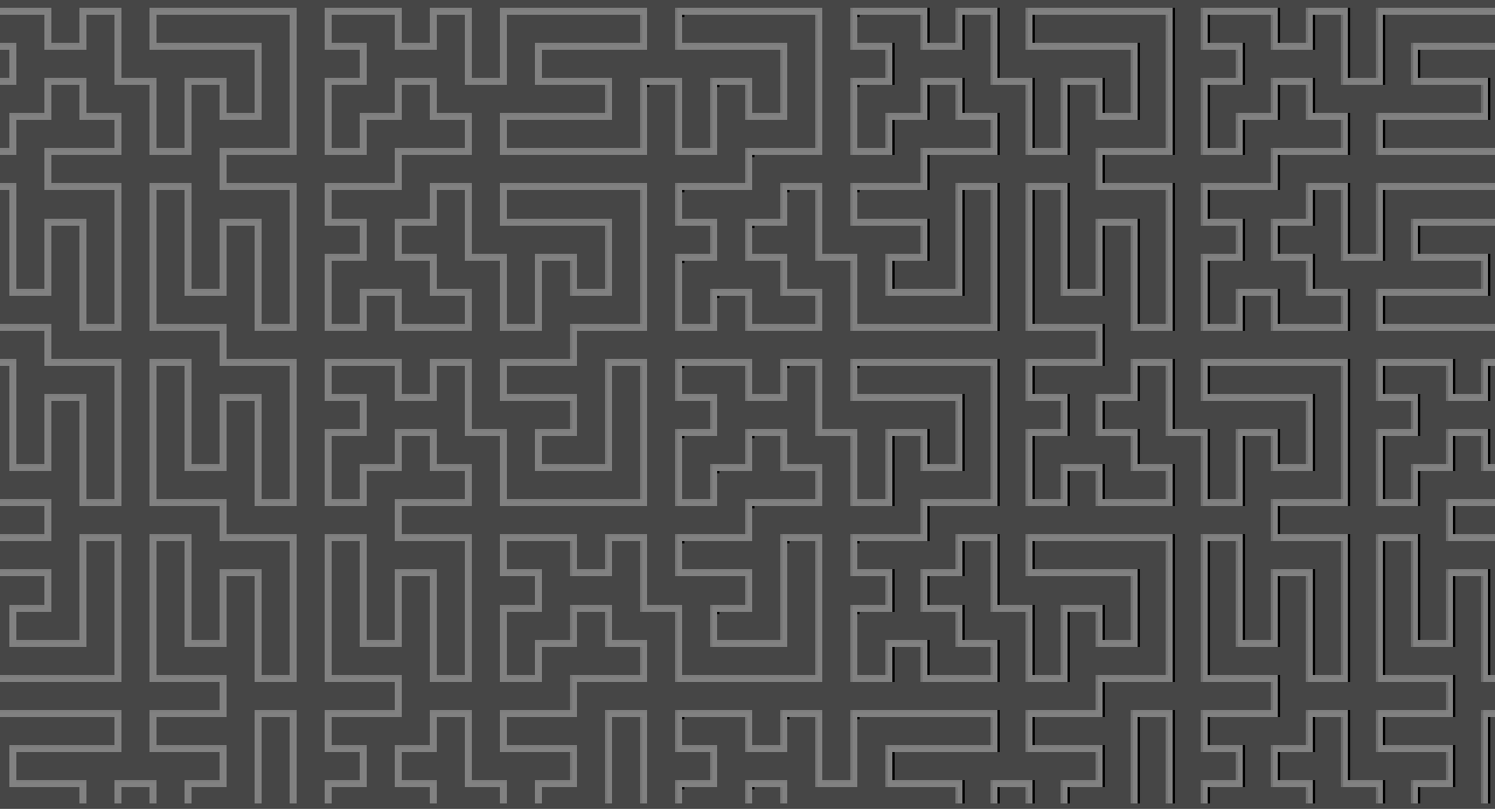
MOBILE DEVELOPMENT



Web Services and Interact with API

- Web services
- RESTful Web API
- Retrofit
- JSON
- Demo
- Exercise

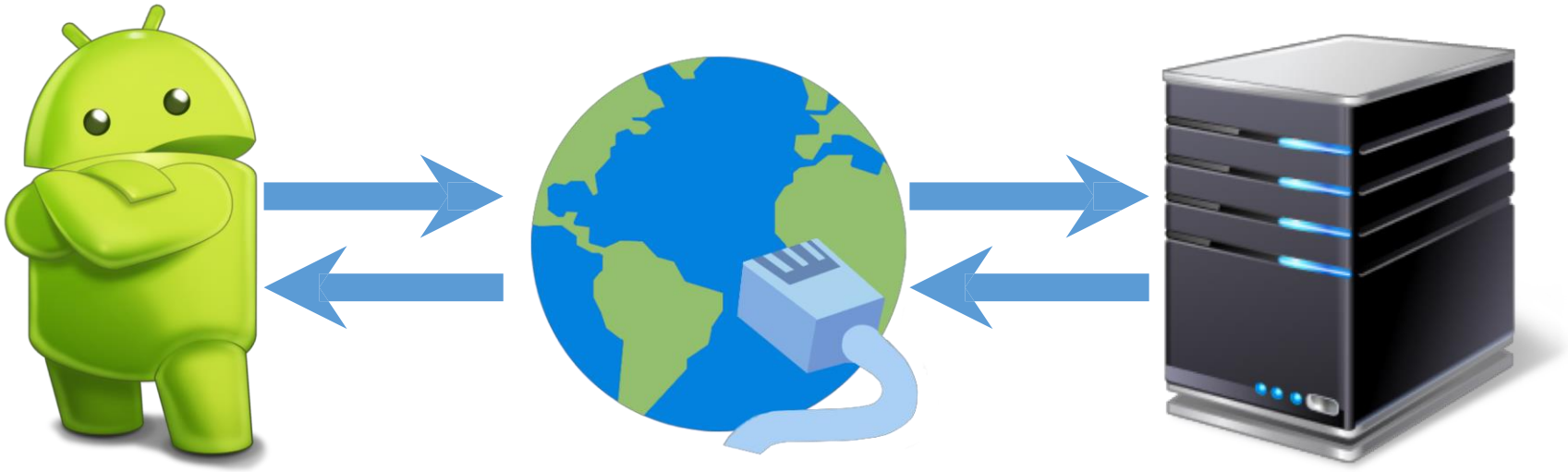
Web Services

- Expose a database / service via HTTP
- Different architectures
  - REST, RESTful
  - SOAP,Swagger etc.
- Basic idea is to manipulate a URL to allow a client application to make different requests
- Get a response in XML/JSON

