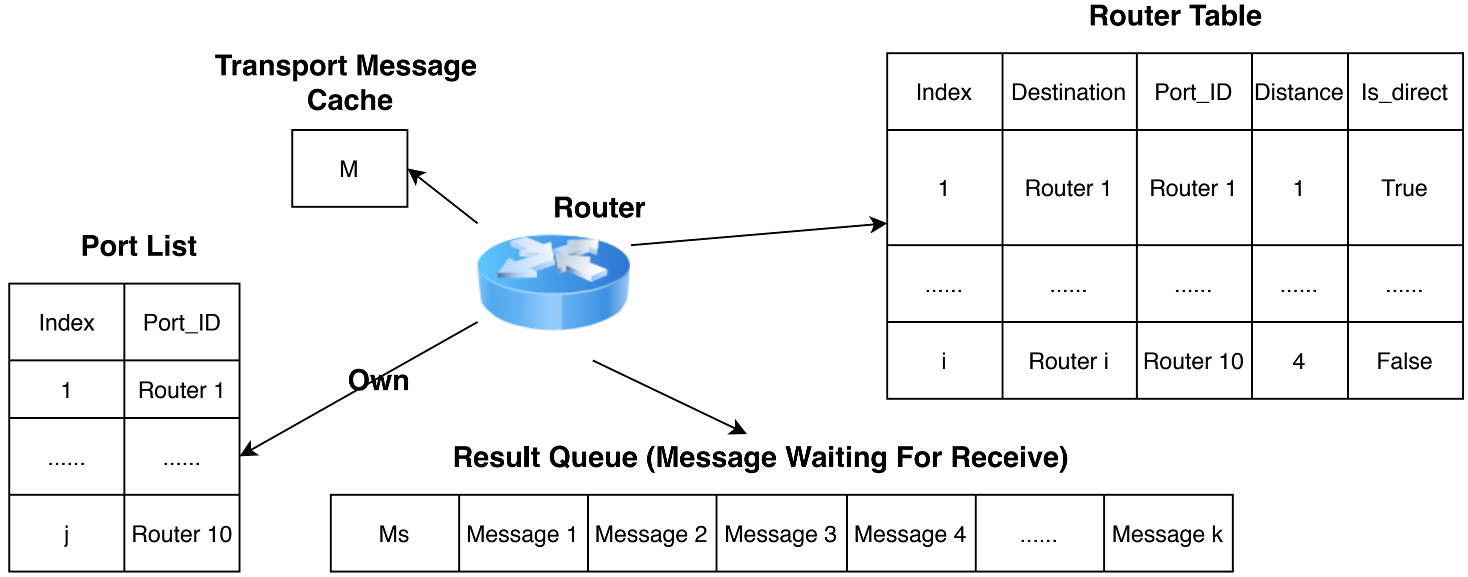
Graphical Representation of Passing the Message

Student Name: Richeng ZHANG

Student ID: U7094927

Router Structure



Router Table

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 1	1	True
......	......	......	......	......
i	Router i	Router 10	4	False

