Assignment 3 – Part I

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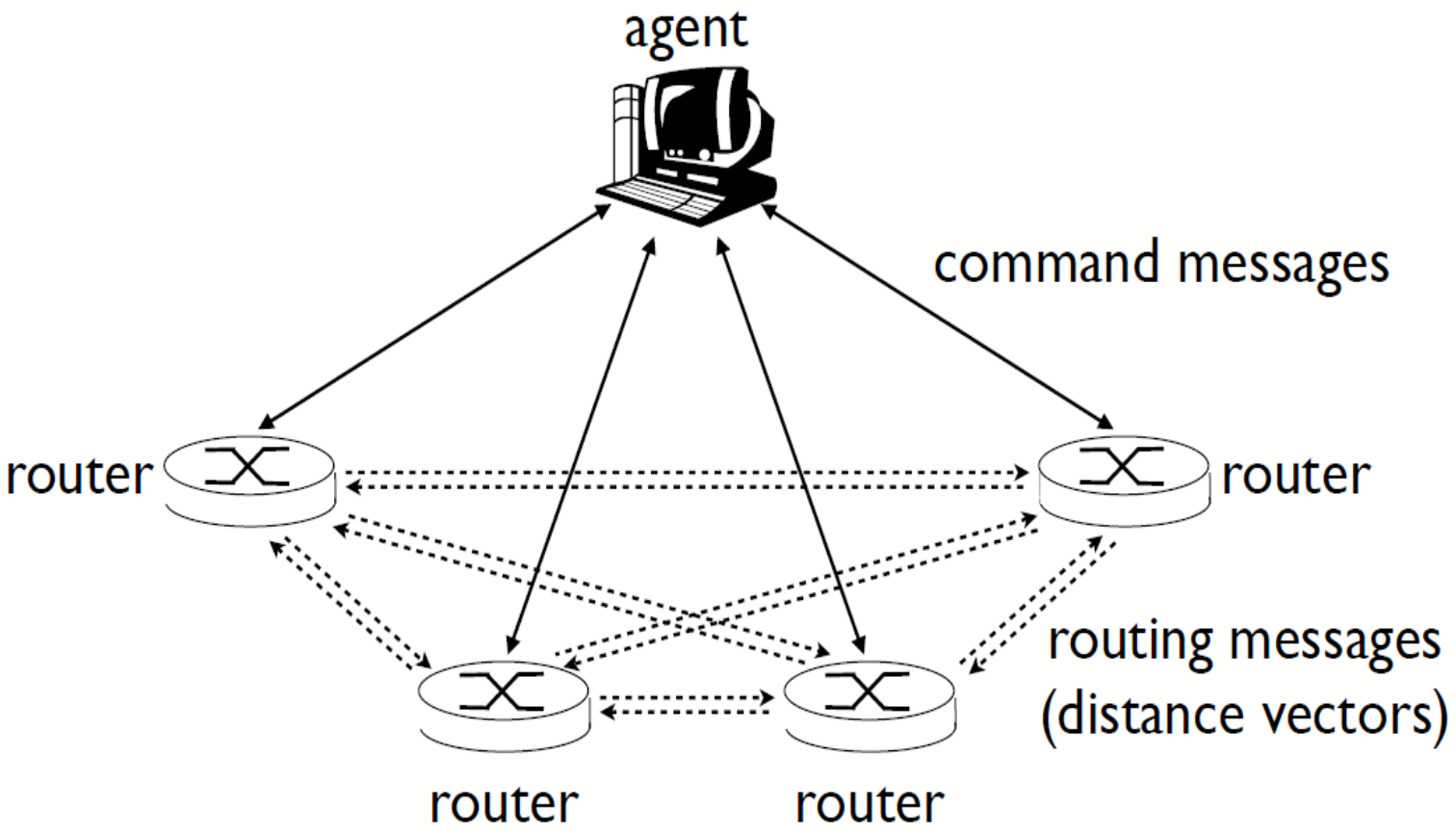
The Big Picture



