

Distributed System I

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Assignment 1

Ciheng Zhang (3472321) zch3183505@gmail.com
Chenxi Li(3502796) cli216@outlook.com
Leqi Xu(3556962) st176119@stud.uni-stuttgart.de
Yaosheng Zheng (3563285) zhengyaosheng312@icloud.com
Team 19

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5.5/11

1 Parameter Passing and RMI

2/3 a)

- i. Call-By-Value:[0,2,8,4,8] 1
- ii.Call-By-Reference:[0,2,16,12,32] 0
- iii.Call-By-Copy: 1. No Aliasing:[0,2,16,12,32], 2.Aliasing:[0,2,8,4,8] 1

Follow up error from ii)

2/2 b)

1. Listing 1: we can't add element to a list like in line 5, 0.5

```

4      public Vector(int x, int y, int z){
5          this.values.add(x);
6          this.values.add(y);
7          this.values.add(z);
8      }

```

2. we should extend Java RMI: 0.5

```

1      public interface RemoteVector extends java.rmi.Remote{
2          ...
3      }

```

- 3.there is no methode connect in java.rmi.connect(line 29): 0.5

```

26     public static void main ( String [] args ) throws Exception {
27         Server serverVector1 = new Server (4 ,5 ,6);
28         Server serverVector2 = new Server (1 ,2 ,3);
29         java . rmi . Naming . rebind (" rmi :// localhost /v1",
30             serverVector1 );
31         java . rmi . Naming . rebind (" rmi :// localhost /v2",
32             serverVector2 );
31     }
32 }

```

4. in line 5,6 we need force type conversion: 0.5

```

5      RemoteVector rb1 = (RemoteVector) java . rmi . Naming .
        lookup (" rmi :// localhost /v1");
6      RemoteVector rb2 = (RemoteVector) java . rmi . Naming .
        lookup (" rmi :// localhost /v2");

```

1.5/3

c)

- 1.: 4,5,6
- 2.: 1,2,3
- 3.: 5,7,9

1. wrong values
2. and 3. have the wrong order

0/3

11/13 2 Chord System

3/3 a)

FT1:	
1	4
2	4
3	8
4	14
5	22

FT4:	
1	8
2	8
3	8
4	14
5	22

FT8:	
1	14
2	14
3	14
4	22
5	28

FT14:	
1	22
2	22
3	22
4	22
5	1

FT22:	
1	28
2	28
3	28
4	1
5	8

FT28:	
1	1
2	1
3	1
4	4
5	14

2/2 b)

At first $31 > 22$ so go Node 22.
then $31 > 28$ and $31 < 33(1)$ so go Node 28
Then return 1

2/2 c)

FT24:	
1	28
2	28
3	28
4	1
5	8

FT22.1 and 2 change to 24, FT8.5 change to 24.

3/3 d)

The modified Chord system reduced storage but increase the lookup operation.
Because each fingertable have less numbers. That's mean we have less chance
got $p=e$ situation. So in average we need to find more times.

1/3 e)

No, For example, $m = 3$ and $ID_1(N) = 4$. Then $ID_2 = 4$ is equal to ID_1 .

7/9 3 Name Services

More details.
How do you solve the problem?

2/3 a)

1. 8 messages for Iter and 8 messages for Recursive.
2. 6 messages for Iter and 6 messages for Recursive.
3. 8 messages for Iter and 8 messages for Recursive.

+2 everywhere.
Also at b)

3/3 b

1. 8 messages and 320ms for Iterative. 8 messages and 200ms for Recursive
2. 4 messages and 160ms for Iterative. 4 message and 120ms for Recursive
3. 8 messages and 320ms for Iterative. 8 messages and 200ms for Recursive

c

0/1 i. They are not replicated.

