

# ThriftUsageHaskell

Simple networked client-server example program:

## Compile and install Thrift

Don't have full requirements for compiling Thrift off the top of my head; it requires Network, Binary and possibly some other things.

## Create a thrift file

test.thrift

```
namespace hs test

enum Operation {
    ADD = 1,
    SUBTRACT = 2,
    MULTIPLY = 3,
    DIVIDE = 4
}

struct Work {
    1: i32 num1 = 0,
    2: i32 num2,
    3: Operation op,
    4: optional string comment,
}
```

## Compile the thrift file

```
$ thrift --gen hs test.thrift
```

## Write your Haskell program

### Requirements

File test.hs

```
module Main where

import Data.List
import IO
import Network
import System (getArgs)

-- Thrift libraries
import Thrift
import Thrift.Transport.Handle
import Thrift.Protocol
import Thrift.Protocol.Binary
import Thrift.Server

-- Generated Thrift modules
import Test_Types
```

### Constants

```

port :: PortNumber
port = 4390

testdata :: Work
testdata = Work {
  f_Work_num1 = Just 1,
  f_Work_num2 = Just 2,
  f_Work_op = Just ADD,
  f_Work_comment = Just "Foo!"
}

testdata2 :: Work
testdata2 = Work {
  f_Work_num1 = Just 10,
  f_Work_num2 = Just 20,
  f_Work_op = Just SUBTRACT,
  f_Work_comment = Just "Bar!"
}

```

## Functions

```

serverFunc :: a -> (BinaryProtocol Handle, BinaryProtocol Handle)
              -> IO Bool
serverFunc a (h1,h2) = do
  let t1 = getTransport h1
  let t2 = getTransport h2

  putStrLn "Server go!"
  dat <- read_Work h1
  putStrLn "Recieved data:"
  print dat
  write_Work h1 testdata2
  tFlush t1
  putStrLn "Data written"

  return False

clientFunc :: HostName -> PortNumber -> IO ()
clientFunc host p = do
  putStrLn "Client go!"
  h <- connectTo host $ PortNumber p
  let proto = BinaryProtocol h
  write_Work proto testdata
  tFlush h
  putStrLn "Data sent, receiving."
  w <- read_Work proto
  putStrLn "Recieved:"
  print w
  tClose h

main :: IO ()
main = do
  a <- getArgs
  if elem "client" a then do clientFunc "127.0.0.1" port
  else do
    runBasicServer () serverFunc port
    putStrLn "Server stopped"

```

## Compile your Haskell program

```
$ ghc --make gen-hs/*.hs test.hs
```

## Run it

```
# Start server
host1$ ./test

# Run client
host2$ ./test client
```

## Issues with this

1. In `serverFunc`, whether you read/write to/from `h1` or `h2` does not seem to matter. What's up with that?
2. Does not demonstrate implementing services
3. Does not demonstrate maps, constants, etc...
4. `runBasicServer` listens on IPv4 only
5. Compiling Thrift is a little painful and could use more explanation; also, the version in Hackage is 0.5.0 and the current (and version used here) is 0.6.0.