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KAUNO TECHNOLOGIJOS UNIVERSITETAS

Informatikos fakultetas

T120B169 App Development for Smart Mobile Systems

**Report of labaratory work no.1**

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# Task

1. Remove a button component from the first Activity.
2. Add the option to scroll the content when the size of the contents in the Activity exceeds the size of the window (using the Scrollview "component).
3. Make a list of items to be created and transferred from the first Activity to be displayed on the second.
4. In the first Activity, place two EditText elements (title and description) in one row and place the "Add" button. The "add" button should create an object from titles and descriptions (all its elements may be assigned the same Figure).
5. Create another Activity, which should contain:

* Image
* the name of the image
* Description

1. \*Add an option to sort the items in an alphabetical order. (for 9 points)
2. \*\*Make the filter by letter. In the text box, when you enter a letter and it must filter list of the elements to display only those that begin with that letter. (for 10 points)

# Implementation

* Remove a button component from the first Activity.

Simply removed button component by deleting it from .xml file

* Add the option to scroll the content when the size of the contents in the Activity exceeds the size of the window (using the Scrollview "component).

Added Scrollview compoment in *firstactivitydesign.xml* file

*<?***xml version="1.0" encoding="utf-8"***?>* <**ScrollView xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"**>  
  
 <**LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="vertical"**>  
  
 <**LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"**>  
  
 <**EditText  
 android:id="@+id/titleInput"  
 android:layout\_width="200dp"  
 android:layout\_height="wrap\_content"  
 android:hint="@string/titleInput"  
 android:inputType="text"** />  
  
 <**EditText  
 android:id="@+id/descriptionInput"  
 android:layout\_width="200dp"  
 android:layout\_height="wrap\_content"  
 android:hint="@string/descriptionInput"  
 android:inputType="text"** />  
  
 </**LinearLayout**>  
  
 <**Button  
 android:id="@+id/addButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/addButton"** />  
  
 <**Button  
 android:id="@+id/secondActivityButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/secondActivityButton"** />  
  
 <**Button  
 android:id="@+id/imageActivityButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/imageActivityButton"** />  
  
 </**LinearLayout**>  
  
 </**ScrollView**>

* Make a list of items to be created and transferred from the first Activity to be displayed on the second.

When *FirstActivity* file is loaded list of items is generated by calling *fillList()* function. Then filled list is passed to *SecondActivity* by Intent object.

@Override  
**protected void** onCreate(Bundle savedInstanceState){  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***firstactivitydesign***);  
  
 **myButton** = findViewById(R.id.***addButton***);  
 **secondActivityButton** = findViewById(R.id.***secondActivityButton***);  
 **imageActivityButton** = findViewById(R.id.***imageActivityButton***);  
  
 **myButton**.setOnClickListener(**myButtonClick**);  
 **myButton**.setOnLongClickListener(**myButtonClickLong**);  
  
 **secondActivityButton**.setOnClickListener(**startSecondActivity**);  
 **secondActivityButton**.setOnLongClickListener(**startSecondActivityLong**);  
  
 **imageActivityButton**.setOnClickListener(**startImageActivity**);  
  
 fillLists();  
}  
  
**private void** fillLists(){  
 **students**.add(**new** ListItem(**"Jack"**, R.drawable.***ic\_3d\_rotation\_black\_48dp***, **"Mathematics, Chemistry"**));  
 **students**.add(**new** ListItem(**"Jane"**, R.drawable.***ic\_announcement\_black\_48dp***, **"Physics, Informatics"**));  
 **students**.add(**new** ListItem(**"Bob"**, R.drawable.***ic\_alarm\_black\_48dp***, **"Mathematics, Informatics"**));  
 **students**.add(**new** ListItem(**"Clara"**, R.drawable.***ic\_account\_box\_black\_48dp***, **"Geography, Chemistry"**));  
 **students**.add(**new** ListItem(**"Sam"**, R.drawable.***ic\_accessibility\_black\_48dp***, **"Mathematics, Physics"**));  
  
