

Belajar Android Studio CRUD dengan Retrofit

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Baca-baca diforum android developer ataupun digoogle tentang akses ke database server dari aplikasi android yang lagi trend sekarang adalah pakai retrofit. Akhirnya penasaran ngoprek lihat contoh-contoh source code pala jadi pusing. Akhirnya ambil salah satu contoh praktek dan berhasil tapi disini cuma menampilkan data dan datanya juga data contoh dari suatu website yang menyediakan Rest JSON.

Akhirnya mau coba buat CRUD dengan retrofit sendiri tapi bingung buat sisi servernya. Akhirnya terpaksa harus ngoprek lagi. Dan Setelah berjuang akhirnya bisa juga walaupun ini juga buatan orang lain yang memang dia share. Ajaib juga kita buat satu webservice hanya dengan satu file PHP dan keren deh pokoknya.

Persiapkan sisi server.

Sebelumnya pastikan dikomputer kita sudah terinstall XAMPP.

1. Login Ke MySQL dengan menggunakan PHPMyAdmin buat database baru dengan nama **dbretrofit**.

2. buat table mahasiswa dengan kode dibawah ini

```
CREATE TABLE IF NOT EXISTS `mahasiswa` (  
  `id` int(4) NOT NULL,  
  `nim` varchar(12) NOT NULL,  
  `nama` varchar(32) NOT NULL,  
  `jurusan` varchar(16) NOT NULL  
) ENGINE=InnoDB AUTO_INCREMENT=3 DEFAULT CHARSET=latin1;  
  
--  
-- Dumping data for table `tbl_mahasiswa`  
--  
  
INSERT INTO `mahasiswa` (`id`, `nim`, `nama`, `jurusan`) VALUES  
(1, '1001', 'Jefri', 'AK'),  
(2, '1002', 'Mirna', 'TI');
```

3. Pada directory **htdocs** buat folder dengan nama **ahretrofit** lalu buat file dengan nama **api.php**

```
<?php  
  
// get the HTTP method, path and body of the request  
$method = $_SERVER['REQUEST_METHOD'];  
$request = explode('/', trim($_SERVER['PATH_INFO'], '/'));  
$input = json_decode(file_get_contents('php://input'), true);  
  
// connect to the mysql database  
$link = mysqli_connect('localhost', 'root', '', 'dbretrofit');  
mysqli_set_charset($link, 'utf8');  
  
// retrieve the table and key from the path  
$table = preg_replace('/^[^a-z0-9_]+/i', '', array_shift($request));  
$key = array_shift($request)+0;  
  
// escape the columns and values from the input object  
$columns;  
if (isset($input)){  
  $columns = preg_replace('/^[^a-z0-9_]+/i', '', array_keys($input));
```

```

$values = array_map(function ($value) use ($link) {
    if ($value===null) return null;
    return mysqli_real_escape_string($link,(string)$value);
},array_values($input));

// build the SET part of the SQL command
$set = '';
for ($i=0;$i<count($columns);$i++) {
    $set.=( $i>0?', ':'').'``'.$columns[$i].'`=';
    $set.=( $values[$i]===null?'NULL':'``'.$values[$i].'``');
}
}
// create SQL based on HTTP method
switch ($method) {
    case 'GET':
        $sql = "select * from ` $table `".( $key?" WHERE id=$key":''); break;
    case 'PUT':
        $sql = "update ` $table ` set $set where id=$key"; break;
    case 'POST':
        $sql = "insert into ` $table ` set $set"; break;
    case 'DELETE':
        $sql = "delete from ` $table ` where id=$key"; break;
}

// execute SQL statement
$result = mysqli_query($link,$sql);

// die if SQL statement failed
if (!$result) {
    http_response_code(404);
    die(mysqli_error());
}

// print results, insert id or affected row count
if ($method == 'GET') {
    $results;
    $countrow= mysqli_num_rows($result);
    $items = array();
    while($row = mysqli_fetch_object($result)){
        array_push($items, $row);
    }
    $results[$table] = $items;
    echo json_encode($results);
} elseif ($method == 'POST') {
    echo mysqli_insert_id($link);
} else {
    echo mysqli_affected_rows($link);
}

// close mysql connection
mysqli_close($link);
?>

```

3. Kita test rest api

<http://localhost/ahretrofit/api.php/mahasiswa>

```

{"mahasiswa":
[{"id":"1","nim":"1001","nama":"Jefri","jurusan":"AK"},
{"id":"2","nim":"1002","nama":"Mirna","jurusan":"TI"}]}

```

Ketentuan penggunaan

Dengan script php diatas kita bisa melakukan operasi CRUD terhadap sebuah table.

Caranya :

Menampilkan semua data di database

List all records of a database table.

