Android Development

Networking

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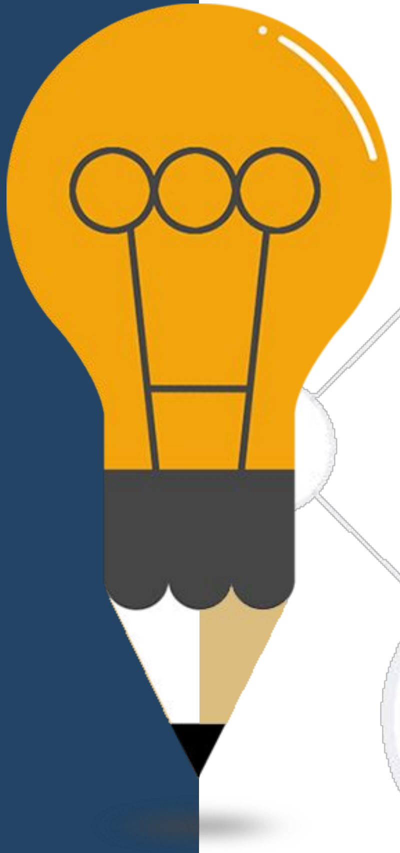
Questions

sli.do

#Android

Just a second!



Do you remember what we talked about last time?

Please fill this form: http://bit.ly/soft-uni-rec-view

This will help me understand what you remember from our previous lecture.

WebView

- It loads a web page inside your app
- You have full control over it
  - Back clicks
  - JavaScript
  - Redirects

```
webView.loadUrl(url);
```

Chrome Custom Tabs

- It loads a web page inside your app
- You don't have full control over it
- More simple than WebView
- Does not allow the developer to listen on the user's inputs

```
String url = ¨https://paul.kinlan.me/¨;

CustomTabsIntent.Builder builder = new
CustomTabsIntent.Builder();

CustomTabsIntent customTabsIntent = builder.build();

customTabsIntent.launchUrl(this, Uri.parse(url));
```

Source: https://developer.chrome.com/multidevice/android/customtabs#whentouse

Internet Requests - the Old Way

- You are responsible for the process to run on a new thread
- You should check the network state before you start, exceptions may be thrown otherwise
- A lot of boilerplate
- You should implement your own architecture over the network process

```
ConnectivityManager connMgr =
       (ConnectivityManager) getSystemService(Context.CONNECTIVITY_SERVICE);
NetworkInfo activeInfo = connMgr.getActiveNetworkInfo();

if (activeInfo != null && activeInfo.isConnected()) {
   wifiConnected = activeInfo.getType() == ConnectivityManager.TYPE_WIFI;
   mobileConnected = activeInfo.getType() == ConnectivityManager.TYPE_MOBILE;
}
```

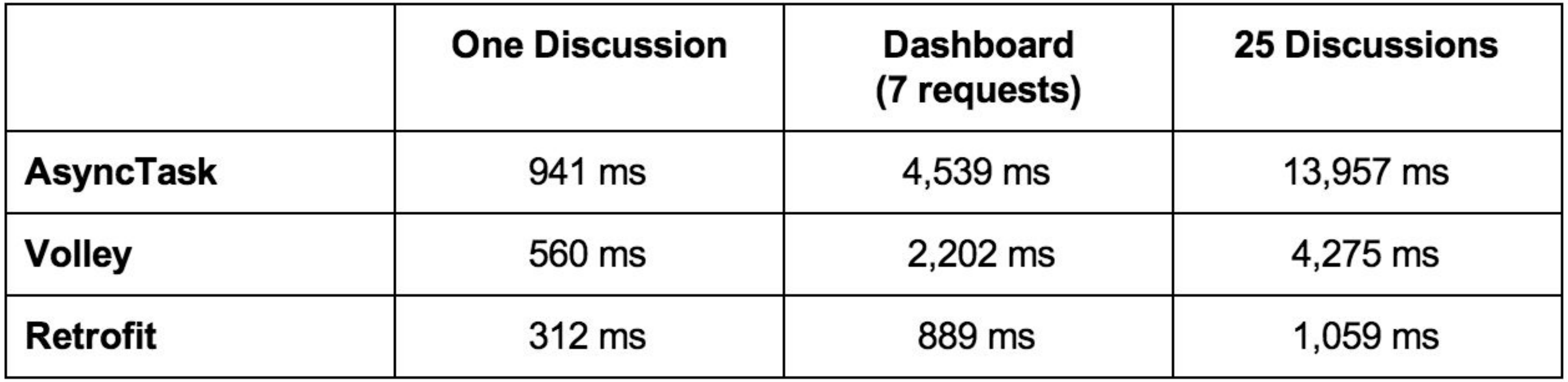
Internet Requests - the Old Way

```
URL url = new URL(urlString);
HttpURLConnection conn = (HttpURLConnection)  url.openConnection();
conn.setReadTimeout(10000 /* milliseconds */);
conn.setConnectTimeout(15000 /* milliseconds */);
conn.setRequestMethod("GET");
conn.setDoInput(true);

conn.connect();
InputStream stream = conn.getInputStream();
```