 **subjects**.add(**new** ListItem(**"Mathematics"**, R.drawable.***ic\_3d\_rotation\_black\_48dp***,  
 **"Mathematics is the study of topics such as quantity, structure, space and change"**));  
 **subjects**.add(**new** ListItem(**"Physics"**, R.drawable.***ic\_announcement\_black\_48dp***,  
 **"Physics is the natural science that involves the study of matter and its motion through space and time along with related concepts such as energy for it"**));  
 **subjects**.add(**new** ListItem(**"Chemistry"**, R.drawable.***ic\_alarm\_black\_48dp***,  
 **"Chemistry is a branch of physical science that studies the composition, structure, properties and change of matter"**));  
 **subjects**.add(**new** ListItem(**"Informatics"**, R.drawable.***ic\_account\_box\_black\_48dp***,  
 **"Informatics is the science of information and computer information systems"**));  
 **subjects**.add(**new** ListItem(**"Geography"**, R.drawable.***ic\_accessibility\_black\_48dp***,  
 **"Geography is a field of science devoted to the study of the lands, the features, the inhabitants and the phenomena of Earth"**));  
}

* In the first Activity, place two EditText elements (title and description) in one row and place the "Add" button. The "add" button should create an object from titles and descriptions (all its elements may be assigned the same Figure).

Added needed components in firstactivitydesign.xml file. When text fields are filled and button „ADD ITEM“ is pressed, function *addElement()* is called where new ListItem object is created and then added to the list.

**private void** addElement(String title, String description, List<ListItem> list){  
 ListItem item = **new** ListItem(title, R.drawable.***ic\_person\_add\_black\_24dp***, description);  
  
 list.add(item);  
}  
  
View.OnClickListener **myButtonClick** = **new** View.OnClickListener(){  
  
 **public void** onClick(View w){  
 **titleField** = findViewById(R.id.***titleInput***);  
 **descriptionField** = findViewById(R.id.***descriptionInput***);  
  
 addElement(**titleField**.getText().toString(), **descriptionField**.getText().toString(), **students**);  
 }  
};

* Create another Activity, which should contain: image, the name of the image, description

Required components have been added to the imageactivitydesign.xml file. Image activity is opened by pressing “IMAGE ACTIVITY” button in the FirstActivity.

*<?***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"  
 android:orientation="vertical" android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"**>  
  
 <**ImageView  
 android:id="@+id/imageView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="161dp"  
 app:srcCompat="@mipmap/ic\_launcher"** />  
  
 <**TextView  
 android:id="@+id/textView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="@string/imageTile"**/>  
  
 <**TextView  
 android:id="@+id/textView2"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="@string/imageTileText"  
 android:textSize="22sp"**/>  
  
 <**TextView  
 android:id="@+id/textView3"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="@string/imageDescription"** />  
  
 <**TextView  
 android:id="@+id/textView4"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="@string/imageDescriptionText"  
 android:textSize="22sp"** />  
</**LinearLayout**>

# ANNEX

## *ListItem.java* file

**package** edu.ktu.lab1;  
  
**import** java.io.Serializable;  
  
**public class** ListItem **implements** Serializable {  
 **private** String **title**;  
 **private int imageId**;  
 **private** String **description**;  
  
 **public** ListItem(){  
  
 }  
  
 **public** ListItem(String title, **int** imageId, String description){  
 **this**.**title** = title;  
 **this**.**imageId** = imageId;  
 **this**.**description** = description;  
 }  
  
 **public** String getTitle(){  
 **return title**;  
 }  
  
 **public void** setTitle(String title){  
 **this**.**title** = title;  
 }  
  
 **public int** getImageId(){  
 **return imageId**;  
 }  
  
 **public void** setImageId(**int** id){  
 **this**.**imageId** = id;  
 }  
  
 **public** String getDescription(){  
 **return description**;  
 }  
  
 **public void** setDescription(String desc){  
 **this**.**description** = desc;  
 }  
}

## *ListAdapter.java* file

**package** edu.ktu.lab1;  
  
**import** android.content.Context;  
**import** android.view.LayoutInflater;  
**import** android.view.View;  
**import** android.view.ViewGroup;  
**import** android.widget.ArrayAdapter;  
**import** android.widget.ImageView;  
**import** android.widget.TextView;  
  