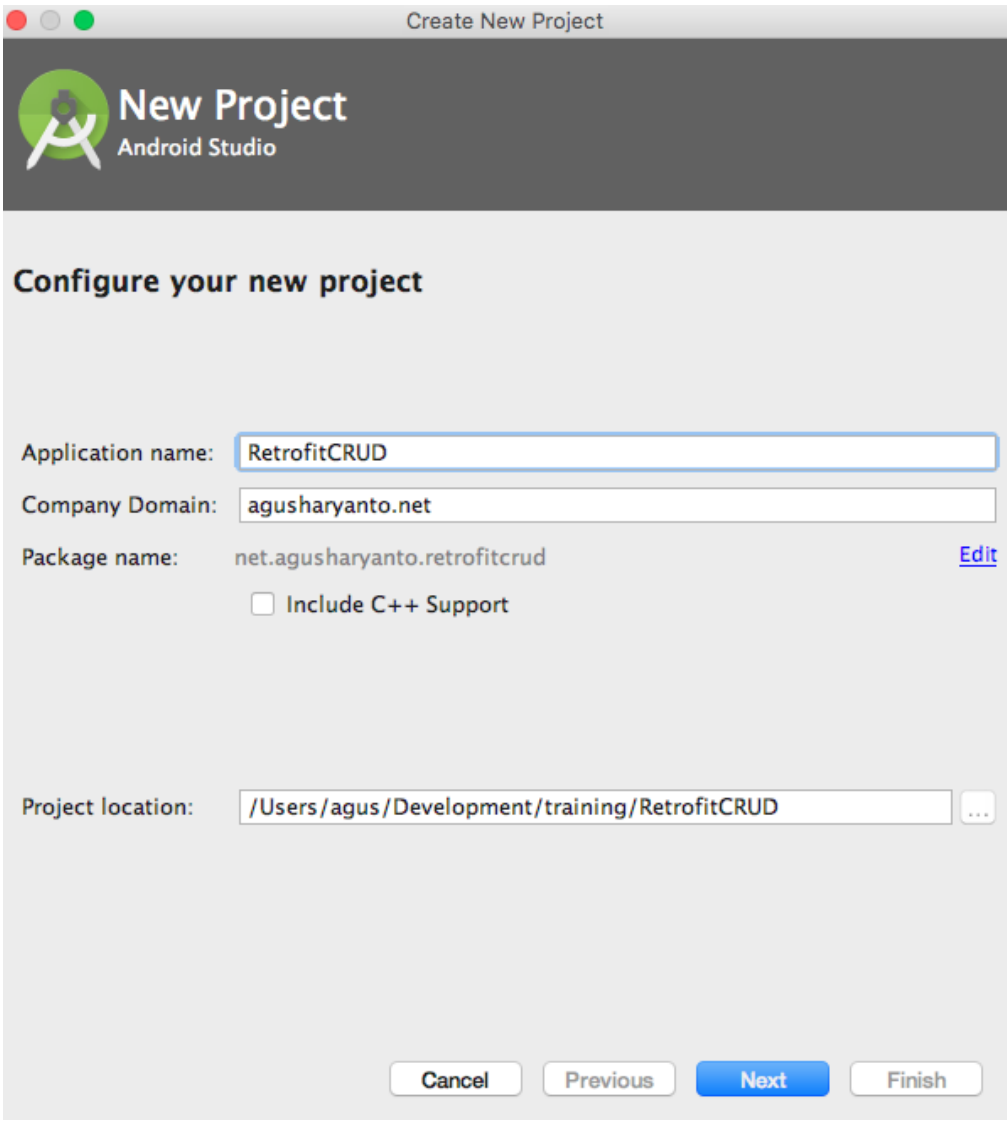
```
GET http://localhost/api.php/categories
```

Output:

```
{"categories":{"columns":["id","name"],"records":[["1","Internet"],["3","Web development"]]}}
```

Sekarang mari kita garap androidnya.

