

Output For 25Chord.fish file

```
Node 0: started
Node 1: started
Node 2: started
Node 3: started
Node 4: started
Node 5: started
Node 6: started
Node 7: started
Node 8: started
Node 9: started
Node 10: started
Node 11: started
Node 12: started
Node 13: started
Node 14: started
Node 15: started
Node 16: started
Node 17: started
Node 18: started
Node 19: started
Node 20: started
Node 21: started
Node 22: started
Node 23: started
Node 24: started
```

@ Printing the AddressKey and Node values

```
Node 0: I am:0, my key:122811361.Joining 0
Node 0: create ring
Node 1: I am:1, my key:2647349846.Joining 0
Node 0: My addKey:122811361 ReceiveJoin : srcKey: 2647349846
Node 0: Only one node in ring and hence accept the joining msg of Node: 1
```

@ Printing the Ring structure through RingState Command.

```
Node 0: RingState<0, 122811361>: Pred<10, 91399271>, Succ<14, 695252541>
Node 14: RingState<14, 695252541>: Pred<0, 122811361>, Succ<8, 697085985>
Node 8: RingState<8, 697085985>: Pred<14, 695252541>, Succ<9, 864112980>
Node 9: RingState<9, 864112980>: Pred<8, 697085985>, Succ<3, 1163988904>
Node 3: RingState<3, 1163988904>: Pred<9, 864112980>, Succ<24, 1321941746>
Node 24: RingState<24, 1321941746>: Pred<3, 1163988904>, Succ<7, 1402853386>
Node 7: RingState<7, 1402853386>: Pred<24, 1321941746>, Succ<4, 1589182411>
Node 4: RingState<4, 1589182411>: Pred<7, 1402853386>, Succ<20, 1828627043>
Node 20: RingState<20, 1828627043>: Pred<4, 1589182411>, Succ<22, 2119602836>
Node 22: RingState<22, 2119602836>: Pred<20, 1828627043>, Succ<12, 2220833526>
Node 12: RingState<12, 2220833526>: Pred<22, 2119602836>, Succ<13, 2302572148>
Node 13: RingState<13, 2302572148>: Pred<12, 2220833526>, Succ<17, 2503661717>
Node 17: RingState<17, 2503661717>: Pred<13, 2302572148>, Succ<18, 2539181210>
Node 18: RingState<18, 2539181210>: Pred<17, 2503661717>, Succ<1, 2647349846>
Node 1: RingState<1, 2647349846>: Pred<18, 2539181210>, Succ<11, 2935358206>
Node 11: RingState<11, 2935358206>: Pred<1, 2647349846>, Succ<19, 2940981655>
Node 19: RingState<19, 2940981655>: Pred<11, 2935358206>, Succ<23, 3325517661>
Node 23: RingState<23, 3325517661>: Pred<19, 2940981655>, Succ<5, 3348484935>
Node 5: RingState<5, 3348484935>: Pred<23, 3325517661>, Succ<16, 3633730534>
```

Node 16: RingState<16, 3633730534>: Pred<5, 3348484935>, Succ<2, 3641602300>
Node 2: RingState<2, 3641602300>: Pred<16, 3633730534>, Succ<6, 3987355288>
Node 6: RingState<6, 3987355288>: Pred<2, 3641602300>, Succ<21, 4248484300>
Node 21: RingState<21, 4248484300>: Pred<6, 3987355288>, Succ<15, 4279888690>
Node 15: RingState<15, 4279888690>: Pred<21, 4248484300>, Succ<10, 91399271>
Node 10: RingState<10, 91399271>: Pred<15, 4279888690>, Succ<0, 122811361>

----- Inject Data -----

@ Printing the Node value where Key is Getting Stored along with the Key value pair.

Node 1: <Milwaukee, Bucks> hashKey:2639866345

Node 0: <Atlanta, Hawks> hashKey:109809025

Node 10: <Denver, Nuggets> hashKey:12540078

Node 14: <Toronto, Raptors> hashKey:123823594

Node 16: <Sacramento, Kings> hashKey:3553910805

Node 0: <Chicago, Bulls> hashKey:122380607

Node 1: <OklahomaCity, Thunder> hashKey:2558072066

Node 0: <Indiana, Pacers> hashKey:109086173

Node 14: <Memphis, Grizzlies> hashKey:126663987

Node 0: <Houston, Rockets> hashKey:122387882

Node 18: <NewOrleans, Hornets> hashKey:2528980549

Node 14: <Philadelphia, 76ers> hashKey:124843390

Node 23: <GoldenState, Warriors> hashKey:3083757157

Node 17: <Minnesota, Timberwolves> hashKey:2393697545

Node 20: <LosAngeles, Lakers> hashKey:1738426247

Node 14: <NewJersey, Nets> hashKey:352595115

Node 10: <Dallas, Mavericks> hashKey:12589838

Node 11: <Charlotte, Bobcats> hashKey:2798370225

Node 10: <Utah, Jazz> hashKey:114945

Node 0: <NewYork, Knicks> hashKey:119611988

Node 14: <Phoenix, Suns> hashKey:131713220

Node 3: <Portland, TrailBlazers> hashKey:1120908590

Node 1: <Cleveland, Cavaliers> hashKey:2619004665

Node 14: <Detroit, Pistons> hashKey:127736678

Node 10: <Boston, Celtics> hashKey:12238676

Node 0: <Orlando, Magic> hashKey:122209019

Node 17: <SanAntonio, Spurs> hashKey:2464692905

Node 20: <LosAngeles, Clippers> hashKey:1738426247

Node 22: <Washington, Wizards> hashKey:2116082409

----- Lookup Test -----

@ Showing Consistent Lookup by raising the request from Different Nodes for same Key