Port List

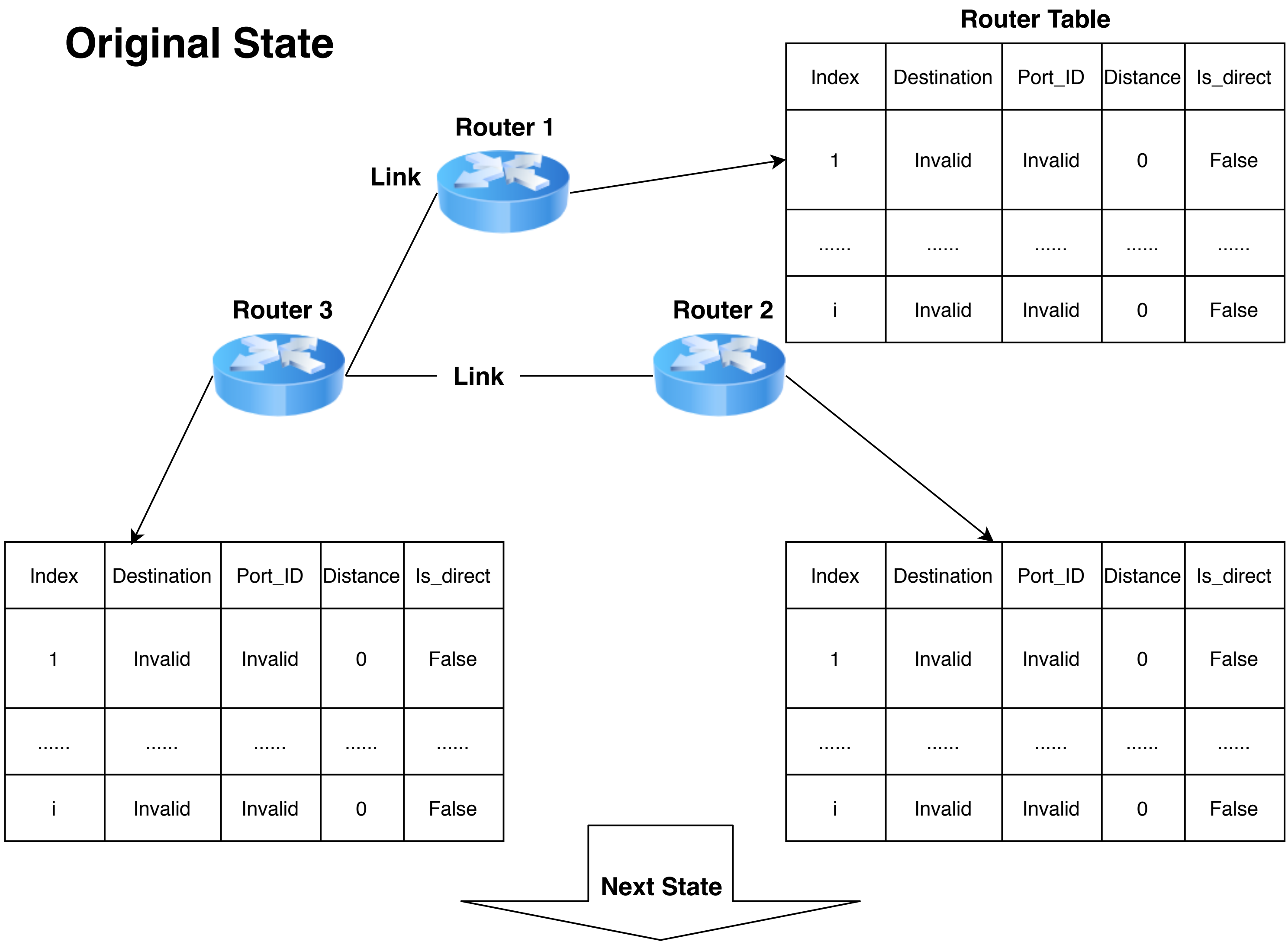
Index	Port_ID
1	Router 1
......	......
j	Router 10

Result Queue (Message Waiting For Receive)

Ms	Message 1	Message 2	Message 3	Message 4	......	Message k

Logic of Router Table Updating

Original State



Router Table (Router 1)

Index	Destination	Port_ID	Distance	Is_direct
1	Invalid	Invalid	0	False
......	......	......	......	......
i	Invalid	Invalid	0	False

(Router 3)

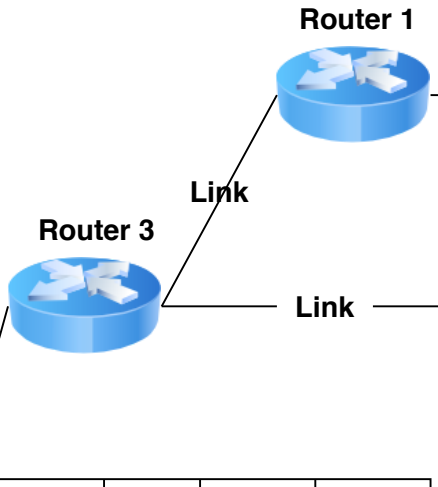
Index	Destination	Port_ID	Distance	Is_direct
1	Invalid	Invalid	0	False
......	......	......	......	......
i	Invalid	Invalid	0	False

(Router 2)

Index	Destination	Port_ID	Distance	Is_direct
1	Invalid	Invalid	0	False
......	......	......	......	......
i	Invalid	Invalid	0	False

Next State

Initialization



Router Table

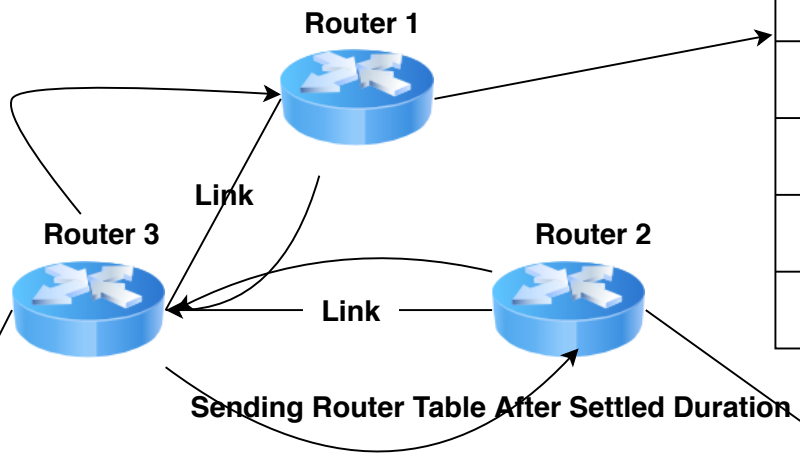
Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Invalid	0	True
2	Invalid	Invalid	0	False
3	Router 3	Router 3	1	True
...	...	...	...	...
i	Invalid	Invalid	0	False