Internet Requests - Retrofit

- There are a lot of 3rd party libraries for internet connectivity
- They come pre-configured and do things easy
- Can automatically parse data
- Can run synchronously or async



	One Discussion	Dashboard (7 requests)	25 Discussions
AsyncTask	941 ms	4,539 ms	13,957 ms
Volley	560 ms	2,202 ms	4,275 ms
Retrofit	312 ms	889 ms	1,059 ms

Source: https://www.quora.com/What-is-the-difference-between-retrofit-and-volley-in-Android

Retrofit Usage

- Step I - Create Interface
  - The interface should describe all the requests you'll want to make
  - Each request is a new method in the interface
  - Each method's signatures describes what the request sends and receives

```
public interface GitHubService {
   @GET("/users/{user}/repos")
   Call<Repo> getRepos(@Path("user") String user, Callback<Repo> callback);
}
```

Source: https://square.github.io/retrofit/

Retrofit Usage

- Step II - Create the access objects
  - Create the Retrofit object and set the base url of the REST API you'll use
  - Create the services object from the retrofit object (applying the interface we created)

```
Retrofit retrofit = new Retrofit.Builder()
       .baseUrl("https://api.github.com")
       .build();
GitHubService service = retrofit.create(GitHubService.class);
```

Source: https://square.github.io/retrofit/

Retrofit Usage

- Step III - make and receive requests
  - The created object is from type Call
  - It can be executed or enqueue-d
  - A used Call cannot be re-used

```
service.getRepos("user123", new Callback<Repo>() {
  @Override
  public void onResponse(Response<Repo> response, Retrofit retrofit) {
    Repo r = response.body();
  }
  @Override
  public void onFailure(Throwable t) {
  }}).execute();
```

Source: https://square.github.io/retrofit/

Demo

Retrofit

Firebase and Amazon Web Services

- Google and Amazon services for easier life and development
- Cost money
- Can be the back bone of your app if you do not have a server
- A lot of different options

Source: https://firebase.google.com/docs/android/setup

Demo

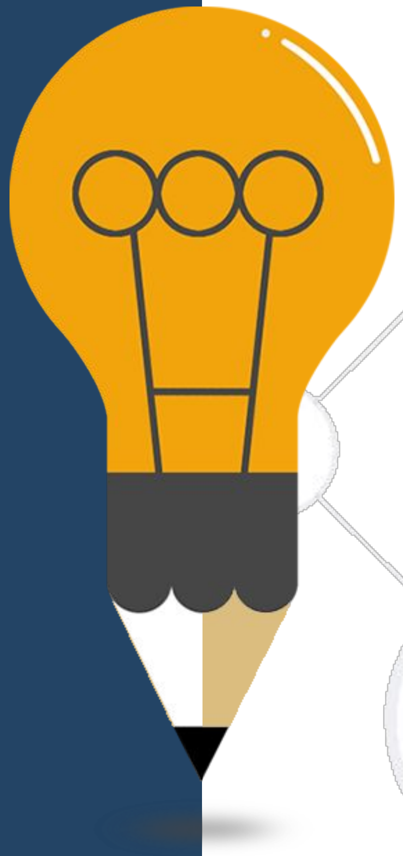
Firebase

Summary and Resources

Retrofit helps you connect your app with the internet. Use it.