Node 0: Values found after for LosAngeles are:

Node 0: <LosAngeles, Lakers> hashKey:1738426247

Node 0: <LosAngeles, Clippers> hashKey:1738426247

Node 4: Values found after for LosAngeles are:

Node 4: <LosAngeles, Lakers> hashKey:1738426247

Node 4: <LosAngeles, Clippers> hashKey:1738426247

Node 8: Values found after for LosAngeles are:

Node 8: <LosAngeles, Lakers> hashKey:1738426247

Node 8: <LosAngeles, Clippers> hashKey:1738426247

Node 12: Values found after for LosAngeles are:

Node 12: <LosAngeles, Lakers> hashKey:1738426247

Node 12: <LosAngeles, Clippers> hashKey:1738426247

Node 16: Values found after for LosAngeles are:

Node 16: <LosAngeles, Lakers> hashKey:1738426247

Node 16: <LosAngeles, Clippers> hashKey:1738426247

@ General Lookup for the Keys

Node 7: Values found after for Philadelphia are:

Node 7: <Philadelphia, 76ers> hashKey:124843390

Node 8: Values found after for Boston are:

Node 8: <Boston, Celtics> hashKey:12238676

Node 9: Values found after for Dallas are:

Node 9: <Dallas, Mavericks> hashKey:12589838

Node 10: Values found after for Houston are:

Node 10: <Houston, Rockets> hashKey:122387882

Node 11: Values found after for Portland are:

Node 11: <Portland, TrailBlazers> hashKey:1120908590

----- Voluntary Leaving -----

Node 11: Receive data from node 1:

Node 11: <OklahomaCity, Thunder> hashKey:2558072066

Node 11: Receive data from node 1:

Node 11: <Cleveland, Cavaliers> hashKey:2619004665

Node 11: Receive data from node 1:

Node 11: <Milwaukee, Bucks> hashKey:2639866345

Node 24: Receive data from node 3:

Node 24: <Portland, TrailBlazers> hashKey:1120908590

@ Printing the Current Ring State after Leaving of 4 Nodes.

----- Ring Size = 21-----

Node 0: RingState<0, 122811361>: Pred<10, 91399271>, Succ<14, 695252541>

Node 14: RingState<14, 695252541>: Pred<0, 122811361>, Succ<8, 697085985>

Node 8: RingState<8, 697085985>: Pred<14, 695252541>, Succ<9, 864112980>

Node 9: RingState<9, 864112980>: Pred<8, 697085985>, Succ<24, 1321941746>

Node 24: RingState<24, 1321941746>: Pred<9, 864112980>, Succ<7, 1402853386>

Node 7: RingState<7, 1402853386>: Pred<24, 1321941746>, Succ<20, 1828627043>

Node 20: RingState<20, 1828627043>: Pred<7, 1402853386>, Succ<22, 2119602836>

Node 22: RingState<22, 2119602836>: Pred<20, 1828627043>, Succ<12, 2220833526>

Node 12: RingState<12, 2220833526>: Pred<22, 2119602836>, Succ<13, 2302572148>

Node 13: RingState<13, 2302572148>: Pred<12, 2220833526>, Succ<17, 2503661717>
Node 17: RingState<17, 2503661717>: Pred<13, 2302572148>, Succ<18, 2539181210>
Node 18: RingState<18, 2539181210>: Pred<17, 2503661717>, Succ<11, 2935358206>
Node 11: RingState<11, 2935358206>: Pred<18, 2539181210>, Succ<19, 2940981655>
Node 19: RingState<19, 2940981655>: Pred<11, 2935358206>, Succ<23, 3325517661>
Node 23: RingState<23, 3325517661>: Pred<19, 2940981655>, Succ<5, 3348484935>
Node 5: RingState<5, 3348484935>: Pred<23, 3325517661>, Succ<16, 3633730534>
Node 16: RingState<16, 3633730534>: Pred<5, 3348484935>, Succ<6, 3987355288>
Node 6: RingState<6, 3987355288>: Pred<16, 3633730534>, Succ<21, 4248484300>
Node 21: RingState<21, 4248484300>: Pred<6, 3987355288>, Succ<15, 4279888690>
Node 15: RingState<15, 4279888690>: Pred<21, 4248484300>, Succ<10, 91399271>
Node 10: RingState<10, 91399271>: Pred<15, 4279888690>, Succ<0, 122811361>
Node 0: LookupRequest<0, 122811361>: RequestString<Philadelphia, 124843390>,
NextHop<14, 695252541>

@ Checking the Consistency of keys after Leaving by calling the lookup for same key from different Nodes.