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 1	1	True
2	Router 2	Router 2	1	True
3	Router 3	Invalid	0	True
...	...	...	...	...
i	Invalid	Invalid	0	False

Index	Destination	Port_ID	Distance	Is_direct
1	Invalid	Invalid	0	False
2	Router 2	Invalid	0	True
3	Router 3	Router 3	1	True
...	...	...	...	...
i	Invalid	Invalid	0	False

Next State

Updating

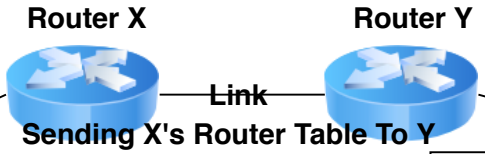


Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Invalid	0	True
2	Router 2	Router 3	2	False
3	Router 3	Router 3	1	True
...	...	...	...	...
i	Invalid	Invalid	0	False

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 1	1	True
2	Router 2	Router 2	1	True
3	Router 3	Invalid	0	True
...	...	...	...	...
i	Invalid	Invalid	0	False

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 3	2	False
2	Router 2	Invalid	0	True
3	Router 3	Router 3	1	True
...	...	...	...	...
i	Invalid	Invalid	0	False

Detailed Logic of Router Table Updating



Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 4	5	False
2	Router 2	Router 3	2	False
3	Router 3	Router 3	1	False
...	...	...	...	...
i	Invalid	Invalid	0	False

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 3	2	False
2	Router 2	Router 4	4	False
3	Invalid	Invalid	0	False
...	...	...	...	...
i	Invalid	Invalid	0	False

Index = 1

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 4	5	False
2	Router 2	Router 3	2	False
3	Router 3	Router 9	5	False
...	...	...	...	...
i	Invalid	Invalid	0	False

same destination,
compare distance,
if lager, do not change

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 3	2	False
2	Router 2	Router 4	4	False
3	Invalid	Invalid	0	False
...	...	...	...	...
i	Invalid	Invalid	0	False

Index = 2

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 4	5	False
2	Router 2	Router 3	2	False
3	Router 3	Router 9	5	False
...	...	...	...	...
i	Invalid	Invalid	0	False

same destination,
compare distance,
if smaller, change

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 3	2	False
2	Router 2	Router X	2+1=3	False
3	Invalid	Invalid	0	False
...	...	...	...	...
i	Invalid	Invalid	0	False

Index = 3

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 4	5	False
2	Router 2	Router 3	2	False
3	Router 3	Router 9	5	False
...	...	...	...	...
i	Invalid	Invalid	0	False

Invalid destination,
copy

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 3	2	False
2	Router 2	Router X	2+1=3	False
3	Router 3	Router X	5+1=6	False
...	...	...	...	...
i	Invalid	Invalid	0	False