**import** java.util.List;  
  
**public class** ListAdapter **extends** ArrayAdapter<ListItem> {  
  
 **public** ListAdapter(Context context, List<ListItem> objects){  
 **super**(context, R.layout.***listitemdesign***, objects);  
 }  
  
 @Override  
 **public** View getView(**int** position, View convertView, ViewGroup parent){  
 View v = convertView;  
  
 **if**(v == **null**){  
 LayoutInflater inflater = (LayoutInflater)getContext().getSystemService(Context.***LAYOUT\_INFLATER\_SERVICE***);  
 v = inflater.inflate(R.layout.***listitemdesign***, **null**);  
 }  
  
 TextView title = v.findViewById(R.id.***title***);  
 TextView description = v.findViewById(R.id.***description***);  
 ImageView image = v.findViewById(R.id.***image***);  
  
 ListItem item = getItem(position);  
  
 title.setText(item.getTitle());  
 description.setText(item.getDescription());  
 image.setImageResource(item.getImageId());  
  
 **return** v;  
 }  
}

## *FirstActivity.java* file

**package** edu.ktu.lab1;  
  
**import** android.content.Context;  
**import** android.content.Intent;  
**import** android.os.Bundle;  
**import** android.support.v7.app.AppCompatActivity;  
**import** android.view.View;  
**import** android.widget.Button;  
**import** android.widget.EditText;  
**import** android.widget.TextView;  
  
**import** java.io.Serializable;  
**import** java.util.ArrayList;  
**import** java.util.List;  
  
**import** edu.ktu.lab1.SecondActivity;  
  
**public class** FirstActivity **extends** AppCompatActivity {  
  
 **private** Button **myButton**;  
 **private** EditText **titleField**;  
 **private** EditText **descriptionField**;  
 **private** Button **secondActivityButton**;  
 **private** Button **imageActivityButton**;  
 **private** Context **context** = **this**;  
 List<ListItem> **students** = **new** ArrayList<>();  
 List<ListItem> **subjects** = **new** ArrayList<>();  
  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState){  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***firstactivitydesign***);  
  
 **myButton** = findViewById(R.id.***addButton***);  
 **secondActivityButton** = findViewById(R.id.***secondActivityButton***);  
 **imageActivityButton** = findViewById(R.id.***imageActivityButton***);  
  
 **myButton**.setOnClickListener(**myButtonClick**);  
 **myButton**.setOnLongClickListener(**myButtonClickLong**);  
  
 **secondActivityButton**.setOnClickListener(**startSecondActivity**);  
 **secondActivityButton**.setOnLongClickListener(**startSecondActivityLong**);  
  
 **imageActivityButton**.setOnClickListener(**startImageActivity**);  
  
 fillLists();  
 }  
  
 **private void** fillLists(){  
 **students**.add(**new** ListItem(**"Jack"**, R.drawable.***ic\_3d\_rotation\_black\_48dp***, **"Mathematics, Chemistry"**));  
 **students**.add(**new** ListItem(**"Jane"**, R.drawable.***ic\_announcement\_black\_48dp***, **"Physics, Informatics"**));  
 **students**.add(**new** ListItem(**"Bob"**, R.drawable.***ic\_alarm\_black\_48dp***, **"Mathematics, Informatics"**));  
 **students**.add(**new** ListItem(**"Clara"**, R.drawable.***ic\_account\_box\_black\_48dp***, **"Geography, Chemistry"**));  
 **students**.add(**new** ListItem(**"Sam"**, R.drawable.***ic\_accessibility\_black\_48dp***, **"Mathematics, Physics"**));  
  