Node 0: Values found after for Philadelphia are:

Node 0: <Philadelphia, 76ers> hashCode:124843390

@ This is how lookup Request is forwarded to successor until it reaches the correct destination

Node 13: LookupRequest<13, 2302572148>: RequestString<Philadelphia, 124843390>,
NextHop<17, 2503661717>
Node 17: LookupRequest<17, 2503661717>: RequestString<Philadelphia, 124843390>,
NextHop<18, 2539181210>
Node 18: LookupRequest<18, 2539181210>: RequestString<Philadelphia, 124843390>,
NextHop<11, 2935358206>
Node 11: LookupRequest<11, 2935358206>: RequestString<Philadelphia, 124843390>,
NextHop<19, 2940981655>
Node 19: LookupRequest<19, 2940981655>: RequestString<Philadelphia, 124843390>,
NextHop<23, 3325517661>
Node 23: LookupRequest<23, 3325517661>: RequestString<Philadelphia, 124843390>,
NextHop<5, 3348484935>
Node 5: LookupRequest<5, 3348484935>: RequestString<Philadelphia, 124843390>,
NextHop<16, 3633730534>
Node 16: LookupRequest<16, 3633730534>: RequestString<Philadelphia, 124843390>,
NextHop<6, 3987355288>
Node 6: LookupRequest<6, 3987355288>: RequestString<Philadelphia, 124843390>,
NextHop<21, 4248484300>
Node 21: LookupRequest<21, 4248484300>: RequestString<Philadelphia, 124843390>,
NextHop<15, 4279888690>
Node 15: LookupRequest<15, 4279888690>: RequestString<Philadelphia, 124843390>,
NextHop<10, 91399271>
Node 10: LookupRequest<10, 91399271>: RequestString<Philadelphia, 124843390>,
NextHop<0, 122811361>
Node 0: LookupRequest<0, 122811361>: RequestString<Philadelphia, 124843390>,
NextHop<14, 695252541>
Node 13: Values found after for Philadelphia are:

Node 13: <Philadelphia, 76ers> hashCode:124843390

Node 19: LookupRequest<19, 2940981655>: RequestString<Philadelphia, 124843390>, NextHop<23, 3325517661>
Node 23: LookupRequest<23, 3325517661>: RequestString<Philadelphia, 124843390>, NextHop<5, 3348484935>
Node 5: LookupRequest<5, 3348484935>: RequestString<Philadelphia, 124843390>, NextHop<16, 3633730534>
Node 16: LookupRequest<16, 3633730534>: RequestString<Philadelphia, 124843390>, NextHop<6, 3987355288>
Node 6: LookupRequest<6, 3987355288>: RequestString<Philadelphia, 124843390>, NextHop<21, 4248484300>
Node 21: LookupRequest<21, 4248484300>: RequestString<Philadelphia, 124843390>, NextHop<15, 4279888690>
Node 15: LookupRequest<15, 4279888690>: RequestString<Philadelphia, 124843390>, NextHop<10, 91399271>
Node 10: LookupRequest<10, 91399271>: RequestString<Philadelphia, 124843390>, NextHop<0, 122811361>
Node 0: LookupRequest<0, 122811361>: RequestString<Philadelphia, 124843390>, NextHop<14, 695252541>
Node 19: Values found after for Philadelphia are:

Node 19: <Philadelphia, 76ers> hashCode:124843390

Node 5: LookupRequest<5, 3348484935>: RequestString<Philadelphia, 124843390>, NextHop<16, 3633730534>
Node 16: LookupRequest<16, 3633730534>: RequestString<Philadelphia, 124843390>, NextHop<6, 3987355288>
Node 6: LookupRequest<6, 3987355288>: RequestString<Philadelphia, 124843390>, NextHop<21, 4248484300>
Node 21: LookupRequest<21, 4248484300>: RequestString<Philadelphia, 124843390>, NextHop<15, 4279888690>
Node 15: LookupRequest<15, 4279888690>: RequestString<Philadelphia, 124843390>, NextHop<10, 91399271>
Node 10: LookupRequest<10, 91399271>: RequestString<Philadelphia, 124843390>, NextHop<0, 122811361>
Node 0: LookupRequest<0, 122811361>: RequestString<Philadelphia, 124843390>, NextHop<14, 695252541>
Node 5: Values found after for Philadelphia are:

Node 5: <Philadelphia, 76ers> hashCode:124843390

@ Testing for another Lookup Key

Node 8: Receive data from node 14:
Node 8: <NewJersey, Nets> hashCode:352595115

Node 8: Receive data from node 14:
Node 8: <Phoenix, Suns> hashCode:131713220

Node 8: Receive data from node 14:
Node 8: <Memphis, Grizzlies> hashCode:126663987

Node 8: Receive data from node 14:
Node 8: <Philadelphia, 76ers> hashKey:124843390

Node 8: Receive data from node 14:
Node 8: <Toronto, Raptors> hashKey:123823594

Node 8: Receive data from node 14:
Node 8: <Detroit, Pistons> hashKey:127736678

Node 9: Receive data from node 8:
Node 9: <NewJersey, Nets> hashKey:352595115

Node 9: Receive data from node 8:
Node 9: <Phoenix, Suns> hashKey:131713220

Node 9: Receive data from node 8:
Node 9: <Memphis, Grizzlies> hashKey:126663987

Node 9: Receive data from node 8:
Node 9: <Toronto, Raptors> hashKey:123823594

Node 9: Receive data from node 8:
Node 9: <Philadelphia, 76ers> hashKey:124843390

Node 9: Receive data from node 8:
Node 9: <Detroit, Pistons> hashKey:127736678

Node 24: Receive data from node 9:
Node 24: <NewJersey, Nets> hashKey:352595115

Node 24: Receive data from node 9:
Node 24: <Phoenix, Suns> hashKey:131713220

Node 24: Receive data from node 9:
Node 24: <Memphis, Grizzlies> hashKey:126663987

Node 24: Receive data from node 9:
Node 24: <Philadelphia, 76ers> hashKey:124843390