Web Services to Access Data

Web Service - HTTP

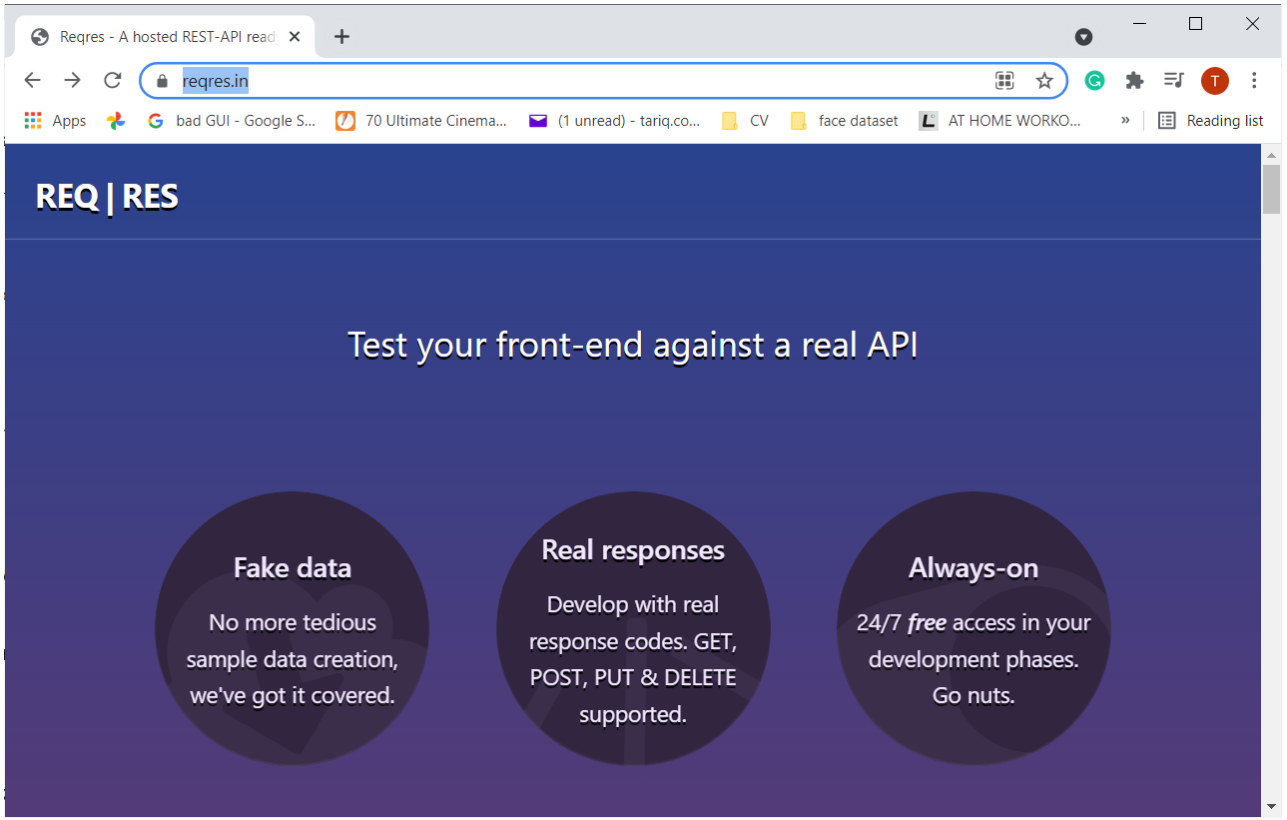
GET http://example.co.nz/students/007



Data as XML, JSON, …

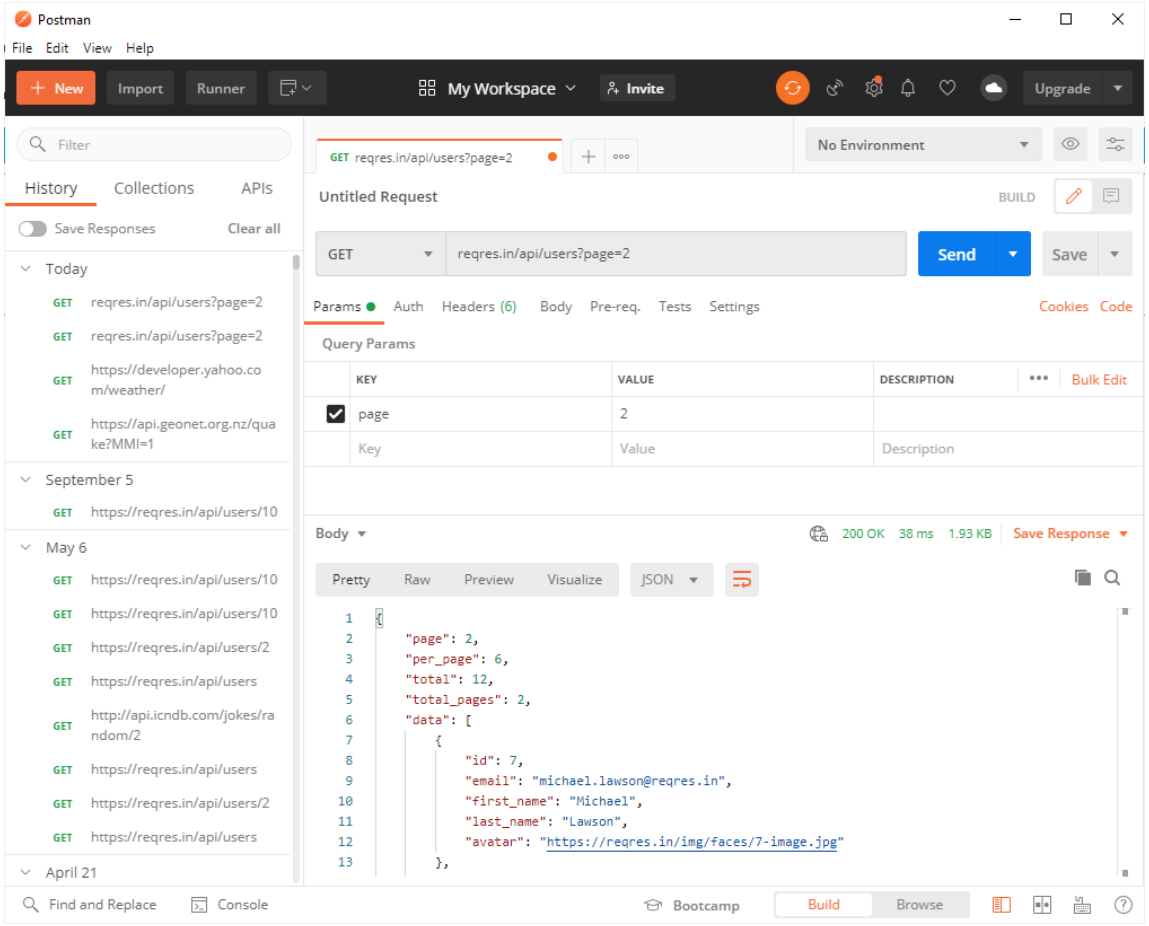
Test API

- https://reqres.in/



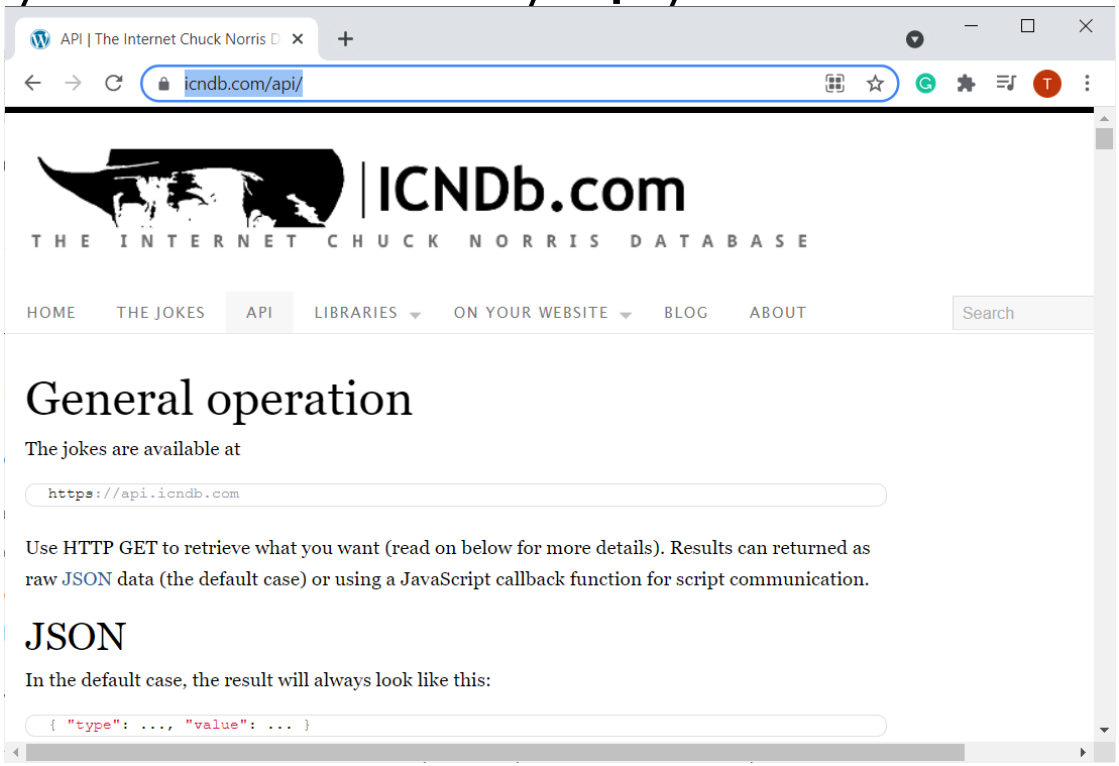
HTTP GET

- reqres.in/api/users?page=2



Jokes

- https://www.icndb.com/api/



JSON Properties

- Define objects and arrays with key value pairs
- Square brackets define arrays
- Curly Brackets define objects
- Key-values define object properties

```
[
   {
      "color":"red",
      "value":"#f00"
   },
   {
      "color":"green",
      "value":"#0f0"
   },
   {
      "color":"blue",
      "value":"#00f"
   },
   {
      "color":"cyan",
      "value":"#0ff"
   }
]
```

https://adobe.github.io/Spry/samples/data_region/JSONDataSetSample.html

- Dependencies build.gradle (Module: App) file

```
def retrofit_version = "2.8.1"
// RETROFIT
implementation "com.squareup.retrofit2:retrofit:$retrofit_version"
implementation "com.squareup.retrofit2:converter-gson:$retrofit_version"
```

Add Internet Access To Manifest file

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

Use following line to application tag in Manifest file for api 28 and above

```
android:usesCleartextTraffic="true"
```

https://developer.android.com/guide/topics/manifest/application-element

REST Api

```
public class User {
    /*{
        "id": 1,
            "email": "george.bluth@reqres.in",
            "first_name": "George",
            "last_name": "Bluth",
            "avatar": ""
    }*/
    int id;
    String email;
    String first_name;
    String last_name;
    String avatar;
}
```

```
public class Users {
    private List<User> data;

    public List<User> getValue()

}
```

User REST Api

- Create **Data Model Class(s)**
- Create **RESTApi Interface**

```
public interface UsersRESTAPI {

    @GET("users/")
    Call<Users> getUsers();
}
```