1. Buat project baru dengan nama RerofitCRUD

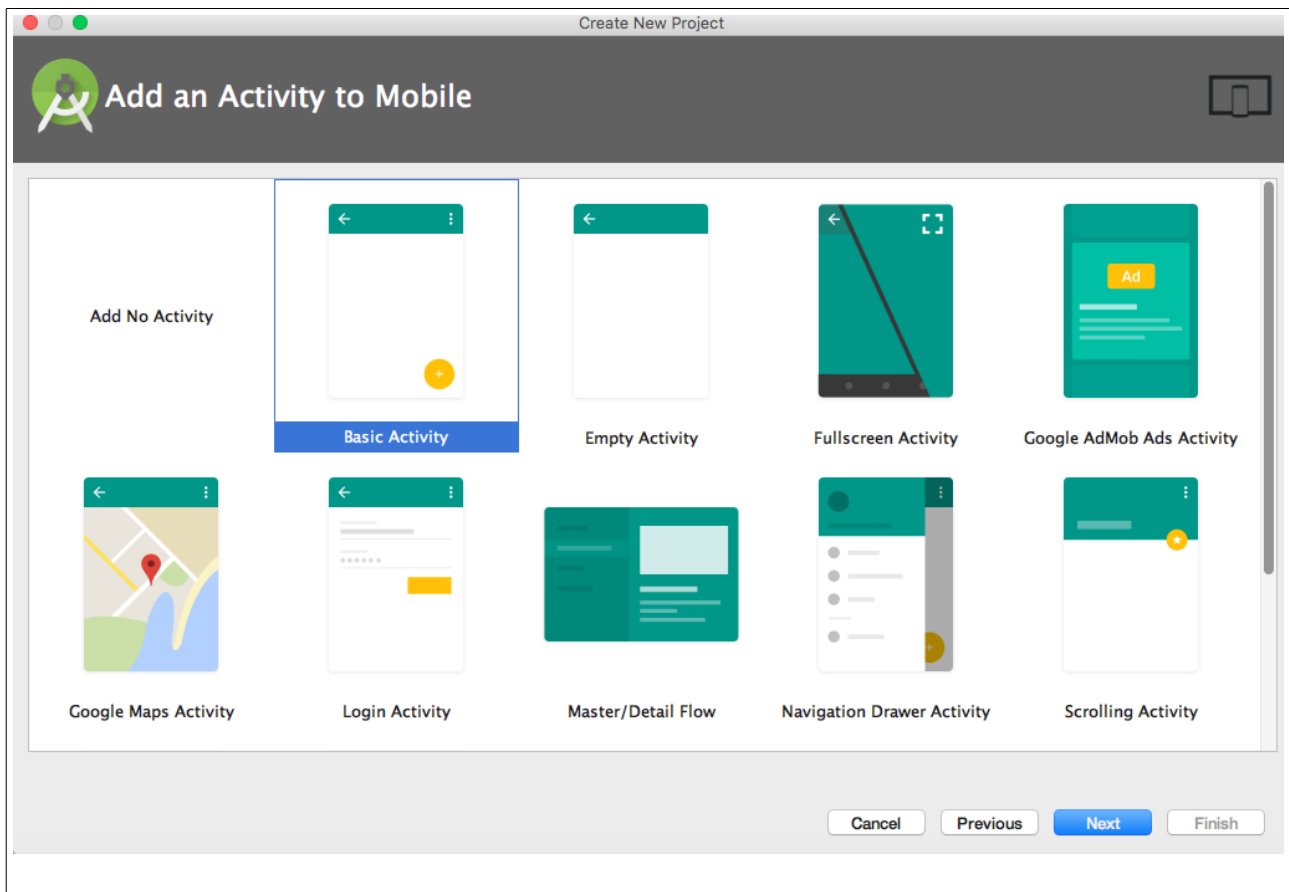


The screenshot shows the 'Create New Project' dialog in Android Studio. The title bar says 'Create New Project'. The main header area has the Android Studio logo and the text 'New Project Android Studio'. Below this is the section 'Configure your new project'. The form contains the following fields and options:

- Application name:** RetrofitCRUD
- Company Domain:** agusharyanto.net
- Package name:** net.agusharyanto.retrofitcrud (with an 'Edit' link to its right)
- Include C++ Support:** An unchecked checkbox.
- Project location:** /Users/agus/Development/training/RetrofitCRUD (with a browse button '...')

At the bottom of the dialog are four buttons: 'Cancel', 'Previous', 'Next' (highlighted in blue), and 'Finish'.

Pada jendela Actiivty pilih Basic Activity



Klik Next samapi Finish.

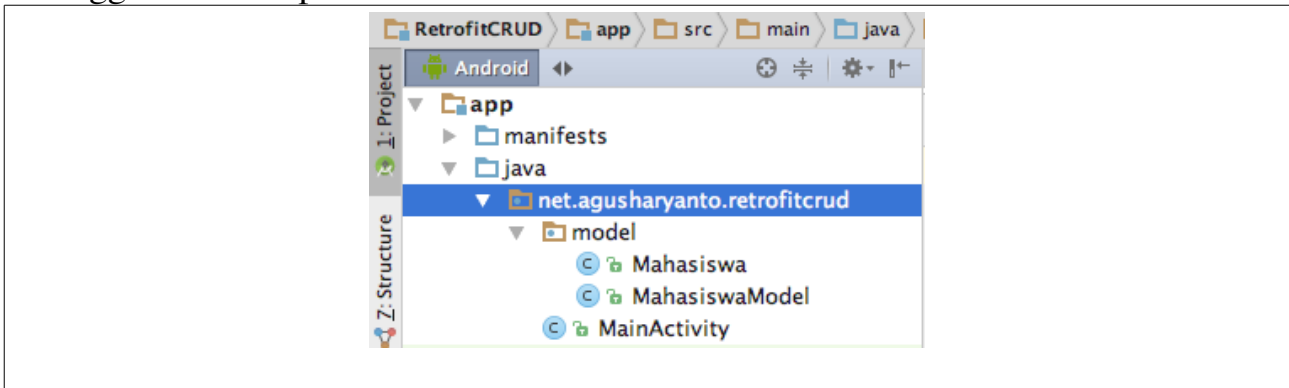
2. Kita harus buat Class untuk data mahasiswa yang akan kita tampilkan untuk itu karena kita sudah punya json nya kita bisa ke <http://www.jsonschema2pojo.org/> untuk mengenerate class java dari data json.



- Paste hasil data json mahasiswa.
- Isi Package dengan net.agusharyanto.retrofitcrud.model
- Isi Class name dengan MahasiswaModel
- Pada Sourc tylpe pilih JSON
- Pada Annotation style pilih Gson

- Klik tombol zip maka secara otomatis menggenerate file MahasiswaModel-sources.zip
- Download File tersebut dan tambahkan ke project kita.

Sehingga terlihat seperti ini



3. Selanjutnya pada script Gradle Scripts build.gradle(module) tambahkan script berikut didalam bagian dependency

```
compile 'com.android.support:cardview-v7:24.2.1'
compile 'com.android.support:recyclerview-v7:24.2.1'
compile 'com.google.code.gson:gson:2.6.1'
compile 'com.squareup.retrofit2:retrofit:2.1.0'
compile 'com.squareup.retrofit2:converter-gson:2.1.0'
compile 'com.squareup.okhttp3:logging-interceptor:3.2.0'
```

Disini terlihat kita menambahkan library yang akan digunakan seperti retrofit, gson, cardview dan recyclerview.