Node 24: Receive data from node 9:
Node 24: <Toronto, Raptors> hashKey:123823594

Node 24: Receive data from node 9:
Node 24: <Detroit, Pistons> hashKey:127736678

Node 0: Receive data from node 10:
Node 0: <Boston, Celtics> hashKey:12238676

Node 0: Receive data from node 10:
Node 0: <Dallas, Mavericks> hashKey:12589838

Node 0: Receive data from node 10:
Node 0: <Miami, Heat> hashKey:1169827

Node 0: Receive data from node 10:
Node 0: <Utah, Jazz> hashKey:114945

Node 0: Receive data from node 10:
Node 0: <Denver, Nuggets> hashKey:12540078

Node 19: Receive data from node 11:
Node 19: <Charlotte, Bobcats> hashKey:2798370225

Node 19: Receive data from node 11:
Node 19: <OklahomaCity, Thunder> hashKey:2558072066

Node 19: Receive data from node 11:
Node 19: <Cleveland, Cavaliers> hashKey:2619004665

Node 19: Receive data from node 11:
Node 19: <Milwaukee, Bucks> hashKey:2639866345

----- Ring Size = 11(Redistribution) -----

@ Printing the current state of the Chord Ring

Node 0: RingState<0, 122811361>: Pred<21, 4248484300>, Succ<24, 1321941746>
Node 24: RingState<24, 1321941746>: Pred<0, 122811361>, Succ<20, 1828627043>
Node 20: RingState<20, 1828627043>: Pred<24, 1321941746>, Succ<22, 2119602836>
Node 22: RingState<22, 2119602836>: Pred<20, 1828627043>, Succ<12, 2220833526>
Node 12: RingState<12, 2220833526>: Pred<22, 2119602836>, Succ<17, 2503661717>
Node 17: RingState<17, 2503661717>: Pred<12, 2220833526>, Succ<18, 2539181210>
Node 18: RingState<18, 2539181210>: Pred<17, 2503661717>, Succ<19, 2940981655>
Node 19: RingState<19, 2940981655>: Pred<18, 2539181210>, Succ<23, 3325517661>
Node 23: RingState<23, 3325517661>: Pred<19, 2940981655>, Succ<16, 3633730534>
Node 16: RingState<16, 3633730534>: Pred<23, 3325517661>, Succ<21, 4248484300>
Node 21: RingState<21, 4248484300>: Pred<16, 3633730534>, Succ<0, 122811361>
Node 0: <Boston, Celtics> hashKey:12238676

@ Looking Up for All the Keys After leaving to test No loss of keys during Redistribution process.

Node 0: Values found after for NewJersey are:

Node 0: <NewJersey, Nets> hashKey:352595115

Node 0: <NewYork, Knicks> hashKey:119611988

Node 0: Values found after for Philadelphia are:

Node 0: <Philadelphia, 76ers> hashKey:124843390

Node 0: Values found after for Toronto are:

Node 0: <Toronto, Raptors> hashKey:123823594

Node 0: <Chicago, Bulls> hashKey:122380607

Node 0: Values found after for Cleveland are:

Node 0: <Cleveland, Cavaliers> hashKey:2619004665

Node 0: Values found after for Detroit are:

Node 0: <Detroit, Pistons> hashKey:127736678

Node 0: <Indiana, Pacers> hashKey:109086173

Node 0: Values found after for Milwaukee are:

Node 0: <Milwaukee, Bucks> hashKey:2639866345

Node 0: <Atlanta, Hawks> hashKey:109809025

Node 0: Values found after for Charlotte are:

Node 0: <Charlotte, Bobcats> hashKey:2798370225

Node 0: <Miami, Heat> hashKey:1169827

Node 0: <Orlando, Magic> hashKey:122209019

Node 0: Values found after for Washington are:

Node 0: <Washington, Wizards> hashKey:2116082409

Node 0: <Dallas, Mavericks> hashKey:12589838

Node 0: <Houston, Rockets> hashKey:122387882

Node 0: Values found after for Memphis are:

Node 0: <Memphis, Grizzlies> hashKey:126663987

Node 0: Values found after for NewOrleans are:

Node 0: <NewOrleans, Hornets> hashKey:2528980549

Node 0: Values found after for SanAntonio are:

Node 0: <SanAntonio, Spurs> hashKey:2464692905

Node 0: Values found after for GoldenState are:

Node 0: <GoldenState, Warriors> hashKey:3083757157

Node 0: Values found after for LosAngeles are:

Node 0: <LosAngeles, Lakers> hashKey:1738426247

Node 0: <LosAngeles, Clippers> hashKey:1738426247

Node 0: Values found after for LosAngeles are:

Node 0: <LosAngeles, Lakers> hashKey:1738426247

Node 0: <LosAngeles, Clippers> hashKey:1738426247

Node 0: Values found after for Phoenix are:

Node 0: <Phoenix, Suns> hashKey:131713220

Node 0: Values found after for Sacramento are:

Node 0: <Sacramento, Kings> hashKey:3553910805

Node 0: <Denver, Nuggets> hashKey:12540078

Node 0: Values found after for Minnesota are:

Node 0: <Minnesota, Timberwolves> hashKey:2393697545

Node 0: Values found after for Portland are:

Node 0: <Portland, TrailBlazers> hashKey:1120908590

Node 0: Values found after for OklahomaCity are:

Node 0: <OklahomaCity, Thunder> hashKey:2558072066

Node 0: <Utah, Jazz> hashKey:114945

@ Checking for the Keys which are not present in the Ring

Node 0: Rahulis not maching found!

