

Porting PSync C++ library to Java

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NEED

- No client library available for PSync
 - So currently not available for Android applications.
- Needed as some applications may desire only a subset of available data (Twitter)

APPROACH

- Write Java implementation from scratch by looking at the current ndn-cxx C++ implementation
- Find libraries for Bloom Filter and IBF
 - <https://github.com/kallerosenbaum/ibltj>
 - Google Guava Bloom Filter library
- Create an Android application

BENEFIT

- Java users and Android users can use the application
 - Ex: NDN Snapchat
- Same implementation of the library as C++ (ndn-cxx)
 - Same API

ACHIEVED

- PSync Java Library
 - Identify Bloom Filter and IBF library
 - PSync Partial Producer almost ready
 - Hello working
 - Sync not working - need to figure out how to use the IBF library correctly
 - PSync Consumer ready
- Demo application
 - Hello ready - need to let user select data from hello data
 - Send sync interest after selecting the subscription data

ALTERNATIVES

- Have a wrapper around the C++
 - A bit harder for Android applications to use
 - Wanted to have a fresh implementation to gain more experience about details of PSync
- Could have rolled out our own pending interest logic
 - Used modified MemoryContentCache that exposes pending sync interest table to to PSync

LINK

- Source code available at:

<https://github.com/6th-ndn-hackathon/psync-java>

- Master branch has the Java library with an example using the partial consumer
- Android-app branch has the simple application

DEMO

```
TestLogic (1) [Java Application] /usr/lib/jvm/java-9-openjdk-amd64/bin/java (May 14, 2018, 4:11:54 PM)
May 14, 2018 4:11:55 PM net.named_data.jndn.Node$RegisterResponse onData
INFO: Register prefix succeeded with the NFD forwarder for prefix /testData000
May 14, 2018 4:11:55 PM net.named_data.jndn.Node$RegisterResponse onData
INFO: Register prefix succeeded with the NFD forwarder for prefix /testSync/hello
May 14, 2018 4:11:55 PM net.named_data.jndn.Node$RegisterResponse onData
INFO: Register prefix succeeded with the NFD forwarder for prefix /testSync/sync
May 14, 2018 4:11:55 PM net.named_data.jndn.Node$RegisterResponse onData
INFO: Register prefix succeeded with the NFD forwarder for prefix /testData1010
May 14, 2018 4:11:55 PM net.named_data.jndn.Node$RegisterResponse onData
INFO: Register prefix succeeded with the NFD forwarder for prefix /testData2020
May 14, 2018 4:11:55 PM net.named_data.jndn.Node$RegisterResponse onData
INFO: Register prefix succeeded with the NFD forwarder for prefix /testData3030
May 14, 2018 4:11:55 PM net.named_data.jndn.Node$RegisterResponse onData
INFO: Register prefix succeeded with the NFD forwarder for prefix /testData4040
May 14, 2018 4:11:55 PM net.named_data.jndn.Node$RegisterResponse onData
INFO: Register prefix succeeded with the NFD forwarder for prefix /testData5050
May 14, 2018 4:11:55 PM net.named_data.jndn.Node$RegisterResponse onData
INFO: Register prefix succeeded with the NFD forwarder for prefix /localhost/psync/publish
Received Hello Interest /testSync/hello
/testSync/hello/120/%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%
Sent Hello data net.named_data.jndn.Data@50de0926
```