Router Location File

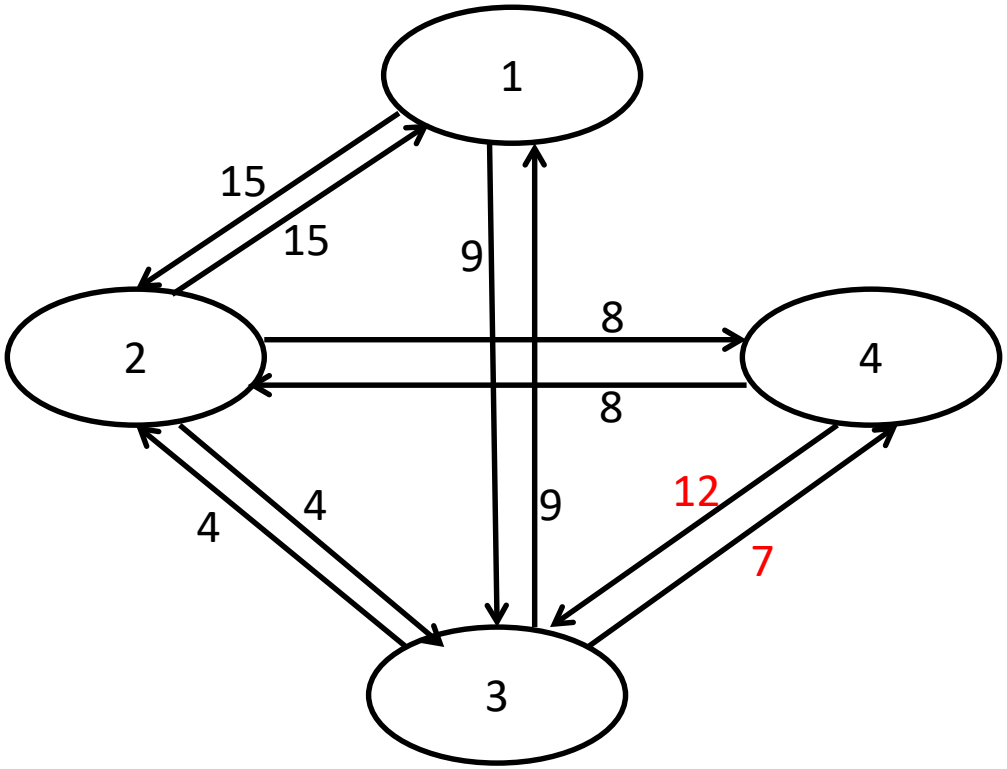
6

137.189.88.101	,	13001	,	1
137.189.88.101	,	13002	,	2
137.189.88.101	,	13003	,	3
137.189.88.102	,	13001	,	4
137.189.88.102	,	13002	,	5
137.189.88.102	,	13003	,	100
Router IP		Router Port		Router ID

For example...
Router #5 listens on 137.189.88.102:13002 for command messages and routing messages.

Topology Configuration File

12
1,2,15
1,3,9
1,4,-1
2,1,15
2,3,4
2,4,8
3,1,9
3,2,4
3,4,7
4,1,-1
4,2,8
4,3,12



The Router Program

- In this assignment, the router program...
  - listens on the router port;
  - receives commands from the agent and reply if required;
  - receives distance vectors from its neighbors;
  - maintains a counter of Distance Vectors received from other routers
  - sends DVs only when triggered by the agent;
  - does not have poisoned reverse.

The Agent Program

- In this assignment, the agent program...
  - reads inputs from the console;
  - sends commands to the routers (there may also be responses from the routers);
  - displays the result.