@ Again Joining the new Nodes to the Ring

Node 13: I am:13, my key:2302572148.Joining 19
Node 19: My addKey:2940981655 ReceiveJoin : srcKey: 2302572148
Node 23: My addKey:3325517661 ReceiveJoin : srcKey: 2302572148
Node 16: My addKey:3633730534 ReceiveJoin : srcKey: 2302572148
Node 21: My addKey:4248484300 ReceiveJoin : srcKey: 2302572148
Node 0: My addKey:122811361 ReceiveJoin : srcKey: 2302572148
Node 24: My addKey:1321941746 ReceiveJoin : srcKey: 2302572148
Node 20: My addKey:1828627043 ReceiveJoin : srcKey: 2302572148
Node 22: My addKey:2119602836 ReceiveJoin : srcKey: 2302572148
Node 12: My addKey:2220833526 ReceiveJoin : srcKey: 2302572148
Node 14: I am:14, my key:695252541.Joining 19
Node 19: My addKey:2940981655 ReceiveJoin : srcKey: 695252541
Node 23: My addKey:3325517661 ReceiveJoin : srcKey: 695252541
Node 16: My addKey:3633730534 ReceiveJoin : srcKey: 695252541
Node 21: My addKey:4248484300 ReceiveJoin : srcKey: 695252541
Node 0: My addKey:122811361 ReceiveJoin : srcKey: 695252541

@ Raising the Lookup request from Newly Joined Node that is 14

Node 14: Receive data from node 24:
Node 14: <NewJersey, Nets> hashKey:352595115

Node 14: Receive data from node 24:
Node 14: <Phoenix, Suns> hashKey:131713220

Node 14: Receive data from node 24:
Node 14: <Memphis, Grizzlies> hashKey:126663987

Node 14: Receive data from node 24:
Node 14: <Toronto, Raptors> hashKey:123823594

Node 14: Receive data from node 24:
Node 14: <Philadelphia, 76ers> hashKey:124843390

Node 14: Receive data from node 24:
Node 14: <Detroit, Pistons> hashKey:127736678

@ Node 15 joining the Ring Again

Node 15: I am:15, my key:4279888690.Joining 19
Node 19: My addKey:2940981655 ReceiveJoin : srcKey: 4279888690
Node 23: My addKey:3325517661 ReceiveJoin : srcKey: 4279888690
Node 16: My addKey:3633730534 ReceiveJoin : srcKey: 4279888690
Node 21: My addKey:4248484300 ReceiveJoin : srcKey: 4279888690

@ Raising the lookup request after Joining

Node 15: Receive data from node 0:
Node 15: <Boston, Celtics> hashKey:12238676

Node 15: Receive data from node 0:
Node 15: <Miami, Heat> hashKey:1169827

Node 15: Receive data from node 0:
Node 15: <Orlando, Magic> hashKey:122209019

Node 15: Receive data from node 0:
Node 15: <NewYork, Knicks> hashKey:119611988

Node 15: Receive data from node 0:
Node 15: <Atlanta, Hawks> hashKey:109809025

Node 15: Receive data from node 0:
Node 15: <Denver, Nuggets> hashKey:12540078

Node 15: Receive data from node 0:
Node 15: <Utah, Jazz> hashKey:114945

Node 15: Receive data from node 0:
Node 15: <Indiana, Pacers> hashKey:109086173

Node 15: Receive data from node 0:
Node 15: <Chicago, Bulls> hashKey:122380607

Node 15: Receive data from node 0:
Node 15: <Dallas, Mavericks> hashKey:12589838

Node 15: Receive data from node 0:

Node 15: <Houston, Rockets> hashKey:122387882

----- Ring Size = 14 -----

@ Printing the Current State of Ring

Node 13: RingState<13, 2302572148>: Pred<12, 2220833526>, Succ<17, 2503661717>
Node 17: RingState<17, 2503661717>: Pred<13, 2302572148>, Succ<18, 2539181210>
Node 18: RingState<18, 2539181210>: Pred<17, 2503661717>, Succ<19, 2940981655>
Node 19: RingState<19, 2940981655>: Pred<18, 2539181210>, Succ<23, 3325517661>
Node 23: RingState<23, 3325517661>: Pred<19, 2940981655>, Succ<16, 3633730534>
Node 16: RingState<16, 3633730534>: Pred<23, 3325517661>, Succ<21, 4248484300>
Node 21: RingState<21, 4248484300>: Pred<16, 3633730534>, Succ<15, 4279888690>
Node 15: RingState<15, 4279888690>: Pred<21, 4248484300>, Succ<0, 122811361>
Node 0: RingState<0, 122811361>: Pred<15, 4279888690>, Succ<14, 695252541>
Node 14: RingState<14, 695252541>: Pred<0, 122811361>, Succ<24, 1321941746>
Node 24: RingState<24, 1321941746>: Pred<14, 695252541>, Succ<20, 1828627043>
Node 20: RingState<20, 1828627043>: Pred<24, 1321941746>, Succ<22, 2119602836>
Node 22: RingState<22, 2119602836>: Pred<20, 1828627043>, Succ<12, 2220833526>
Node 12: RingState<12, 2220833526>: Pred<22, 2119602836>, Succ<13, 2302572148>