 **subjects**.add(**new** ListItem(**"Mathematics"**, R.drawable.***ic\_3d\_rotation\_black\_48dp***,  
 **"Mathematics is the study of topics such as quantity, structure, space and change"**));  
 **subjects**.add(**new** ListItem(**"Physics"**, R.drawable.***ic\_announcement\_black\_48dp***,  
 **"Physics is the natural science that involves the study of matter and its motion through space and time along with related concepts such as energy for it"**));  
 **subjects**.add(**new** ListItem(**"Chemistry"**, R.drawable.***ic\_alarm\_black\_48dp***,  
 **"Chemistry is a branch of physical science that studies the composition, structure, properties and change of matter"**));  
 **subjects**.add(**new** ListItem(**"Informatics"**, R.drawable.***ic\_account\_box\_black\_48dp***,  
 **"Informatics is the science of information and computer information systems"**));  
 **subjects**.add(**new** ListItem(**"Geography"**, R.drawable.***ic\_accessibility\_black\_48dp***,  
 **"Geography is a field of science devoted to the study of the lands, the features, the inhabitants and the phenomena of Earth"**));  
 }  
  
 **private void** addElement(String title, String description, List<ListItem> list){  
 ListItem item = **new** ListItem(title, R.drawable.***ic\_person\_add\_black\_24dp***, description);  
  
 list.add(item);  
 }  
  
 View.OnClickListener **myButtonClick** = **new** View.OnClickListener(){  
  
 **public void** onClick(View w){  
 **titleField** = findViewById(R.id.***titleInput***);  
 **descriptionField** = findViewById(R.id.***descriptionInput***);  
  
 addElement(**titleField**.getText().toString(), **descriptionField**.getText().toString(), **students**);  
 }  
 };  
  
 View.OnLongClickListener **myButtonClickLong** = **new** View.OnLongClickListener(){  
 @Override  
 **public boolean** onLongClick(View w){  
 **titleField** = findViewById(R.id.***titleInput***);  
 **descriptionField** = findViewById(R.id.***descriptionInput***);  
  
 addElement(**titleField**.getText().toString(), **descriptionField**.getText().toString(), **subjects**);  
  
 **return true**;  
 }  
 };  
  
 **public void** runSecondActivity(**boolean** b) {  
 Intent intent = **new** Intent(**context**, SecondActivity.**class**);  
 intent.putExtra(**"flag"**, b);  
 intent.putExtra(**"students"**, (Serializable) **students**);  
 intent.putExtra(**"subjects"**, (Serializable) **subjects**);  
  
 **context**.startActivity(intent);  
 }  
  
 View.OnClickListener **startSecondActivity** = **new** View.OnClickListener(){  
 @Override  
 **public void** onClick(View w){  
 runSecondActivity(**true**);  
 }  
 };  
  
 View.OnLongClickListener **startSecondActivityLong** = **new** View.OnLongClickListener(){  
 @Override  
 **public boolean** onLongClick(View w){  
 runSecondActivity(**false**);  
 **return true**;  
 }  
 };  
  
 View.OnClickListener **startImageActivity** = **new** View.OnClickListener(){  
 @Override  
 **public void** onClick(View w){  
 runImageActivity();  
 }  
 };  
  
 **public void** runImageActivity() {  
 **context**.startActivity(**new** Intent(**context**, ImageActivity.**class**));  
 }  
}

## *SecondActivity.java* file

**package** edu.ktu.lab1;  
  
**import** android.content.Intent;  
**import** android.os.Bundle;  
**import** android.support.v7.app.AppCompatActivity;  
**import** android.view.MotionEvent;  
**import** android.view.View;  
**import** android.view.ViewGroup;  
**import** android.widget.AdapterView;  
**import** android.widget.Button;  
**import** android.widget.ListView;  
  
**import** java.util.ArrayList;  
**import** java.util.Collection;  
**import** java.util.Collections;  
**import** java.util.Comparator;  
**import** java.util.List;  
  
