

15-440: Distributed Systems

Rubrics of Project 1

School of Computer Science
Carnegie Mellon University, Qatar
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Common Package (Points: 10%)

- Path class

RMI (Points: 40%)

- Multi-threaded servers (Points: 4%)
 - All servers/skeletons should be multi-threaded. No clients should wait while another client is waiting
- SkeletonTest (Points: 18%)
 - Skeleton unmarshalls variables and marshalls return values correctly (Points: 2%)
 - Skeleton links to the correct Class object (Points: 5%)
 - Skeleton dispatches to the correct method for any invocation class (Points: 5%)
 - Error/Exception checks (Points: 6%)
 - Trivial errors, such as passing null as parameters, should be rejected
 - Skeleton should reject RMI methods that do not throw RemoteException
 - Skeleton rejects non-matching class parameter and server object
- Stub Test (Points: 18%)
 - Stub connects to skeleton (Points: 2%)
 - Stub marshalls all types of arguments correctly and unmarshalls return result (Points: 2%)
 - Stub can be created at a remote IP address and port (Points: 3%)
 - Stub can be created with a given skeleton class (Points: 3%)
 - Error/Exception checks (Points: 8%)
 - Code should check if skeleton has started
 - Stub should be created only from an interface
 - Cases where interface does not throw RemoteException should be rejected
 - Trivial errors, such as passing null as parameters, should be rejected

Storage server (Points: 20%)

- Registration Test(Points: 10%)
 - Storage server should register to the naming server
 - Storage server should prune empty directories
- FileAccessTest(Points: 5%)
 - Size test
 - For Valid files
 - For Invalid files
 - For null args (trivial args)
 - Read test
 - Should not be able to read directories
 - Reading empty file
 - null args (trivial args)

- Write test
 - Write to non-existent file should be rejected
 - Write a directory should be rejected
 - null args for file and/or data (trivial args)
- Write-local read
 - The file written through client should be same as local file stored on disk
- Write-Read OutOfBounds
 - Read beyond file size should not be allowed
 - Reading negative lengths should not be allowed
 - Writing files with negative offset should not be permitted ○

Append test

- Directory tests(Points: 5%)
 - File create Test
 - Should not be able to create root dir
 - File should be created directly under root directory
 - Creating directory with null args (trivial case) should not be allowed
 - Cannot create file/dir that is already present
 - Check if file is created with read/write perms
 - Delete test
 - Client should not be able to delete root
 - Client should not be able to delete file/dir with null args (trivial case)
 - Client should not be allowed to delete a non-existing file/dir
 - Prune empty directories

Naming server (Points: 25%)

- Contact tests (Points: 1%)
 - Test if naming server has opened one port for registration and one for service
- Registration test(Points: 6%)
 - Cannot register with null args (trivial test)
 - Merge two storage server file meta data
- List files(Points: 6%)
 - Cannot list with null args (trivial test)
 - List non-existent file/dir
 - Test listing files/dirs
- Create files/directory (Points: 6%)
 - Cannot create file/dir with null args (trivial test)
 - Cannot create root directory
 - Cannot create file/dir under parent directory that does not exist
 - Cannot create a file/dir with an already existing file/dir
- Stub retrieval tests(Points: 6%)
 - Trivial tests
 - Start two storage servers with initial set of files. Retrieve the storage server stub from naming for those files. Check and see if they match

Code Style (Points 5%)

- Method Comments, Block comments, Readability, Dead code, Code design

Bonus (Points: 10%)

- Implementation of Delete functionality