4. Selanjutnya kita edit strings.xml pada directory res/values

```
<resources>
    <string name="app_name">Retrofit CRUD</string>
    <string name="action_settings">Settings</string>
    <string name="action_save">Save</string>
    <string name="action_delete">Delete</string>
    <string name="nim">NIM</string>
    <string name="nama">Nama</string>
    <string name="jurusan">Jurusan</string>
</resources>
```

5. Edit content_main.xml pada directories res/layout

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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:id="@+id/content_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
```

```

        android:paddingTop="@dimen/activity_vertical_margin"
        app:layout_behavior="@string/appbar_scrolling_view_behavior"
        tools:context="net.agusharyanto.retrofitcrud.MainActivity"
        tools:showIn="@layout/activity_main">
        <ProgressBar
            android:layout_width="45dp"
            android:layout_height="45dp"
            android:id="@+id/pb_progress"
            android:layout_centerVertical="true"
            android:layout_centerHorizontal="true"/>
        <android.support.v7.widget.RecyclerView
            android:id="@+id/my_recycler_view"
            android:scrollbars="vertical"
            android:layout_width="match_parent"
            android:layout_height="match_parent"/>
    </RelativeLayout>

```

5. Buat layout baru dengan nama item_mahasiswa.xml lalu ketikkan kode berikut.

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent" android:layout_height="wrap_content"
    android:padding="5dp"
    >
    <android.support.v7.widget.CardView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/cv"
        >
        <RelativeLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:padding="16dp"
            >
            <TextView
                android:layout_width="100dp"
                android:layout_height="wrap_content"
                android:text="@string/nim"
                android:id="@+id/textViewRowNim" />
            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="@string/nama"
                android:id="@+id/textViewRowNama"
                android:layout_alignParentTop="true"
                android:layout_toRightOf="@+id/textViewRowNim"
                android:layout_toEndOf="@+id/textViewRowNim" />
            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="@string/jurusan"
                android:id="@+id/textViewRowJurusan"
                android:layout_alignParentTop="true"
                android:layout_alignParentRight="true"
                android:layout_alignParentEnd="true" />
        </RelativeLayout>
    </android.support.v7.widget.CardView>

```

```
</LinearLayout>
```

6. Sekarang kita buat adapter untuk menampilkan data mahasiswa, buat package baru dengan nam adapter lalu pada package terbut buat class baru dengan nama **MahasiswaAdapter**

```
package net.agusharyanto.hotelretrofit.adapter;
import android.support.v7.widget.CardView;
import android.support.v7.widget.RecyclerView;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.TextView;
import net.agusharyanto.hotelretrofit.R;
import net.agusharyanto.hotelretrofit.model.Mahasiswa;
import java.util.List;
/**
 * Created by agus on 21/3/16.
 */
public class MahasiswaAdapter extends RecyclerView.Adapter<MahasiswaAdapter.MahasiswaViewHolder> {
    List<Mahasiswa> mahasiswas;
    private final OnItemClickListener listener;
    public MahasiswaAdapter(List<Mahasiswa> mahasiswas, OnItemClickListener listener) {
        this.mahasiswas = mahasiswas;
        this.listener = listener;
    }
    @Override
    public MahasiswaViewHolder onCreateViewHolder(ViewGroup viewGroup, int i) {
        View v = LayoutInflater.from(viewGroup.getContext()).inflate(R.layout.row_mahasiswa,
viewGroup, false);
        MahasiswaViewHolder mahasiswaViewHolder = new MahasiswaViewHolder(v);
        return mahasiswaViewHolder;
    }
    @Override
    public void onBindViewHolder(MahasiswaViewHolder mahasiswaViewHolder, int i) {
        mahasiswaViewHolder.click(mahasiswas.get(i), listener);
        mahasiswaViewHolder.mahasiswaName.setText(mahasiswas.get(i).getNama());
        mahasiswaViewHolder.mahasiswaJurusan.setText(mahasiswas.get(i).getJurusan());
        mahasiswaViewHolder.mahasiswaNim.setText(mahasiswas.get(i).getNim());
    }
    @Override
    public int getItemCount() {
        return mahasiswas.size();
    }
    public Mahasiswa getItem(int position) {
        return mahasiswas.get(position);
    }
    @Override
    public void onAttachedToRecyclerView(RecyclerView recyclerView) {
        super.onAttachedToRecyclerView(recyclerView);
    }
    public static class MahasiswaViewHolder extends RecyclerView.ViewHolder {
        CardView cv;
        TextView mahasiswaName;
        TextView mahasiswaJurusan;
        TextView mahasiswaNim;
        MahasiswaViewHolder(View itemView) {
            super(itemView);
            cv = (CardView) itemView.findViewById(R.id.cv);
            mahasiswaName = (TextView) itemView.findViewById(R.id.textViewRowNama);
            mahasiswaJurusan = (TextView) itemView.findViewById(R.id.textViewRowJurusan);
            mahasiswaNim = (TextView) itemView.findViewById(R.id.textViewRowNim);
        }
        public void click(final Mahasiswa quesModel, final OnItemClickListener listener) {
            itemView.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    listener.onClick(quesModel);
                }
            });
        }
    }
}
```

```

    }
}
public interface OnItemClickListener {
    void onClick(Mahasiswa Item);
}
}

