Programming Assignment 4 Demo Procedure

Key-value store put/get

You will first start four replicas: S1, S2, S3, and S4, in hinted handoff mode. At least one of them has to be on a different physical machine than others. Initially, all four replicas are empty, containing no key-value pairs.

A client, C1, selects S1 as the coordinator and issues the following request:

client	coordinator	consistency	operation	key	value
C1	S1	ONE	put	10	aaaa

Another client, C2, selects S2 as the coordinator and issues the following request:

client	coordinator	consistency	operation	key	value
C2	S2	ONE	get	10	(Expected result: aaaa)

Write-ahead log

Kill all servers via command line, then restart S1. Instruct a client, C3, to issue the following request:

client	coordinator	consistency	operation	key	value
C3	S1	ONE	get	10	(Expected result: aaaa)

Hinted handoff

Restart S2, S3, and S4 so that all four replicas are up and running.

Kill S1. Instruct a client, C4, to issue the following request:

client	coordinator	consistency	operation	key	value
C4	S2	ONE	put	10	bbbb

Restart S1. Instruct another client, C5, to issue the following request:

client	coordinator	consistency	operation	key	value
C5	S1	ONE	put	20	cccc

Kill S2, S3, S4. Instruct C5 to issue the following request:

client	coordinator	consistency	operation	key	value
C5	S1	ONE	get	10	(Expected result: bbbb)

Configurable consistency level

With S2, S3, S4 killed, instruct C5 to issue the following request:

client	coordinator	consistency	operation	key	value
C5	S1	TWO	get	10	(Expected result: exception)

Read repair

Start four new empty replicas, S5, S6, S7, and S8 in read repair mode.

Instruct a client, C6, to do the following:

client	coordinator	consistency	operation	key	value
C6	S5	TWO	put	30	dddd

Kill S8.

client	coordinator	consistency	operation	key	value
C6	S5	TWO	put	30	eeee

Restart S8. Start a new client C7 to issue the following request:

client	coordinator	consistency	operation	key	value
C7	S8	ONE	get	30	(Expected result: dddd)

Instruct C6 to issue the following request:

client	coordinator	consistency	operation	key	value
C6	S5	TWO	get	30	(Expected result: eeee)

Kill S5, S6, and S7. Instruct C7 to issue the following request:

client	coordinator	consistency	operation	key	value
C7	S8	ONE	get	30	(Expected result: eeee)