Resources:

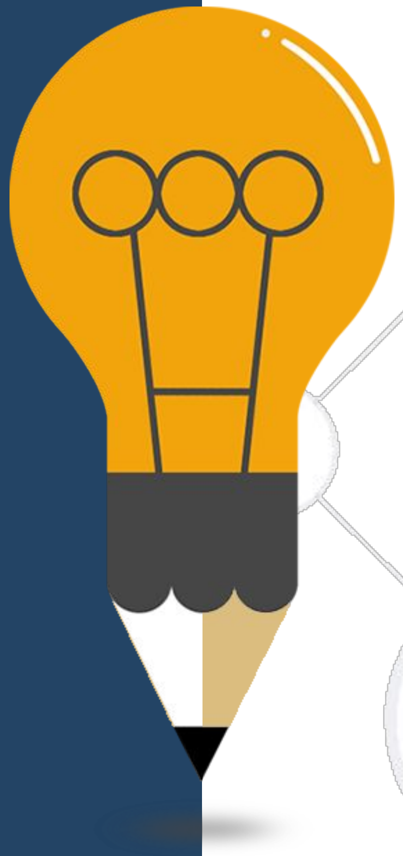
Homework (1)



Make an app showing data from the internet.

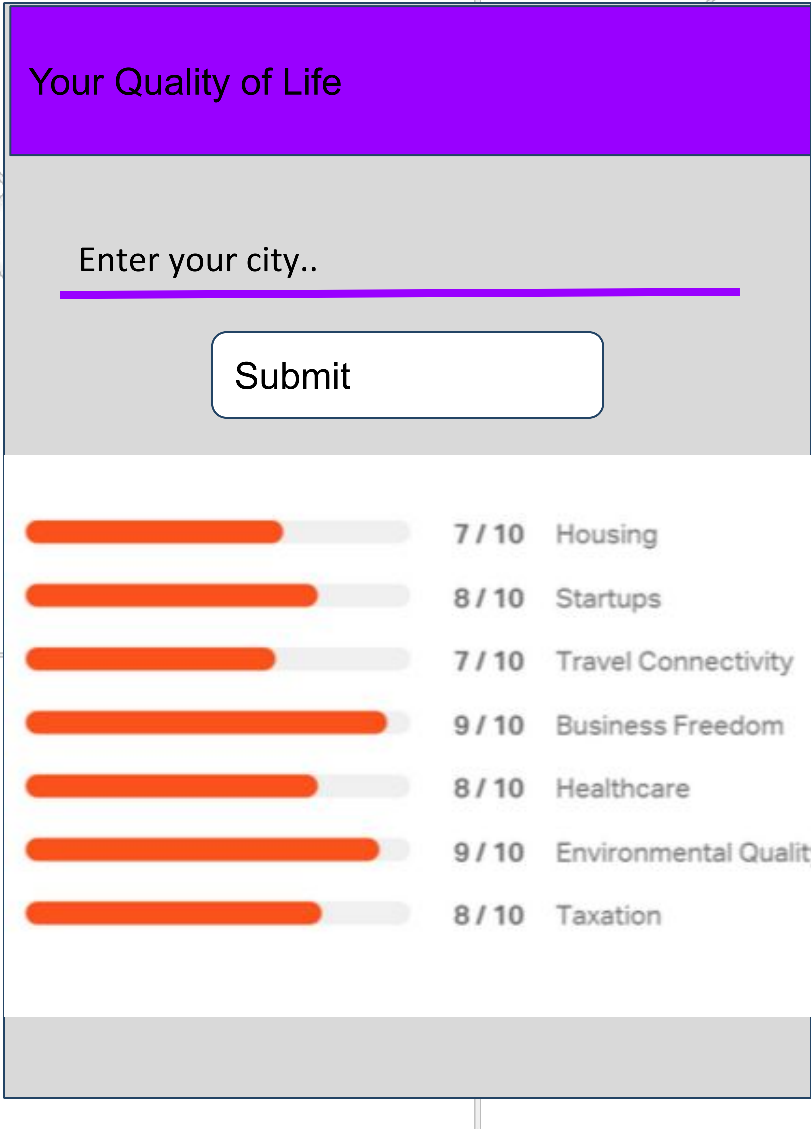
1. Choose a free api: https://github.com/toddmotto/public-apis
2. Go to its website and see how it works (if api keys are needed and so on)
3. Choose what data to show in your app from the api
4. Test the chosen requests in Postman (or other REST clients)
5. Open Android Studio, create new project
6. Create a java class (model) of the data you'll get from the api calls
7. Make the calls
8. Show the data to the user in a friendly way

Homework (1) - Example



You can use this example directly if you are lazy.