```

7. Sekarang buat package api lalu buat class dengan nama ApiService.java

```

package net.agusharyanto.retrofitcrud.api;
import net.agusharyanto.retrofitcrud.model.MahasiswaModel;
import retrofit2.Call;
import retrofit2.Retrofit;
import retrofit2.converter.gson.GsonConverterFactory;
import retrofit2.http.Body;
import retrofit2.http.DELETE;
import retrofit2.http.GET;
import retrofit2.http.POST;
import retrofit2.http.PUT;
import retrofit2.http.Path;
import retrofit2.http.Query;
/**
 * Created by agus on 9/29/16.
 * agus.superwriter@gmail.com
 * http://agusharyanto.net
 */
public interface ApiService {
    //variable base URL
    public static String baseUrl = "http://192.168.0.102/php-crud-api/newapi.php/";

    Retrofit client = new Retrofit.Builder()
        .baseUrl(baseUrl)
        .addConverterFactory(GsonConverterFactory.create())
        .build();

    @GET("{TableName}")
    public Call<MahasiswaModel> getMahasiswa(@Path("TableName") String TableName,
    @Query("transform") String transform);

    @POST("{TableName}")
    Call<String> postMahasiswa(@Path("TableName") String TableName, @Body Object data);
    @PUT("{TableName}/{id}")
    Call<String> updateMahasiswa(@Path("TableName") String TableName, @Path("id") String id, @Body
    Object data);
    @DELETE("{TableName}/{id}")
    Call<String> deleteMahasiswa(@Path("TableName") String TableName, @Path("id") String id);
}

```

8. Sekrang mari kita edit MainActivity.java Lalu ketikan kode berikut.

```

package net.agusharyanto.retrofitcrud;
import android.support.design.widget.FloatingActionButton;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.support.v7.widget.LinearLayoutManager;
import android.support.v7.widget.RecyclerView;
import android.support.v7.widget.Toolbar;
import android.util.Log;
import android.view.View;
import android.widget.ProgressBar;
import android.widget.Toast;
import net.agusharyanto.retrofitcrud.adapter.MahasiswaAdapter;
import net.agusharyanto.retrofitcrud.api.ApiService;
import net.agusharyanto.retrofitcrud.model.Mahasiswa;
import net.agusharyanto.retrofitcrud.model.MahasiswaModel;
import retrofit2.Call;
import retrofit2.Callback;
import retrofit2.Response;
public class MainActivity extends AppCompatActivity {

```



```

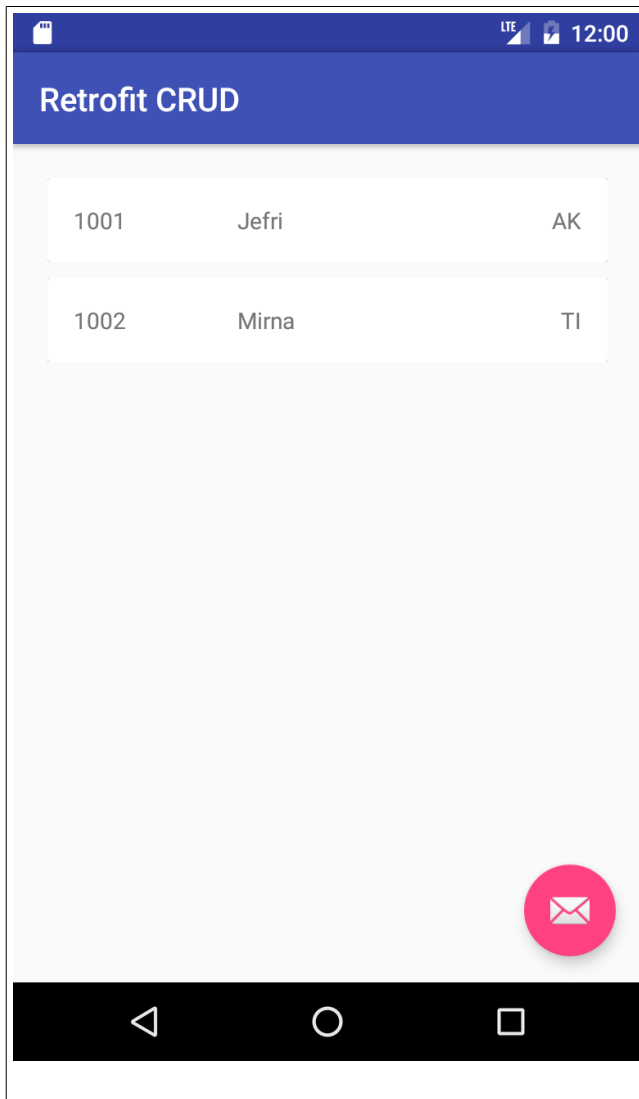
private String TAG = "MainActivity";
private RecyclerView rvItem;
private ProgressBar indicator;
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);
    setSupportActionBar(toolbar);
    FloatingActionButton fab = (FloatingActionButton) findViewById(R.id.fab);
    fab.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            Toast.makeText(MainActivity.this, "Add Data", Toast.LENGTH_SHORT).show();
        }
    });
    rvItem = (RecyclerView) findViewById(R.id.my_recycler_view);
    rvItem.setHasFixedSize(true);
    LinearLayoutManager lnLayoutManager = new LinearLayoutManager(MainActivity.this);
    rvItem.setLayoutManager(lnLayoutManager);
    indicator = (ProgressBar) findViewById(R.id.pb_progress);
    viewDataMahasiswa();
}
private void viewDataMahasiswa() {
    //membuat service
    ApiService apiService =
        ApiService.client.create(ApiService.class);
    //melakukan call dengan method getQuestion.
    Call<MahasiswaModel> call = apiService.getMahasiswa("mahasiswa","1");
    //proses call
    call.enqueue(new Callback<MahasiswaModel>() {
        @Override
        public void onResponse(Call<MahasiswaModel> call, Response<MahasiswaModel> response) {
            Log.d(TAG, "call-url-request:"+call.request().toString());
            //merubah respon body menjadi model
            MahasiswaModel mahasiswaModel = response.body();
            //instance adapter dengan object Item (QuestionModel.getItems)
            MahasiswaAdapter adapter = new MahasiswaAdapter( mahasiswaModel.getMahasiswa(),
                new MahasiswaAdapter.OnItemClickListener() {
                    @Override
                    public void onClick(Mahasiswa Item) {
                        Toast.makeText(getApplicationContext(),Item.getNama(),Toast.LENGTH_SHORT).show();
                    }
                });
            //menghilangkan progres bar
            indicator.setVisibility(View.INVISIBLE);
            //men-set adapter pada recycler view
            rvItem.setAdapter(adapter);
        }
        @Override
        public void onFailure(Call<MahasiswaModel> call, Throwable t) {
            // Log error
            Log.e(TAG, "onFailure: ", t.fillInStackTrace());
            //menghilangkan progres bar
            indicator.setVisibility(View.INVISIBLE);
        }
    });
}
}