2/2 ii. the under figure

```
>>> DiG 9.11.4-P2-RedHat-9.11.4-26.P2.el7_9.2 <<< @8.8.8.8 +trace www.uni-stuttgart.de
; (1 server found)
;; global options: +cmd
80226 IN NS e.root-servers.net.
80226 IN NS h.root-servers.net.
80226 IN NS l.root-servers.net.
80226 IN NS i.root-servers.net.
80226 IN NS a.root-servers.net.
80226 IN NS d.root-servers.net.
80226 IN NS c.root-servers.net.
80226 IN NS b.root-servers.net.
80226 IN NS j.root-servers.net.
80226 IN NS k.root-servers.net.
80226 IN NS g.root-servers.net.
80226 IN NS m.root-servers.net.
80226 IN NS f.root-servers.net.
80226 IN RRSIG NS 8 0 518400 20201219170000 20201206160000 26116 . dJuD
21YgzDZiNZaYXASassJtJ5vBYsVl9dSNX3uHmhl0mU AVdfZrSMfH6CzQzKMoffA2AsN5pTvRukNbiiirTiI5daTZDzgeW9GrOMi 1x1
;; Received 525 bytes from 8.8.8.53(8.8.8.8) in 0 ms

de. 172800 IN NS n.de.net.
de. 172800 IN NS a.nic.de.
de. 172800 IN NS s.de.net.
de. 172800 IN NS l.de.net.
de. 172800 IN NS z.nic.de.
de. 172800 IN NS f.nic.de.
de. 86400 IN DS 45580 8 2 918C32E2F12211766BE6226674F447458F2259B9A0D87E
de. 86400 IN RRSIG DS 8 1 86400 20201219170000 20201206160000 26116 . affwE
fsRji2sKtYq2Zrd9N9kseFgIMtFWovHntOG06wjGw4 43aLz4eyhHKPZoZJJEXGT9qMsB1ji7hxd0q+jigkUItnVSZFXujyJzba 2w+
;; Received 754 bytes from 192.112.36.4#53(g.root-servers.net) in 35 ms

uni-stuttgart.de. 86400 IN NS dns3.belwue.de.
uni-stuttgart.de. 86400 IN NS dns1.uni-stuttgart.edu.
uni-stuttgart.de. 86400 IN NS minnehaha.rhrk.uni-kl.de.
uni-stuttgart.de. 86400 IN NS dns1.belwue.de.
uni-stuttgart.de. 86400 IN NS dns0.uni-stuttgart.de.
uni-stuttgart.de. 86400 IN DS 53428 10 2 46A9DE33B8F5A3C45AC50F78B8325F612147F989A4FEC
uni-stuttgart.de. 86400 IN DS 5796 10 2 80448384B6557435DECB49C393B7314A922327551A8F24
uni-stuttgart.de. 86400 IN RRSIG DS 8 2 86400 20201217104338 20201203091338 60906 de. ksw
;; Received 619 bytes from 194.0.0.53#53(a.nic.de) in 1 ms

www.uni-stuttgart.de. 3600 IN A 129.69.8.19
www.uni-stuttgart.de. 3600 IN RRSIG A 10 3 3600 20201216000051 20201205235551 36245 uni-stu
3mxCAyzDS17fVPJAMILFs+bLNRXr086Kn3hZybdPpNvdzdUmKRC7W10 kXwyutS/M6XKYdL05vJja43h9qD/2XH+VTBotFdTg7K0wbL
N +E1G6WkX05eDgc6TYon31/0r1Yf50q6Hhg48kmaV0kbPjjPIfM8dhxOp 3WtkVAPqTh+zhGiu7EbYRkMQYc0Lwga/hxhSZkRPKJe6L
uni-stuttgart.de. 3600 IN NS dns3.belwue.de.
uni-stuttgart.de. 3600 IN NS dns1.belwue.de.
uni-stuttgart.de. 3600 IN NS dns0.uni-stuttgart.de.
uni-stuttgart.de. 3600 IN NS dns1.uni-stuttgart.edu.
uni-stuttgart.de. 3600 IN NS minnehaha.rhrk.uni-kl.de.
uni-stuttgart.de. 3600 IN RRSIG NS 10 2 3600 20201216000051 20201205235551 36245 uni-stu
K 3ozgXbBankz0HDHXfV0JNaS/JZZjmMgnBKThnofY9YrsCSECVlt9+qWA oH1scmBSMkCzR5NsKOTi4f4N0fbrSLN6kfIC089F7iyykt
BP hnbuk0V+68rwTXG5vb6P5n310F3N/e71DT076mFaLayVxRULmjObig2 AZv1d0qpufubw4qmk3WA+kJtKKU3peLQvEkCsg3GPnPus
;; Received 2485 bytes from 129.143.253.133#53(dns3.belwue.de) in 152 ms
```