User App

- Create **Controller**

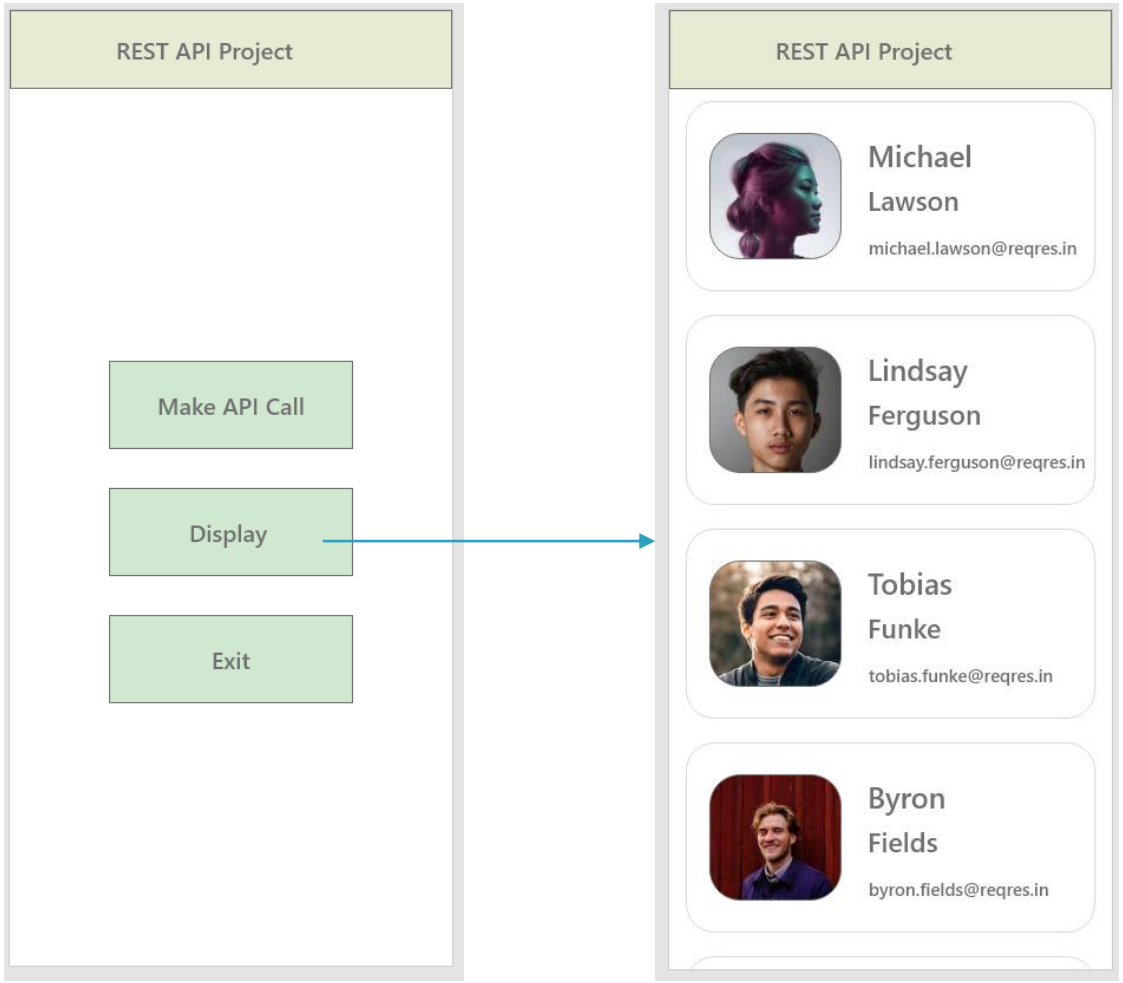
```
final String BASE_URL = "http://reqres.in/api/";
```

```
public void start(){
    Retrofit retrofit = new Retrofit.Builder()
            .baseUrl(BASE_URL)
            .addConverterFactory(GsonConverterFactory.create())
            .build();
    UsersRESTAPI usersRESTAPI =
            retrofit.create(UsersRESTAPI.class);
    Call<Users> call = usersRESTAPI.getUsers();
    call.enqueue(this);
}
```

```
@Override
public void onResponse(
            Call<Users> call, Response<Users> response)
```

```
@Override
public void onFailure(Call<Users> call, Throwable t) {
    t.printStackTrace();
}
```

Exercise


REST API Project
Make API Call
Display
Exit
REST API Project
Michael
Lawson
michael.lawson@reqres.in
Lindsay
Ferguson
lindsay.ferguson@reqres.in
Tobias
Funke
tobias.funke@reqres.in
Byron
Fields
byron.fields@reqres.in