```

9. tambahkan permission INTERNET pada AndroidManifest.xml

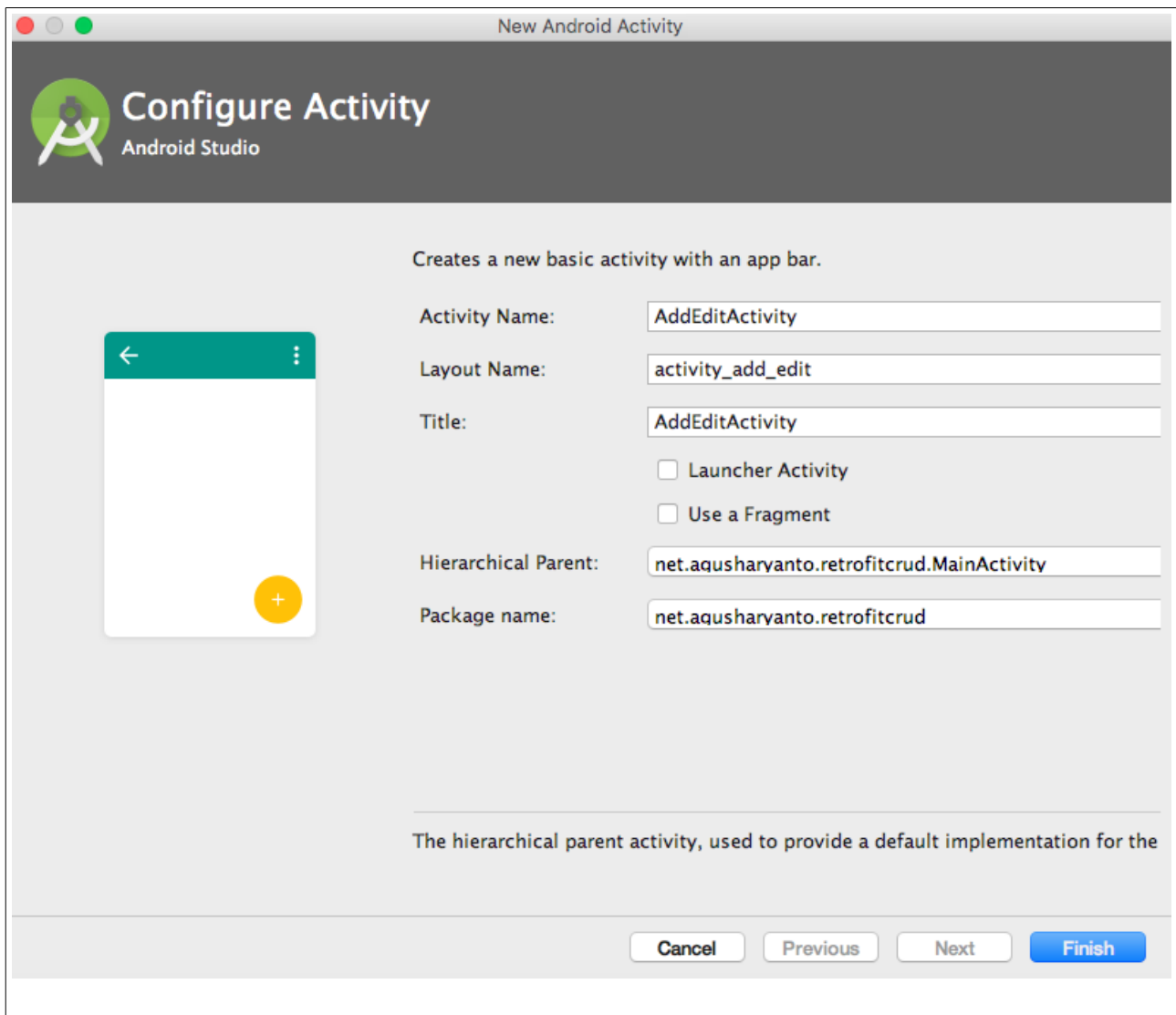
```
<uses-permission android:name="android.permission.INTERNET" />
```

10. Saatnya kita Run Projectnya



Bagaimana mudahkan retrofit.
Lho katanya CRUD ini kan baru READ saja.