@ Printing LookupDebug command in detail for each Hop

Node 13: LookupRequest<13, 2302572148>: RequestString<Philadelphia, 124843390>,
NextHop<17, 2503661717>
Node 17: LookupRequest<17, 2503661717>: RequestString<Philadelphia, 124843390>,
NextHop<18, 2539181210>
Node 18: LookupRequest<18, 2539181210>: RequestString<Philadelphia, 124843390>,
NextHop<19, 2940981655>
Node 19: LookupRequest<19, 2940981655>: RequestString<Philadelphia, 124843390>,
NextHop<23, 3325517661>
Node 23: LookupRequest<23, 3325517661>: RequestString<Philadelphia, 124843390>,
NextHop<16, 3633730534>
Node 16: LookupRequest<16, 3633730534>: RequestString<Philadelphia, 124843390>,
NextHop<21, 4248484300>
Node 21: LookupRequest<21, 4248484300>: RequestString<Philadelphia, 124843390>,
NextHop<15, 4279888690>
Node 15: LookupRequest<15, 4279888690>: RequestString<Philadelphia, 124843390>,
NextHop<0, 122811361>
Node 0: LookupRequest<0, 122811361>: RequestString<Philadelphia, 124843390>,
NextHop<14, 695252541>

Node 13: Values found after for Philadelphia are:

Node 13: <Philadelphia, 76ers> hashKey:124843390

Node 14: LookupRequest<14, 695252541>: RequestString<LosAngeles, 1738426247>,
NextHop<24, 1321941746>
Node 24: LookupRequest<24, 1321941746>: RequestString<LosAngeles, 1738426247>,
NextHop<20, 1828627043>
Node 14: Values found after for LosAngeles are:

Node 14: <LosAngeles, Lakers> hashKey:1738426247

Node 14: <LosAngeles, Clippers> hashKey:1738426247

Node 15: LookupRequest<15, 4279888690>: RequestString<Houston, 122387882>,
NextHop<0, 122811361>

Node 15: Values found after for Houston are:

Node 15: <Houston, Rockets> hashKey:122387882

Node 1: I am:1, my key:2647349846.Joining 13

Node 13: My addKey:2302572148 ReceiveJoin : srcKey: 2647349846

Node 17: My addKey:2503661717 ReceiveJoin : srcKey: 2647349846

Node 18: My addKey:2539181210 ReceiveJoin : srcKey: 2647349846

Node 1: Receive data from node 19:

Node 1: <OklahomaCity, Thunder> hashKey:2558072066

Node 1: Receive data from node 19:

Node 1: <Cleveland, Cavaliers> hashKey:2619004665

Node 1: Receive data from node 19:

Node 1: <Milwaukee, Bucks> hashKey:2639866345

Node 2: I am:2, my key:3641602300.Joining 15

Node 15: My addKey:4279888690 ReceiveJoin : srcKey: 3641602300

Node 0: My addKey:122811361 ReceiveJoin : srcKey: 3641602300

Node 14: My addKey:695252541 ReceiveJoin : srcKey: 3641602300

Node 24: My addKey:1321941746 ReceiveJoin : srcKey: 3641602300

Node 20: My addKey:1828627043 ReceiveJoin : srcKey: 3641602300

Node 22: My addKey:2119602836 ReceiveJoin : srcKey: 3641602300

Node 12: My addKey:2220833526 ReceiveJoin : srcKey: 3641602300

Node 13: My addKey:2302572148 ReceiveJoin : srcKey: 3641602300

Node 17: My addKey:2503661717 ReceiveJoin : srcKey: 3641602300

Node 18: My addKey:2539181210 ReceiveJoin : srcKey: 3641602300

Node 1: My addKey:2647349846 ReceiveJoin : srcKey: 3641602300

Node 19: My addKey:2940981655 ReceiveJoin : srcKey: 3641602300

Node 23: My addKey:3325517661 ReceiveJoin : srcKey: 3641602300

Node 16: My addKey:3633730534 ReceiveJoin : srcKey: 3641602300

----- Ring Size = 16 -----

@ Printing the Current Status of Ring

Node 1: RingState<1, 2647349846>: Pred<18, 2539181210>, Succ<19, 2940981655>

Node 19: RingState<19, 2940981655>: Pred<1, 2647349846>, Succ<23, 3325517661>

Node 23: RingState<23, 3325517661>: Pred<19, 2940981655>, Succ<16, 3633730534>

Node 16: RingState<16, 3633730534>: Pred<23, 3325517661>, Succ<2, 3641602300>

Node 2: RingState<2, 3641602300>: Pred<16, 3633730534>, Succ<21, 4248484300>

Node 21: RingState<21, 4248484300>: Pred<2, 3641602300>, Succ<15, 4279888690>

Node 15: RingState<15, 4279888690>: Pred<21, 4248484300>, Succ<0, 122811361>

Node 0: RingState<0, 122811361>: Pred<15, 4279888690>, Succ<14, 695252541>

Node 14: RingState<14, 695252541>: Pred<0, 122811361>, Succ<24, 1321941746>

Node 24: RingState<24, 1321941746>: Pred<14, 695252541>, Succ<20, 1828627043>

Node 20: RingState<20, 1828627043>: Pred<24, 1321941746>, Succ<22, 2119602836>

Node 22: RingState<22, 2119602836>: Pred<20, 1828627043>, Succ<12, 2220833526>
Node 12: RingState<12, 2220833526>: Pred<22, 2119602836>, Succ<13, 2302572148>
Node 13: RingState<13, 2302572148>: Pred<12, 2220833526>, Succ<17, 2503661717>
Node 17: RingState<17, 2503661717>: Pred<13, 2302572148>, Succ<18, 2539181210>
Node 18: RingState<18, 2539181210>: Pred<17, 2503661717>, Succ<1, 2647349846>

