CS455 – Lab Session 04

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Agenda

• ASG 01 – Submission
• Quiz 2 review
• ASG 02 – High level idea of ThreadPool

ASG 01 - Submission

• ASG 01 Programming component is due Wednesday, 15th Feb. by 5:00 p.m.
• ASG 01 Written component is due Friday, 17th Feb. by 5:00 p.m.

What to Submit

• Use the CS455 checkin program to submit a single .tar file that contains:
  • All the Java files related to the assignment (please document your code)
  • A Makefile that performs both a make clean as well as a make all
  • A README.txt file containing a description of each file and any information you feel the GTA needs to grade your program.
• The folder set aside for this assignment’s submission using checkin is HW1-PC

Quiz 2 review

1. In layered network architectures, layers at lower levels in the hierarchy are dependent on services provided by higher levels. [True/False]

2. Given that TCP/UDP layer handles the process-to-process communication, which is crucial, it is considered as the focal point of the Internet architecture. [True/False]

3. When the MTU (Maximum Transmission Unit) for a network type is smaller than the datagram packet that needs to be transmitted, IP will manage its fragmentation and reassembly. If any of the fragments are lost in transit, IP gives up reassembly of the datagram packet and any fragments that were received are discarded. [True/False]

4. Maximum Transmission Unit (MTU) on a link depends on:
   a. IP version (IPv4 vs IPv6)
   b. Network type
   c. Both a and b
   d. None of the above

5. Why are port numbers in TCP and UDP limited to 0-65535?
   a. Port numbers in TCP and UDP are only used for identification purposes.
   b. Port numbers in TCP and UDP are limited to 0-65535 due to historical limitations.
   c. Port numbers in TCP and UDP are limited to 0-65535 because of hardware limitations.
   d. Port numbers in TCP and UDP are limited to 0-65535 to prevent address conflicts.

6. In UDP, if the queue associated with a port is full and a new datagram packet arrives that packet will be discarded. [True/False]
Quiz-2 review

7. The size of the TCP sliding window is based on:
   a. The Delay x Bandwidth product between the sender and receiver
   b. The memory set aside by the sender for the particular connection
   c. The memory set aside by the receiver for the particular connection
   d. All of the above

8. In TCP each byte has a sequence number associated with it. [True/False]

ASG2: High Level Overview

• One Server
• Contains a threadpool (implemented by you)
• 100+ Clients
• A Client generates a random byte]
• The server replies with an acknowledgement which is a hash of the data
• Ensure data remains uncorrupted by computing hashes

ThreadPool

High level ideas
• Threads created once and operate on different tasks throughout their lifetime
• In other words threads never leave the run method.
• As tasks become available, they will be given to the threads in the pool.
• When a thread has completed its task, it will add itself back to the pool
• Tasks are given to the pool from the ThreadPoolManager

ThreadPoolManager

• ThreadPoolManager maintains a list of the work that it needs to perform.
• Maintains these work units (Tasks) in a FIFO queue
• Implemented using the linked list data structure
• Work units are added to the tail of this work queue
• When spare workers are available, they are assigned work from the top of the queue.
• If no workers are available, the Tasks enter the queue and wait for a free worker.
**ThreadPool**

- This class be created independently of the rest of the system.
- The pool is abstracts the resources (threads) being available or unavailable as execution goes on.
- The actual work, or Task, should be independent.

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**ThreadPool**

- So you can create ThreadPool with junk tasks and queue them.
- Test your ThreadPool with these tasks before attempting network communications.

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**QUESTIONS ?**