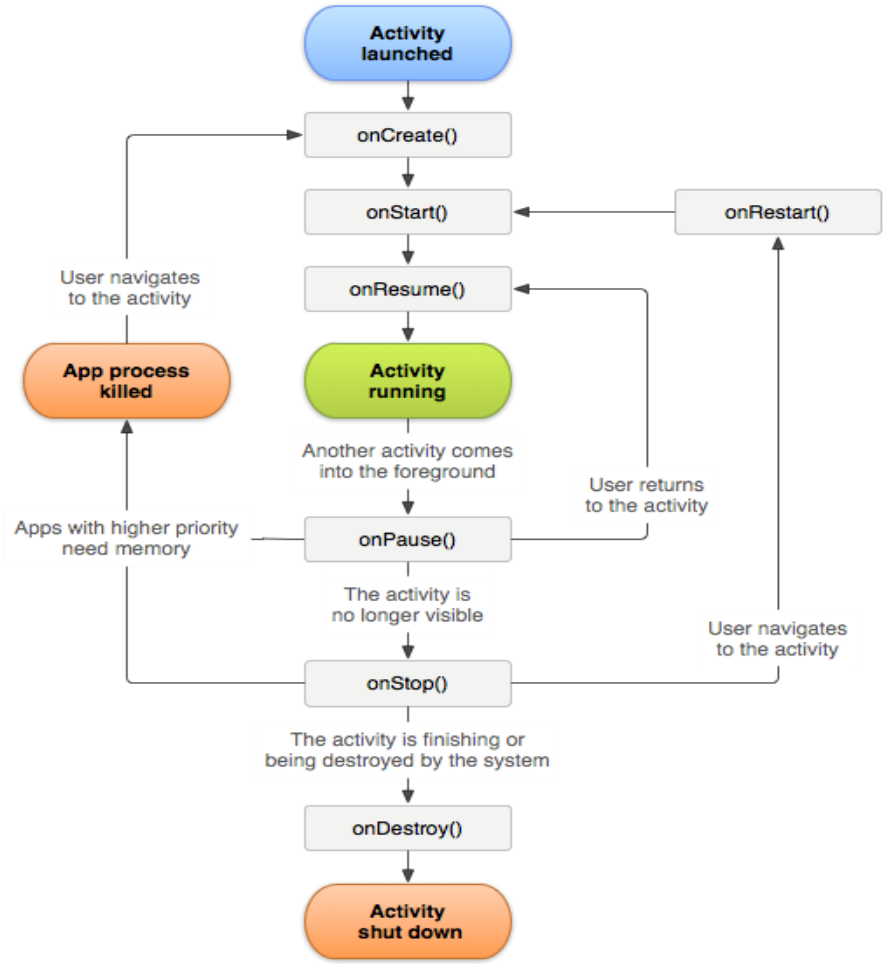
Android – Szkolenie Podstawowe

Future Processing
FP Mobile Division
***„Projekt Jaszczur”* 2016**

Android – Szkolenie Podstawowe

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

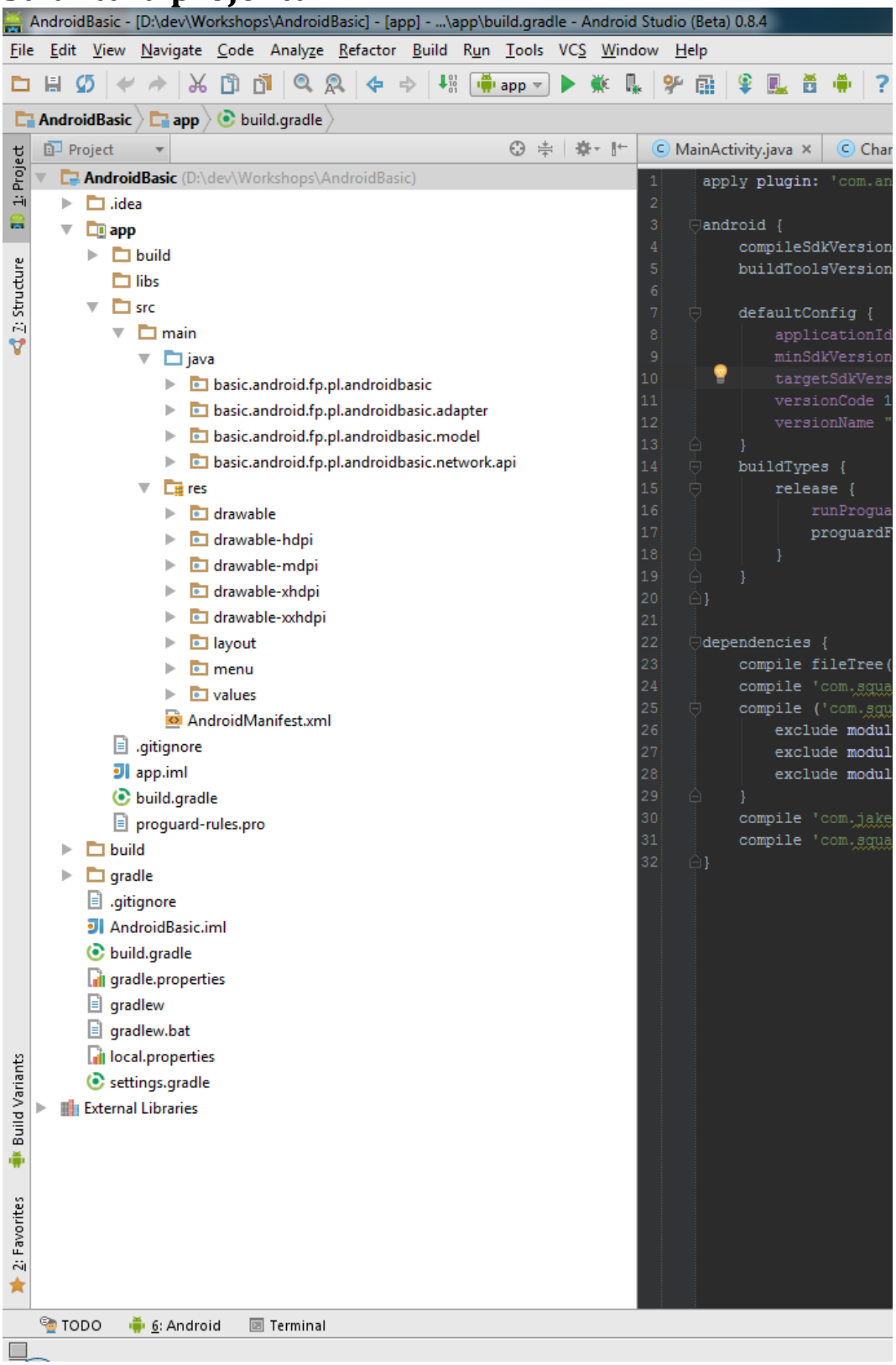
momencie aktywność jest na szczycie stosu aktywności.

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 23
   buildToolsVersion "23.0.2"

   defaultConfig {
      applicationId "basic.android.fp.pl.androidbasic"
      minSdkVersion 15
      targetSdkVersion 23
      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 AppCompatActivity {

       @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="Theme.AppCompat.Light.DarkActionBar”>
```

Zad 3 – Odkrywamy magię cyklu życia

```
public class MainActivity extends AppCompatActivity {

	@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 AppCompatActivity {

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

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

Dodajemy do build.gradle w tagu dependencies:

```
compile 'com.jakewharton:butterknife:7.0.1'
```

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 pojedyńczego 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 {
	@Bind(R.id.currencyName)
	TextView currencyName;
	@Bind(R.id.averageRate)
	TextView averageRate;

	private ViewHolder(View rootView) {
		ButterKnife.bind(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 inflatowaniu 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:

```
@OnItemClick(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 wyszukanie 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:2.5.2'
```

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.static_webservice_port);
		 return ws_url + ":" + port + "/" + 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="static_webservice_port">8087</string>
```

Uaktualniamy ViewHolder

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

	private ViewHolder(View rootView) {
		ButterKnife.bind(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 manifeście.

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

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

W Build gradle nalezy dodac linijke:

```
compile 'com.squareup.retrofit2:retrofit:2.0.0'
compile 'com.squareup.retrofit2:converter-gson:2.0.0'
```

Tworzymy API które definiuje punkty dostępu do serwisu.