1. Choose teleport api: https://developers.teleport.org/
2. Go to its website and see how it works (if api keys are needed and so on): https://developers.teleport.org/api/getting_started/
3. Choose what data to show in your app from the api
   a. I want to show quality of life data for a city (entered by user)
   b. This is done with this: https://api.teleport.org/api/urban_areas/slug:san-francisco-bay-area/scores/
4. Decide how to show it in the app



Your Quality of Life

Enter your city..

Submit

7 / 10 Housing

8 / 10 Startups

7 / 10 Travel Connectivity

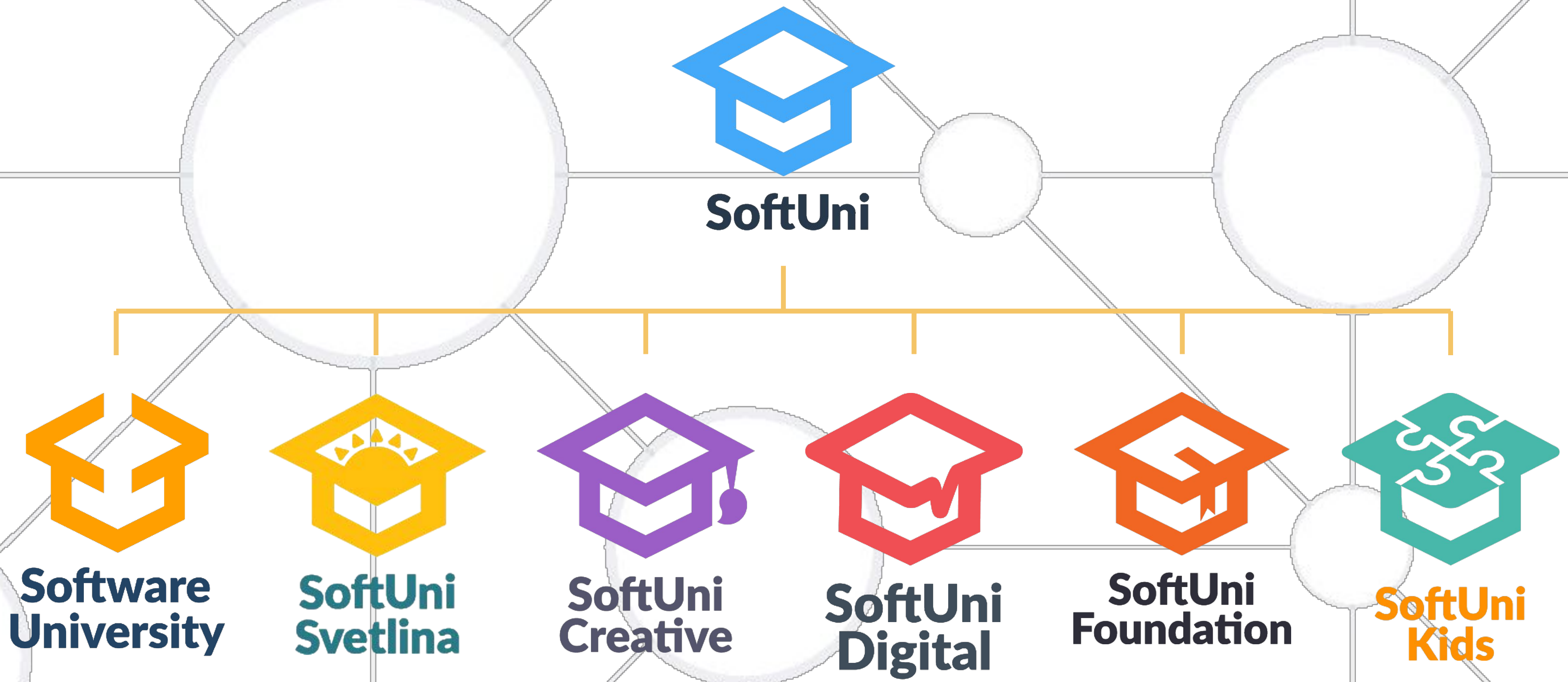
9 / 10 Business Freedom

8 / 10 Healthcare

9 / 10 Environmental Qualit

8 / 10 Taxation

Questions?



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