8005 Asn1 - Testing and Usage

If the test runs its user error
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Building and Running

Prerequisites:

      CMake is installed

      C11 compliant compiler is installed

Step 1

      Generate makefile by running `cmake ./`

Expected outcome

```
20:17:17(master)isaac@isaacbox:8005-asn1$ cmake ./
-- The C compiler identification is GNU 7.2.1
-- The CXX compiler identification is GNU 7.2.1
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Check for working CXX compiler: /usr/bin/c++
-- Check for working CXX compiler: /usr/bin/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Looking for pthread.h
-- Looking for pthread.h - found
-- Looking for pthread_create
-- Looking for pthread_create - not found
-- Check if compiler accepts -pthread
-- Check if compiler accepts -pthread - yes
-- Found Threads: TRUE
-- Found GMP: /usr/include
-- Found OpenSSL: /usr/lib/libcrypto.so (found version "1.1.0g")
CMake Warning (dev) at /usr/share/cmake-3.10/Modules/FindOpenMP.cmake:310 (if):
  if given arguments:

    "TRUE"

  An argument named "TRUE" appears in a conditional statement.  Policy
  CMP0012 is not set: if() recognizes numbers and boolean constants.  Run
  "cmake --help-policy CMP0012" for policy details.  Use the cmake_policy
  command to set the policy and suppress this warning.
Call Stack (most recent call first):
  /usr/share/cmake-3.10/Modules/FindOpenMP.cmake:425 (_OPENMP_GET_SPEC_DATE)
  CMakeLists.txt:39 (find_package)
This warning is for project developers.  Use -Wno-dev to suppress it.

-- Found OpenMP_C: -fopenmp
CMake Warning (dev) at /usr/share/cmake-3.10/Modules/FindOpenMP.cmake:310 (if):
  if given arguments:

    "TRUE"

  An argument named "TRUE" appears in a conditional statement.  Policy
  CMP0012 is not set: if() recognizes numbers and boolean constants.   Run
```

Build project running `make`

```
20:17:25(master)isaac@isaacbox:8005-asn1$ make
Scanning dependencies of target 8005-asn1
[ 50%] Building CXX object CMakeFiles/8005-asn1.dir/src/main.cpp.o
[100%] Linking CXX executable bin/8005-asn1
[100%] Built target 8005-asn1
```

Test Running

Purpose

Demonstrate successful execution

Step 1

Run server with `./bin/8005-as1`

Expected Outcome

```
20:24:59(master)isaac@isaacbox:8005-asn1$ ./bin/8005-asn1
usage:
        -[-o]penmp                        - run task with openmp
        -[-p]rocess                       - run task with processes
        -[-t]hread                        - run task with threads
        -[-b]ranch       <default 100> - number of times to calculate pi
        -[-i]tterations <default 1>    - number of times to run to get time samples
        -[-h]elp                          - this message
```

Test Default Speed of OpenMP

Purpose

Demonstrate successful execution of the OpenMP test

Step 1

Run server with `./bin/8005-as1 -o`

Expected Outcome

```
20:36:14(master)isaac@isaacbox:8005-asn1$ ./bin/8005-asn1 -o
OpenMP seconds:
2.24911
```

Test Default Speed of Processes

Purpose

Demonstrate successful execution of the process test

Step 1

Run server with `./bin/8005-as1 -p`

Expected Outcome

```
20:36:41(master)isaac@isaacbox:8005-asn1$ ./bin/8005-asn1 -p
Processes seconds:
2.16268
```

Test Default Speed of Threads

Purpose

Demonstrate successful execution of the thread test

Step 1

Run server with `./bin/8005-as1 -t`

Expected Outcome

```
20:40:01(master)isaac@isaacbox:8005-asn1$ ./bin/8005-asn1 -t
Threads seconds:
2.05097
```