```
public interface JsonRatesService {

	@GET("/list/USD")
	Call<RatesList> getCurrencyTable();
}
```

W ListCurrenciesActivity w metodzie onCreate() konfigurujemy adapter serwisu.

```
Retrofit restAdapter = new Retrofit.Builder()
        .baseUrl(getString(R.string.webservice_url) + ":" + getString(R.string.webservice_port))
        .addConverterFactory(GsonConverterFactory.create())
        .build();

service = restAdapter.create(JsonRatesService.class);
```

Musimy jeszcze dodać pole:

```
private JsonRatesService service;
```

Oraz nowy zasób tekstowy:

```
<string name="webservice_port">8086</string>
```

Pobieranie z Internetu wywoływane musi być na osobnym wątku, inaczej wyrzucony zostanie wyjątek NetworkOnMainThreadException. Dlatego użyjemy asynchronicznego wywołania Call’a.

```
private void loadData() {
    dialog.show();

    service.getCurrencyTable().enqueue(new Callback<RatesList>() {
        @Override
        public void onResponse(Call<RatesList> call, Response<RatesList> response) {
            dialog.dismiss();
            currencyListView.setAdapter(new CurrencyListAdapter(ListCurrenciesActivity.this,
response.body()));
        }

        @Override
        public void onFailure(Call<RatesList> call, Throwable t) {
            dialog.dismiss();
            Toast.makeText(ListCurrenciesActivity.this, "Something went wrong",
Toast.LENGTH_SHORT).show();
        }
    });
}
```

Dodajemy pole w klasie:

private AlertDialog dialog;

W metodzie onCreate dodajemy:

dialog = new ProgressDialog(this);
dialog.setMessage(getString(R.string.*please_wait*));

Dodajemy zasób tekstowy:

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

Pozostaje w metodzie onCreate wywołać metodę loadData.

```
loadData();
```

Usuwamy 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"
xmlns:app="http://schemas.android.com/apk/res-auto">
    <item
        android:id="@+id/action_refresh"
        android:title="@string/action_refresh"
        app:showAsAction="always"
        android:icon="@drawable/ic_menu_refresh"/>
    <item
        android:id="@+id/menu_refresh"
        android:title="@string/action_refresh"
        app: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. Importując klasę AlertDialog należy pamiętać, by użyć implementacji z biblioteki suportowej v7. DialogFragment użyjemy z support v4

```
public class RateChangeDialogFragment extends DialogFragment {

	private static final String CURRENCY_BUNDLE_KEY = "CURRENCY_BUNDLE_KEY";

	private OnCurrencyChangedListener onCurrencyChangedListener;
	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 {
			onCurrencyChangedListener = (OnCurrencyChangedListener) activity;
		} catch (ClassCastException e) {
			throw new ClassCastException(activity.toString() + " must implement
OnCurrencyChangedListener");
		}

		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())) {
			onCurrencyChangedListener.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 OnCurrencyChangedListener {

		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(getSupportFragmentManager(),
"tag");
}
});
```

Oraz implementujemy interfejs OnCurrencyChangedListener w MainActivity

```
public class MainActivity extends AppCompatActivity implements
RateChangeDialogFragment.OnCurrencyChangedListener


@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 AppCompatActivity {

	public static final String CURRENCY_BUNDLE_KEY = "CURRENCY_BUNDLE_KEY";

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

	private ExchangeRate exchangeRate;

	@Override
	protected void onCreate(Bundle savedInstanceState) {
		super.onCreate(savedInstanceState);
		setContentView(R.layout.activity_exchange);
		ButterKnife.bind(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://facebook.github.io/stetho/
- 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/