@ Raising the Lookup Request

Node 1: LookupRequest<1, 2647349846>: RequestString<Philadelphia, 124843390>,
NextHop<19, 2940981655>
Node 19: LookupRequest<19, 2940981655>: RequestString<Philadelphia, 124843390>,
NextHop<23, 3325517661>
Node 23: LookupRequest<23, 3325517661>: RequestString<Philadelphia, 124843390>,
NextHop<16, 3633730534>
Node 16: LookupRequest<16, 3633730534>: RequestString<Philadelphia, 124843390>,
NextHop<2, 3641602300>
Node 2: LookupRequest<2, 3641602300>: RequestString<Philadelphia, 124843390>,
NextHop<21, 4248484300>
Node 21: LookupRequest<21, 4248484300>: RequestString<Philadelphia, 124843390>,
NextHop<15, 4279888690>
Node 15: LookupRequest<15, 4279888690>: RequestString<Philadelphia, 124843390>,
NextHop<0, 122811361>
Node 0: LookupRequest<0, 122811361>: RequestString<Philadelphia, 124843390>,
NextHop<14, 695252541>
Node 1: Values found after for Philadelphia are:

Node 1: <Philadelphia, 76ers> hashKey:124843390

Node 2: LookupRequest<2, 3641602300>: RequestString<Houston, 122387882>,
NextHop<21, 4248484300>
Node 21: LookupRequest<21, 4248484300>: RequestString<Houston, 122387882>,
NextHop<15, 4279888690>
Node 15: LookupRequest<15, 4279888690>: RequestString<Houston, 122387882>,
NextHop<0, 122811361>
Node 2: Values found after for Houston are:

Node 2: <Houston, Rockets> hashKey:122387882

Node 3: I am:3, my key:1163988904.Joining 1
Node 1: My addKey:2647349846 ReceiveJoin : srcKey: 1163988904
Node 19: My addKey:2940981655 ReceiveJoin : srcKey: 1163988904
Node 23: My addKey:3325517661 ReceiveJoin : srcKey: 1163988904
Node 16: My addKey:3633730534 ReceiveJoin : srcKey: 1163988904
Node 2: My addKey:3641602300 ReceiveJoin : srcKey: 1163988904
Node 21: My addKey:4248484300 ReceiveJoin : srcKey: 1163988904
Node 15: My addKey:4279888690 ReceiveJoin : srcKey: 1163988904
Node 0: My addKey:122811361 ReceiveJoin : srcKey: 1163988904
Node 14: My addKey:695252541 ReceiveJoin : srcKey: 1163988904

Node 3: Receive data from node 24:
Node 3: <Portland, TrailBlazers> hashKey:1120908590

Node 3: Receive data from node 24:
Node 3: <NewJersey, Nets> hashKey:352595115

Node 3: Receive data from node 24:
Node 3: <Phoenix, Suns> hashKey:131713220

Node 3: Receive data from node 24:
Node 3: <Memphis, Grizzlies> hashKey:126663987

Node 3: Receive data from node 24:
Node 3: <Toronto, Raptors> hashKey:123823594

Node 3: Receive data from node 24:
Node 3: <Philadelphia, 76ers> hashKey:124843390

Node 3: Receive data from node 24:
Node 3: <Detroit, Pistons> hashKey:127736678

Node 4: I am:4, my key:1589182411.Joining 6
Node 8: I am:8, my key:697085985.Joining 0
Node 0: My addKey:122811361 ReceiveJoin : srcKey: 697085985
Node 14: My addKey:695252541 ReceiveJoin : srcKey: 697085985
Node 8: Receive data from node 3:
Node 8: <NewJersey, Nets> hashKey:352595115

Node 8: Receive data from node 3:
Node 8: <Phoenix, Suns> hashKey:131713220

Node 8: Receive data from node 3:
Node 8: <Memphis, Grizzlies> hashKey:126663987

Node 8: Receive data from node 3:
Node 8: <Philadelphia, 76ers> hashKey:124843390

Node 8: Receive data from node 3:
Node 8: <Toronto, Raptors> hashKey:123823594

Node 8: Receive data from node 3:
Node 8: <Detroit, Pistons> hashCode:127736678

----- Ring Size = 19 -----

Node 8: RingState<8, 697085985>: Pred<14, 695252541>, Succ<3, 1163988904>
Node 3: RingState<3, 1163988904>: Pred<8, 697085985>, Succ<24, 1321941746>
Node 24: RingState<24, 1321941746>: Pred<3, 1163988904>, Succ<20, 1828627043>
Node 20: RingState<20, 1828627043>: Pred<24, 1321941746>, Succ<22, 2119602836>
Node 22: RingState<22, 2119602836>: Pred<20, 1828627043>, Succ<12, 2220833526>
Node 12: RingState<12, 2220833526>: Pred<22, 2119602836>, Succ<13, 2302572148>
Node 13: RingState<13, 2302572148>: Pred<12, 2220833526>, Succ<17, 2503661717>
Node 17: RingState<17, 2503661717>: Pred<13, 2302572148>, Succ<18, 2539181210>
Node 18: RingState<18, 2539181210>: Pred<17, 2503661717>, Succ<1, 2647349846>
Node 1: RingState<1, 2647349846>: Pred<18, 2539181210>, Succ<19, 2940981655>
Node 19: RingState<19, 2940981655>: Pred<1, 2647349846>, Succ<23, 3325517661>
Node 23: RingState<23, 3325517661>: Pred<19, 2940981655>, Succ<16, 3633730534>
Node 16: RingState<16, 3633730534>: Pred<23, 3325517661>, Succ<2, 3641602300>
Node 2: RingState<2, 3641602300>: Pred<16, 3633730534>, Succ<21, 4248484300>
Node 21: RingState<21, 4248484300>: Pred<2, 3641602300>, Succ<15, 4279888690>
Node 15: RingState<15, 4279888690>: Pred<21, 4248484300>, Succ<0, 122811361>
Node 0: RingState<0, 122811361>: Pred<15, 4279888690>, Succ<14, 695252541>
Node 14: RingState<14, 695252541>: Pred<0, 122811361>, Succ<8, 697085985>