Command #1 - dv

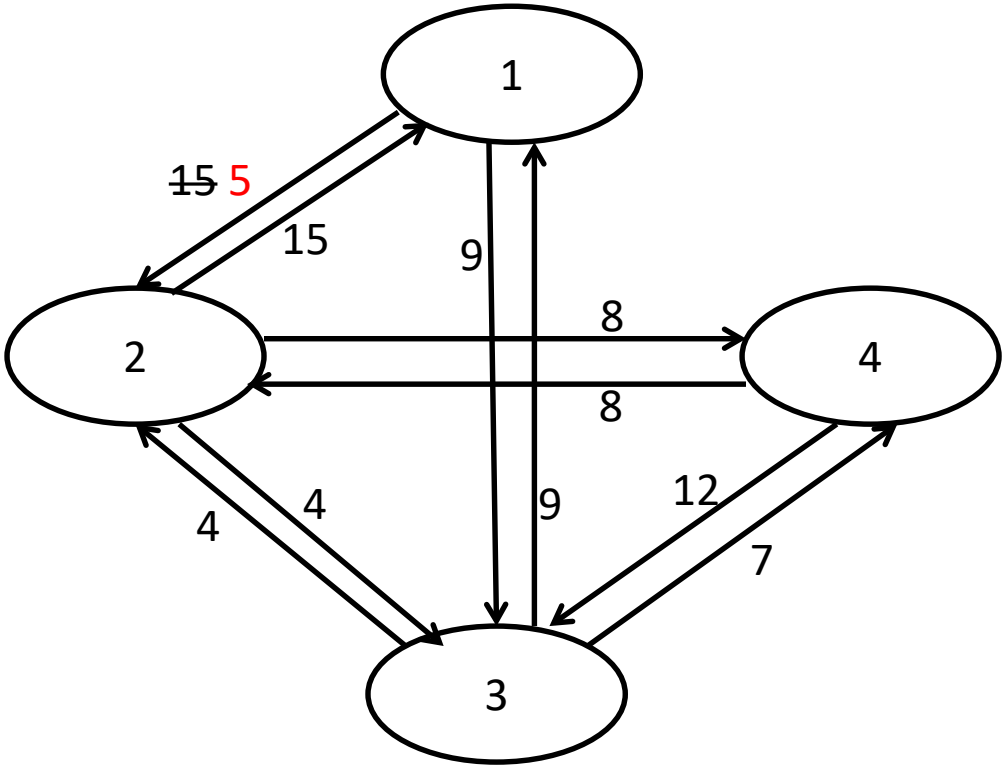
- dv
  - All routers are triggered to propagate Distance Vectors to their neighbors, until the link costs become stable.

Command #2 - update

- update:1,2,5
  - Tell Router #1 that the weight of link(1,2) is changed to 5.
  - Do not propagate DVs for now, so other routers does not know the change.
  - Also tell Router #2 the change, but Router #2 would do nothing.