11. Buat Activity (Basic Activity) bernama dengan AddEditActivity



12. Siapkan Layout untuk form data mahasiswa, untuk itu edit content_add_edit.xml laluketikan kode berikut.

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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:id="@+id/content_add_edit"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    app:layout_behavior="@string/appbar_scrolling_view_behavior"
    tools:context="net.agusharyanto.retrofitcrud.AddEditActivity"
    tools:showIn="@layout/activity_add_edit">
    <android.support.design.widget.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginBottom="8dp">
        <EditText
            android:id="@+id/editTextNim"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="@string/nim"/>
        </android.support.design.widget.TextInputLayout>
    <android.support.design.widget.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content">
```

```

        <EditText
            android:id="@+id/editTextNama"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="@string/nama"/>
    </android.support.design.widget.TextInputLayout>
    <android.support.design.widget.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginBottom="8dp">
        <EditText
            android:id="@+id/editTextJurusan"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="@string/jurusan"/>
    </android.support.design.widget.TextInputLayout>
</RelativeLayout>

```

13. Kita ingin untuk save dan delete data itu dilakukan dengan menyentuh tombol save dan delete pada toolbar. Untuk itu buat menu baru dengan nama menu_add_edit.xml pada directory res/menu lalu ketikan kode berikut.

```

<menu 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"
    tools:context="net.agusharyanto.cruddatamahasiswa.MahasiswaActivity">
    <item
        android:id="@+id/action_save"
        android:orderInCategory="100"
        android:title="@string/action_save"
        android:icon="@android:drawable/ic_menu_save"
        app:showAsAction="always" />
    <item
        android:id="@+id/action_delete"
        android:orderInCategory="100"
        android:title="@string/action_delete"
        android:icon="@android:drawable/ic_menu_delete"
        app:showAsAction="always" />
</menu>

```

14. Edit **AddEditActivity.java** lalu ketikan kode berikut.

```

package net.agusharyanto.retrofitcrud;
import android.app.AlertDialog;
import android.app.ProgressDialog;
import android.content.Context;
import android.content.DialogInterface;
import android.os.Bundle;
import android.support.design.widget.FloatingActionButton;
import android.support.design.widget.Snackbar;
import android.support.v7.app.AppCompatActivity;
import android.support.v7.widget.Toolbar;
import android.util.Log;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;
import net.agusharyanto.retrofitcrud.api.ApiService;
import net.agusharyanto.retrofitcrud.model.Mahasiswa;
import retrofit2.Call;
import retrofit2.Callback;
import retrofit2.Response;

```

```

public class AddEditActivity extends AppCompatActivity {
    private EditText editTextNama, editTextNim, editTextJurusan;
    private static String TAG = "AddEditActivity";
    public static String KEY_ITEM = "item";
    private Mahasiswa itemMahasiswa = null;
    private boolean isUpdateForm = false;
    private String actionBarTitle = null;
    private Context context;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        context = AddEditActivity.this;
        setContentView(R.layout.activity_add_edit);
        Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);
        editTextNim = (EditText) findViewById(R.id.editTextNim);
        editTextNama = (EditText) findViewById(R.id.editTextNama);
        editTextJurusan = (EditText) findViewById(R.id.editTextJurusan);
        FloatingActionButton fab = (FloatingActionButton) findViewById(R.id.fab);
        fab.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Snackbar.make(view, "Replace with your own action", Snackbar.LENGTH_LONG)
                    .setAction("Action", null).show();
            }
        });
        itemMahasiswa = (Mahasiswa) getIntent().getSerializableExtra(KEY_ITEM);
        if (itemMahasiswa != null) {
            isUpdateForm = true;
            actionBarTitle = "Update Mahasiswa";
            editTextJurusan.setText(itemMahasiswa.getJurusan());
            editTextNama.setText(itemMahasiswa.getNama());
            editTextNim.setText(itemMahasiswa.getNim());
        } else {
            actionBarTitle = "Create Mahasiswa";
            itemMahasiswa = new Mahasiswa();
        }
        getSupportActionBar().setDisplayHomeAsUpEnabled(true);
        getSupportActionBar().setTitle(actionBarTitle);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_add_edit, menu);
        MenuItem item = menu.findItem(R.id.action_delete);
        if (!isUpdateForm) {
            item.setVisible(false);
        }
        return true;
    }
    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        // Handle action bar item clicks here. The action bar will
        // automatically handle clicks on the Home/Up button, so long
        // as you specify a parent activity in AndroidManifest.xml.
        int id = item.getItemId();
        if (id == R.id.action_save) {
            saveData();
            return true;
        } else if (id == R.id.action_delete) {
            if (isUpdateForm) {
                showDeleteAlert(itemMahasiswa);
            }
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
    private void saveData() {
        String nama = editTextNama.getText().toString();
        String nim = editTextNim.getText().toString();
        String jurusan = editTextJurusan.getText().toString();
        if (nim.equals("") || nama.equals("") || jurusan.equals("")) {
            Toast.makeText(context, "All fields are mandatory", Toast.LENGTH_LONG).show();
        }
    }
}

```