@ Raising LookupDebug command

Node 8: LookupRequest<8, 697085985>: RequestString<Philadelphia, 124843390>,
NextHop<3, 1163988904>
Node 3: LookupRequest<3, 1163988904>: RequestString<Philadelphia, 124843390>,
NextHop<24, 1321941746>
Node 24: LookupRequest<24, 1321941746>: RequestString<Philadelphia, 124843390>,
NextHop<20, 1828627043>
Node 20: LookupRequest<20, 1828627043>: RequestString<Philadelphia, 124843390>,
NextHop<22, 2119602836>
Node 22: LookupRequest<22, 2119602836>: RequestString<Philadelphia, 124843390>,
NextHop<12, 2220833526>
Node 12: LookupRequest<12, 2220833526>: RequestString<Philadelphia, 124843390>,
NextHop<13, 2302572148>
Node 13: LookupRequest<13, 2302572148>: RequestString<Philadelphia, 124843390>,
NextHop<17, 2503661717>
Node 17: LookupRequest<17, 2503661717>: RequestString<Philadelphia, 124843390>,
NextHop<18, 2539181210>
Node 18: LookupRequest<18, 2539181210>: RequestString<Philadelphia, 124843390>,
NextHop<1, 2647349846>
Node 1: LookupRequest<1, 2647349846>: RequestString<Philadelphia, 124843390>,
NextHop<19, 2940981655>
Node 19: LookupRequest<19, 2940981655>: RequestString<Philadelphia, 124843390>,
NextHop<23, 3325517661>
Node 23: LookupRequest<23, 3325517661>: RequestString<Philadelphia, 124843390>,
NextHop<16, 3633730534>
Node 16: LookupRequest<16, 3633730534>: RequestString<Philadelphia, 124843390>,
NextHop<2, 3641602300>
Node 2: LookupRequest<2, 3641602300>: RequestString<Philadelphia, 124843390>,
NextHop<21, 4248484300>
Node 21: LookupRequest<21, 4248484300>: RequestString<Philadelphia, 124843390>,
NextHop<15, 4279888690>

Node 15: LookupRequest<15, 4279888690>: RequestString<Philadelphia, 124843390>, NextHop<0, 122811361>
Node 0: LookupRequest<0, 122811361>: RequestString<Philadelphia, 124843390>, NextHop<14, 695252541>
Node 8: Values found after for Philadelphia are:

Node 8: <Philadelphia, 76ers> hashCode:124843390

Node 8: LookupRequest<8, 697085985>: RequestString<Houston, 122387882>, NextHop<3, 1163988904>
Node 3: LookupRequest<3, 1163988904>: RequestString<Houston, 122387882>, NextHop<24, 1321941746>
Node 24: LookupRequest<24, 1321941746>: RequestString<Houston, 122387882>, NextHop<20, 1828627043>
Node 20: LookupRequest<20, 1828627043>: RequestString<Houston, 122387882>, NextHop<22, 2119602836>
Node 22: LookupRequest<22, 2119602836>: RequestString<Houston, 122387882>, NextHop<12, 2220833526>
Node 12: LookupRequest<12, 2220833526>: RequestString<Houston, 122387882>, NextHop<13, 2302572148>
Node 13: LookupRequest<13, 2302572148>: RequestString<Houston, 122387882>, NextHop<17, 2503661717>
Node 17: LookupRequest<17, 2503661717>: RequestString<Houston, 122387882>, NextHop<18, 2539181210>
Node 18: LookupRequest<18, 2539181210>: RequestString<Houston, 122387882>, NextHop<1, 2647349846>
Node 1: LookupRequest<1, 2647349846>: RequestString<Houston, 122387882>, NextHop<19, 2940981655>
Node 19: LookupRequest<19, 2940981655>: RequestString<Houston, 122387882>, NextHop<23, 3325517661>
Node 23: LookupRequest<23, 3325517661>: RequestString<Houston, 122387882>, NextHop<16, 3633730534>
Node 16: LookupRequest<16, 3633730534>: RequestString<Houston, 122387882>, NextHop<2, 3641602300>
Node 2: LookupRequest<2, 3641602300>: RequestString<Houston, 122387882>, NextHop<21, 4248484300>
Node 21: LookupRequest<21, 4248484300>: RequestString<Houston, 122387882>, NextHop<15, 4279888690>
Node 15: LookupRequest<15, 4279888690>: RequestString<Houston, 122387882>, NextHop<0, 122811361>
Node 8: Values found after for Houston are:

Node 8: <Houston, Rockets> hashCode:122387882

@ The Average Hop count for all the Lookup request

Node 0: Average hop counts per lookup is: 4.627906976744186
Fishnet exiting after time: 1440000 msec.
Number of packets sent: 306293