**public class** SecondActivity **extends** AppCompatActivity {  
 **private** ListView **myList**;  
 **private** ListAdapter **adapter**;  
 **private** Button **sortButton**;  
 **private** List<ListItem> **items**;  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***secondactivitydesign***);  
 **myList** = findViewById(R.id.***listView***);  
 **sortButton** = findViewById(R.id.***sortButton***);  
 **sortButton**.setOnClickListener(**sortButtonClick**);  
  
 Intent intent = getIntent();  
  
 **if** (intent.getBooleanExtra(**"flag"**, **true**)) {  
 **items** = (List<ListItem>) intent.getExtras().getSerializable(**"students"**);  
 } **else items** = (List<ListItem>) intent.getExtras().getSerializable(**"subjects"**);  
  
 **adapter** = **new** ListAdapter(**this**, **items**);  
  
 **myList**.setAdapter(**adapter**);  
  
 **myList**.setOnItemClickListener(**new** AdapterView.OnItemClickListener() {  
 @Override  
 **public void** onItemClick(AdapterView<?> parent, View view, **int** position, **long** id) {  
 **items**.remove(position);  
  
 **myList**.setAdapter(**adapter**);  
 }  
 });  
  
 }  
  
 View.OnClickListener **sortButtonClick** = **new** View.OnClickListener(){  
  
 **public void** onClick(View w){  
 Collections.*sort*(**items**, **new** Comparator<ListItem>() {  
 @Override  
 **public int** compare(ListItem o1, ListItem o2) {  
 **if**(o1.equals(o2)){  
 **return** 0;  
 } **else** {  
 **return** o1.getTitle().toLowerCase().compareTo(o2.getTitle().toLowerCase());  
 }  
 }  
 });  
  
 **myList**.setAdapter(**adapter**);  
 }  
 };   
}

## *ImageActivity.java* file

**package** edu.ktu.lab1;  
  
**import** android.os.Bundle;  
**import** android.support.v7.app.AppCompatActivity;  
  
**public class** ImageActivity **extends** AppCompatActivity {  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***imageactivitydesign***); }}

## *firstactivitydesign.xml* file

*<?***xml version="1.0" encoding="utf-8"***?>* <**ScrollView xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"**>  
  
 <**LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="vertical"**>  
  
 <**LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"**>  
  
 <**EditText  
 android:id="@+id/titleInput"  
 android:layout\_width="200dp"  
 android:layout\_height="wrap\_content"  
 android:hint="@string/titleInput"  
 android:inputType="text"** />  
  
 <**EditText  
 android:id="@+id/descriptionInput"  
 android:layout\_width="200dp"  
 android:layout\_height="wrap\_content"  
 android:hint="@string/descriptionInput"  
 android:inputType="text"** />  
  
 </**LinearLayout**>  
  
 <**Button  
 android:id="@+id/addButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/addButton"** />  
  
 <**Button  
 android:id="@+id/secondActivityButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/secondActivityButton"** />  
  
 <**Button  
 android:id="@+id/imageActivityButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/imageActivityButton"** />  
  
 </**LinearLayout**>  
  
 </**ScrollView**>

## *Secondactivitydesign.xml* file

*<?***xml version="1.0" encoding="utf-8"***?>*<**LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:orientation="vertical" android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"**>  
  
 <**Button  
 android:id="@+id/sortButton"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Sort by name"**/>  
  
 <**ListView  
 android:id="@+id/listView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"**>  
  
 </**ListView**>  
</**LinearLayout**>

## *imageactivitydesign.xml* file

*<?***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"  
 android:orientation="vertical" android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"**>  
  
 <**ImageView  
 android:id="@+id/imageView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="161dp"  
 app:srcCompat="@mipmap/ic\_launcher"** />  
  
 <**TextView  
 android:id="@+id/textView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="@string/imageTile"**/>  
  
 <**TextView  
 android:id="@+id/textView2"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="@string/imageTileText"  
 android:textSize="22sp"**/>  
  
 <**TextView  
 android:id="@+id/textView3"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="@string/imageDescription"** />  
  
 <**TextView  
 android:id="@+id/textView4"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="@string/imageDescriptionText"  
 android:textSize="22sp"** />  
</**LinearLayout**>