```

    } else {
        String mahasiswaId = itemMahasiswa == null ? null : itemMahasiswa.getId();
        postRequest(nim, nama, jurusan, mahasiswaId);
    }
}

private void postRequest(String nim, String nama, String jurusan, String id) {
    final ProgressDialog dialog = new ProgressDialog(context);
    dialog.setMessage("Please wait...");
    dialog.show();
    itemMahasiswa.setNim(nim);
    itemMahasiswa.setNama(nama);
    itemMahasiswa.setJurusan(jurusan);
    itemMahasiswa.setId(id);
    Call<String> call = null;
    // if (!isUpdateForm){
    ApiService apiService =
        ApiService.client.create(ApiService.class);
    if (!isUpdateForm) {
        call = apiService.postMahasiswa("mahasiswa", itemMahasiswa);
    } else {
        call = apiService.updateMahasiswa("mahasiswa", itemMahasiswa.getId(), itemMahasiswa);
    }
    call.enqueue(new Callback<String>() {
        @Override
        public void onResponse(Call<String> call, Response<String> response) {
            Log.d(TAG, "cal-request-url:" + call.request().toString());
            dialog.dismiss();
            if (response.body() != null) {
                String mhsid = response.body();
                itemMahasiswa.setId(mhsid);
                finish();
            } else {
                Toast.makeText(context, "Failed to " + actionBarTitle,
                    Toast.LENGTH_LONG).show();
            }
        }
        @Override
        public void onFailure(Call<String> call, Throwable t) {
            dialog.dismiss();
            Toast.makeText(context, "Failed to " + actionBarTitle, Toast.LENGTH_LONG).show();
            Log.e(TAG, "onFailure: ", t.fillInStackTrace());
        }
    });
}

public void showDeleteAlert(final Mahasiswa itemMahasiswa) {
    AlertDialog.Builder alertDialogBuilder = new AlertDialog.Builder(context);
    alertDialogBuilder.setTitle("Contact App");
    alertDialogBuilder
        .setMessage("Are you sure want to delete this item?")
        .setCancelable(false)
        .setPositiveButton("Yes", new DialogInterface.OnClickListener() {
            public void onClick(DialogInterface dialog, int id) {
                deleteRequest(itemMahasiswa);
            }
        })
        .setNegativeButton("No", new DialogInterface.OnClickListener() {
            public void onClick(DialogInterface dialog, int id) {
                dialog.cancel();
            }
        });
    AlertDialog alertDialog = alertDialogBuilder.create();
    alertDialog.show();
}

private void deleteRequest(final Mahasiswa item) {
    final ProgressDialog dialog = new ProgressDialog(context);
    dialog.setTitle("Delete Item");
    dialog.setMessage("Please wait...");
    dialog.show();
    ApiService apiService =
        ApiService.client.create(ApiService.class);
    Call<String> call = apiService.deleteMahasiswa("mahasiswa", item.getId());
    call.enqueue(new Callback<String>() {
        @Override

```

```

        public void onResponse(Call<String> call, Response<String> response) {
            Log.d("call", "call:" + call.request().toString());
            dialog.dismiss();
            if (response.body() != null) {
                Toast.makeText(context, "Success to delete data", Toast.LENGTH_LONG).show();
                finish();
            } else {
                Toast.makeText(context, "Failed to delete data", Toast.LENGTH_LONG).show();
            }
        }
        @Override
        public void onFailure(Call<String> call, Throwable t) {
            dialog.dismiss();
            Log.e(TAG, "onFailure: ", t.fillInStackTrace());
            Toast.makeText(context, "Failed to delete data", Toast.LENGTH_LONG).show();
        }
    });
}
}

```

15. Pada MainActivity.java
pada bagian deklarasi variable. Tambahkan code

```

private static final int REQUEST_CODE_ADD =1;
private static final int REQUEST_CODE_EDIT =2;

```

ganti code

```

Toast.makeText(MainActivity.this, "Add Data", Toast.LENGTH_SHORT).show();

```

Dengan

```

//Toast.makeText(MainActivity.this, "Add Data", Toast.LENGTH_SHORT).show();
Intent intent = new Intent(MainActivity.this, AddEditActivity.class);
startActivityForResult(intent, REQUEST_CODE_ADD);

```

ganti code

```

Toast.makeText(MainActivity.this, Item.getNama(), Toast.LENGTH_SHORT).show();

```

Dengan

```

//Toast.makeText(getApplicationContext(),Item.getNama(),Toast.LENGTH_SHORT).show();
Intent intent = new Intent(MainActivity.this, AddEditActivity.class);
intent.putExtra(AddEditActivity.KEY_ITEM, Item);
startActivityForResult(intent,REQUEST_CODE_EDIT);

```

Agar error code diatas tidak error, maka kita harus mengimplement Serializable pada class **Mahasiswa.java**

```

public class Mahasiswa implements Serializable

```

Tambahkan method onActivityResult pada MainActivity.java untuk menangkap nilai kembalian ketika AddEditActivity diclose.

```
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    super.onActivityResult(requestCode, resultCode, data);
    switch (requestCode) {
        case REQUEST_CODE_ADD: {
            if (resultCode == RESULT_OK && null != data) {
                if (data.getStringExtra("refreshflag").equals("1")) {
                    viewRequest();
                }
            }
            break;
        }
        case REQUEST_CODE_EDIT: {
            if (resultCode == RESULT_OK && null != data) {
                if (data.getStringExtra("refreshflag").equals("1")) {
                    viewRequest();
                }
            }
            break;
        }
    }
}
```

16. Agar bisa kirim data ke MainActivity ketika Activity AddEditActivity ditutup tambahkan method onFinish

```
@Override
public void finish() {
    System.gc();
    Intent data = new Intent();
    data.putExtra("refreshflag", "1");
    setResult(RESULT_OK, data);
    super.finish();
}
```

17. Sekarang Saatnya kita Run Projectnya.