Message Structure

Transport Message Cache

M

Router

Result Queue (Message Waiting For Receive)
Array of Transport Message Cache

Ms	Message 1	Message 2	Message 3	Message 4	.....	Message k

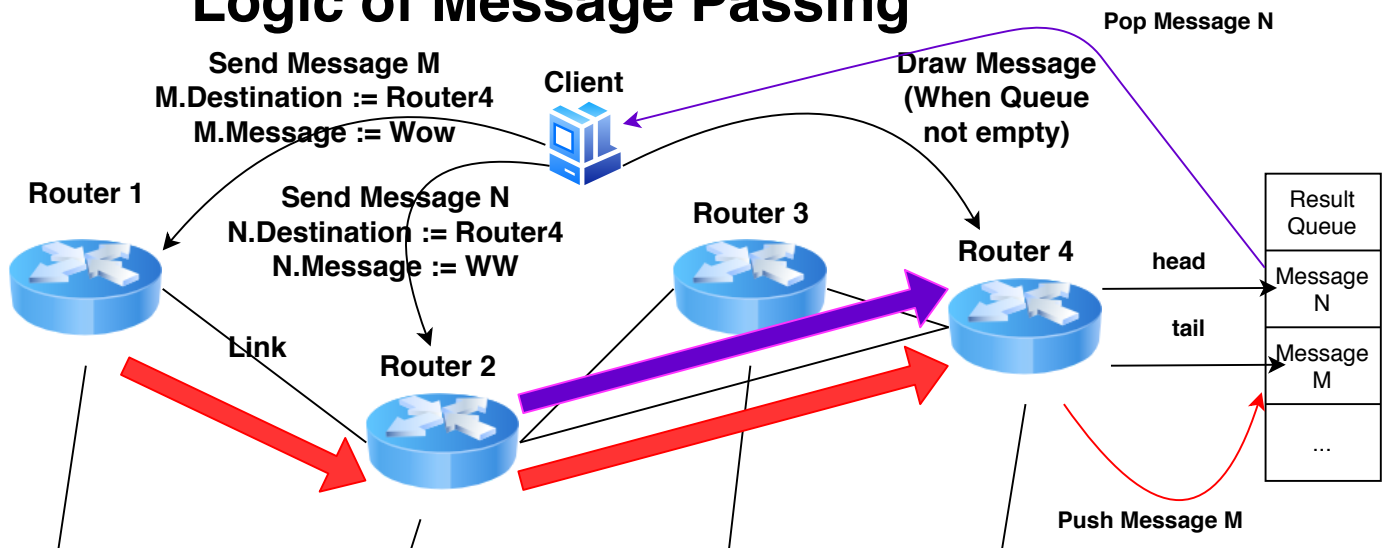
Item	Context
Original Sender	Router 1
Original Destination	Router 9
Sender	Router 7
Destination	Router 8
Message	Wow!
Hop_Counter	5

Item	Context
Original Sender	Router 1
Original Destination	Router 9
Sender	Router 7
Destination	Router 8
Message	Wow!
Hop_Counter	5

Item	Context
Original Sender	Router 2
Original Destination	Router 9
Sender	Router 5
Destination	Router 6
Message	Wow!
Hop_Counter	4

.....

Logic of Message Passing



Index	Destination	Port_ID	Distance	Is_direct
2	Router 2	Router 2	1	True
3	Router 3	Router 2	2	False
4	Router 4	Router 2	2	False

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 2	2	False
2	Router 2	Router 2	1	True
4	Router 4	Router 4	1	True

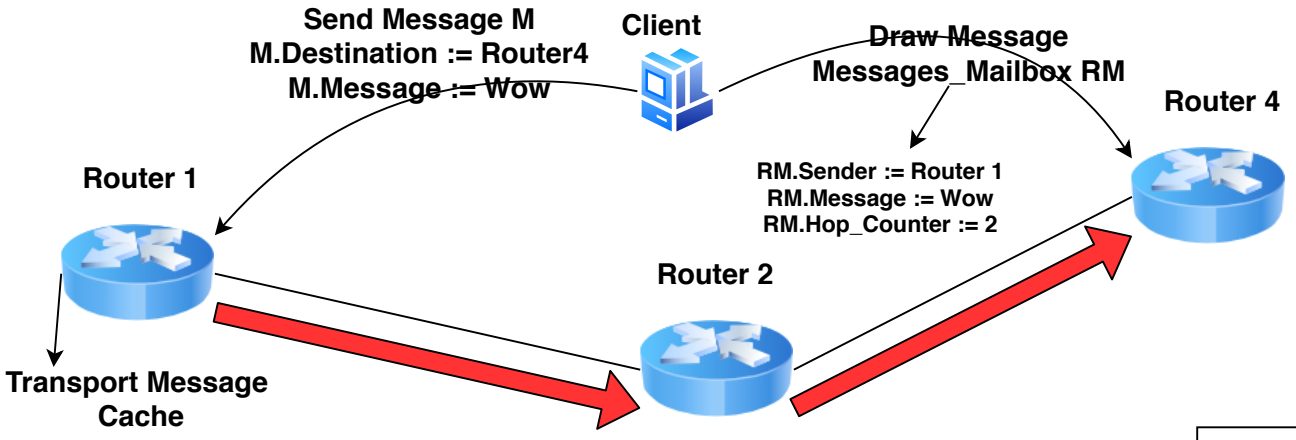
Message N Passing path

Message M Passing path

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 1	1	True
3	Router 3	Router 3	1	True
4	Router 4	Router 4	1	True

Index	Destination	Port_ID	Distance	Is_direct
1	Router 1	Router 3	2	False
2	Router 2	Router 2	1	True
4	Router 3	Router 3	1	True

Detailed Logic of Message Passing



Item	Context
Original Sender	Router 1
Original Destination	Router 4
Sender	Router 1
Destination	Router 2
Message	Wow
Hop_Counter	0

Item	Context
Original Sender	Router 1
Original Destination	Router 4
Sender	Router 2
Destination	Router 4
Message	Wow
Hop_Counter	0+1=1

Item	Context
Original Sender	Router 1
Original Destination	Router 4
Sender	Router 4
Destination	Router 4
Message	Wow
Hop_Counter	1+1=2