HTTP Protocol
Slides

Client-side Web Access
Slides

Family Map Server Web API
Slides

Threads / Main (or UI) Thread
By default, Android apps run on a single thread. This thread is called the “main” or the “UI” thread. All operations on UI widgets must be done on the UI thread.

Apps can perform multiple concurrent actions by creating additional threads. (Each thread has its own runtime stack).

Apps are not allowed to block on the main (or UI) thread. Thus, long-running I/O operations such as HTTP requests must be done on a separate thread. Android’s AsyncTask class can be used to create a new thread and run a blocking I/O operation.

Asynchronous Web Access
Async Web Access code example
AsyncTask generic parameters: 1. doInBackground input type, 2. onProgressUpdate input type, 3. doInBackground result / onPostExecute input type
doInBackground called on new thread
onProgressUpdate / onPostExecute called on main (or UI) thread

Family Map Application
HttpServletRequest class with HTTP Get/Post operations
ServerProxy class with Login(LoginParams), Sync(SyncParams) methods

Asynchronous methods with callbacks
LoginCallback(LoginResult) and SyncCallback(SyncResult)

Login Task
Sync Data Task (re-used for “Sync Data”)
Tasks invoke callbacks in their onPostExecute methods