Server Design Document

Data Communications: Big Brother 3000

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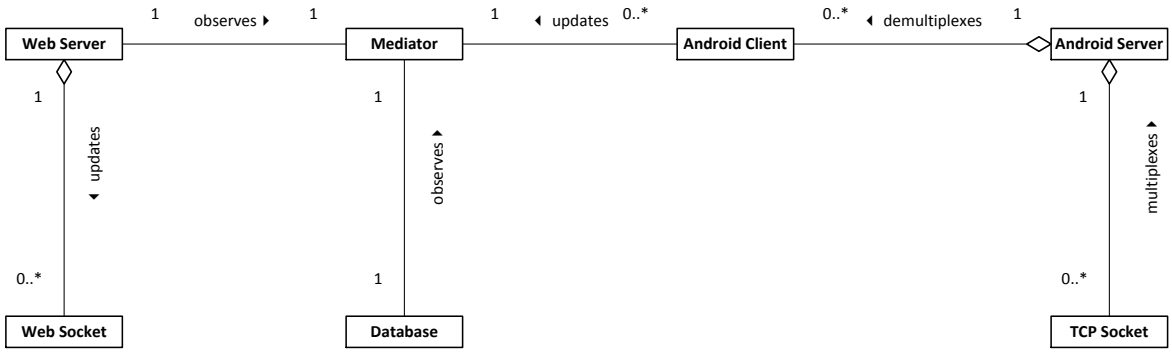
Server Class Diagram



The diagram above illustrates the classes involved in the server application:

- **TCP Socket**; socket that is connected to an android client that's being tracked by our app.
- **Android Server**; listens for any new TCP connections, and accepts them. Forwards data from sockets to its corresponding android client object to deal with.
- **Android Client**; holds state information regarding the connection, and .
- **Mediator**; receives updates from android clients, and forwards the updates to all registered observers, which are the database, and the web server.
- **Database**; stores the history of all collected GPS records. Inserts any GPS updates from the mediator into the database.
- **Web Server**; listens for new web socket connections, and accepts them. Forwards any updates to all sockets as the web server is notified from the mediator.
  Web Socket; socket that's connected to a web browser that's currently watching the website that displays the android device positions.

Server Pseudo Code

Android Server

Asynchronous Routine

```
1  when a new TCP connection is made
2      create a new Android Client object, that's mapped to the
   new TCP connection
3  when new data from a TCP connection arrives
4      forward the data from the TCP connection to the
   corresponding Android Client object
5  when a TCP connection is terminated
6      remove the TCP connection's corresponding Android Client
```

Web Server

Initialize

```
1  Register with the mediator as an observer
```

Asynchronous Routine

```
1  when notified that a new android client has connected
2      add the android client to the connected clients list
3  when notified that an existing android client has disconnected
4      remove the android client from the list of connected
   clients
5  when notified of a GPS update from a connected android client
6      send the GPS update to all connected Web Sockets
7  when a new Web Socket connection is made
8      send the new connection a list of all connected android
   clients corresponding Android Client object
```

Database

```
1  when notified of a GPS update from a connected android client
2      insert the GPS update into the database
```

Android Client

Initialize

```
1  notify the mediator that a new android client has connected
```

Received Data

```
1  parse information into GPS update information
2  notify the mediator of the GPS update
```

Destroy

```
3  notify the mediator that an existing android client has
   disconnected
```

Mediator

Register

```
1  add the registering object to a list of registered objects
```

Receive GPS Update

```
1  sends the GPS update to all registered objects
```

New Android Client Connected

```
1  sends the connection update to all registered objects
```

Existing Android Client Disconnected

```
1  sends the disconnection update to all registered objects
```