Command #2 - update

After the update

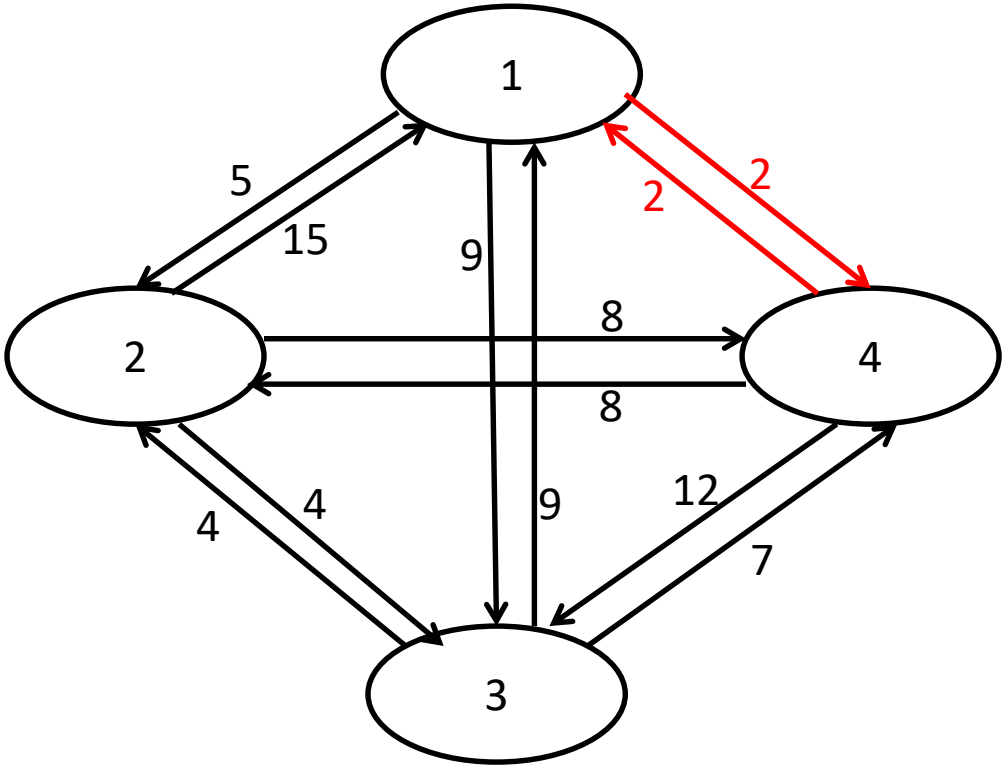


Command #2 - update

- update:4,1,2 (Note that no edges between the two routers before)
  - Tell Router #1 that the weight of link(1,4) is changed to 2.
  - Tell Router #4 that the weight of link(4,1) is changed to 2.
  - Do not propagate DVs for now, so only the two routers know the change.

Command #2 - update

After the update

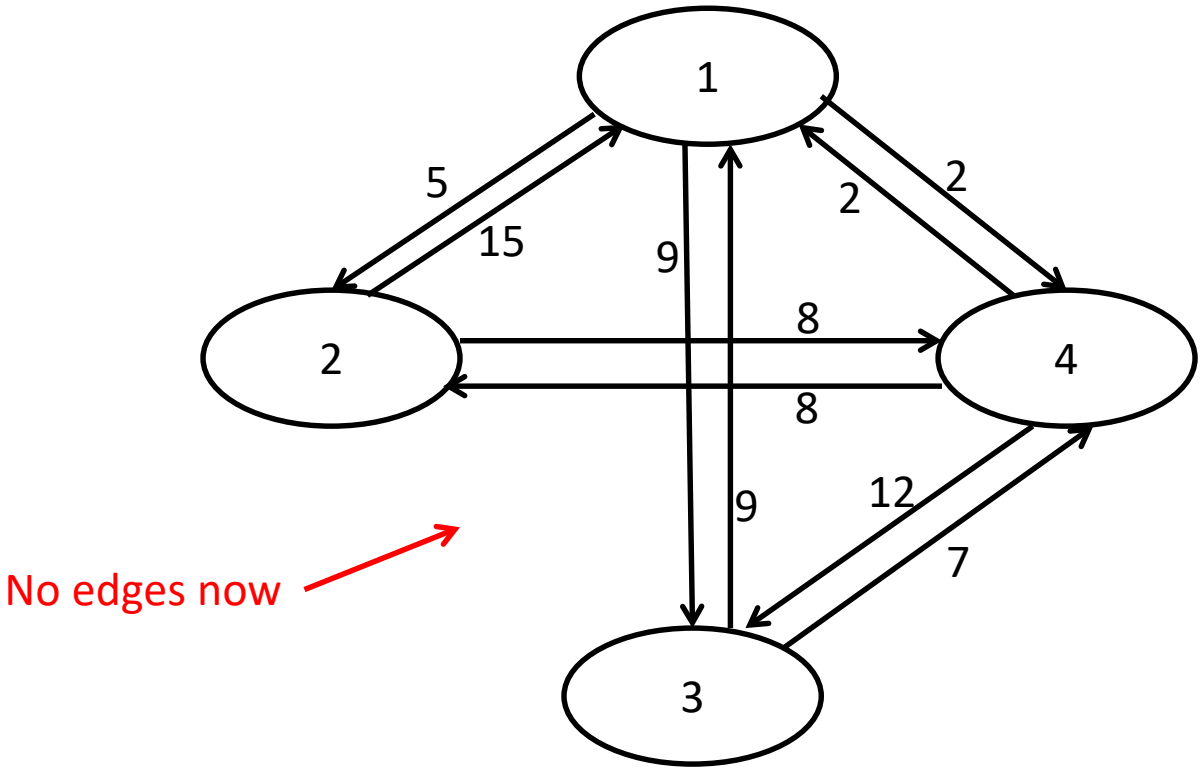


Command #2 - update

- update:2,3,-1 (Note that -1 mean delete edge)
  - Tell Router #2 that the weight of link(2,3) is changed to -1.
  - Tell Router #3 that the weight of link(3,2) is changed to -1.
  - Do not propagate DVs for now, so only the two routers know the change.

Command #2 - update

After the update



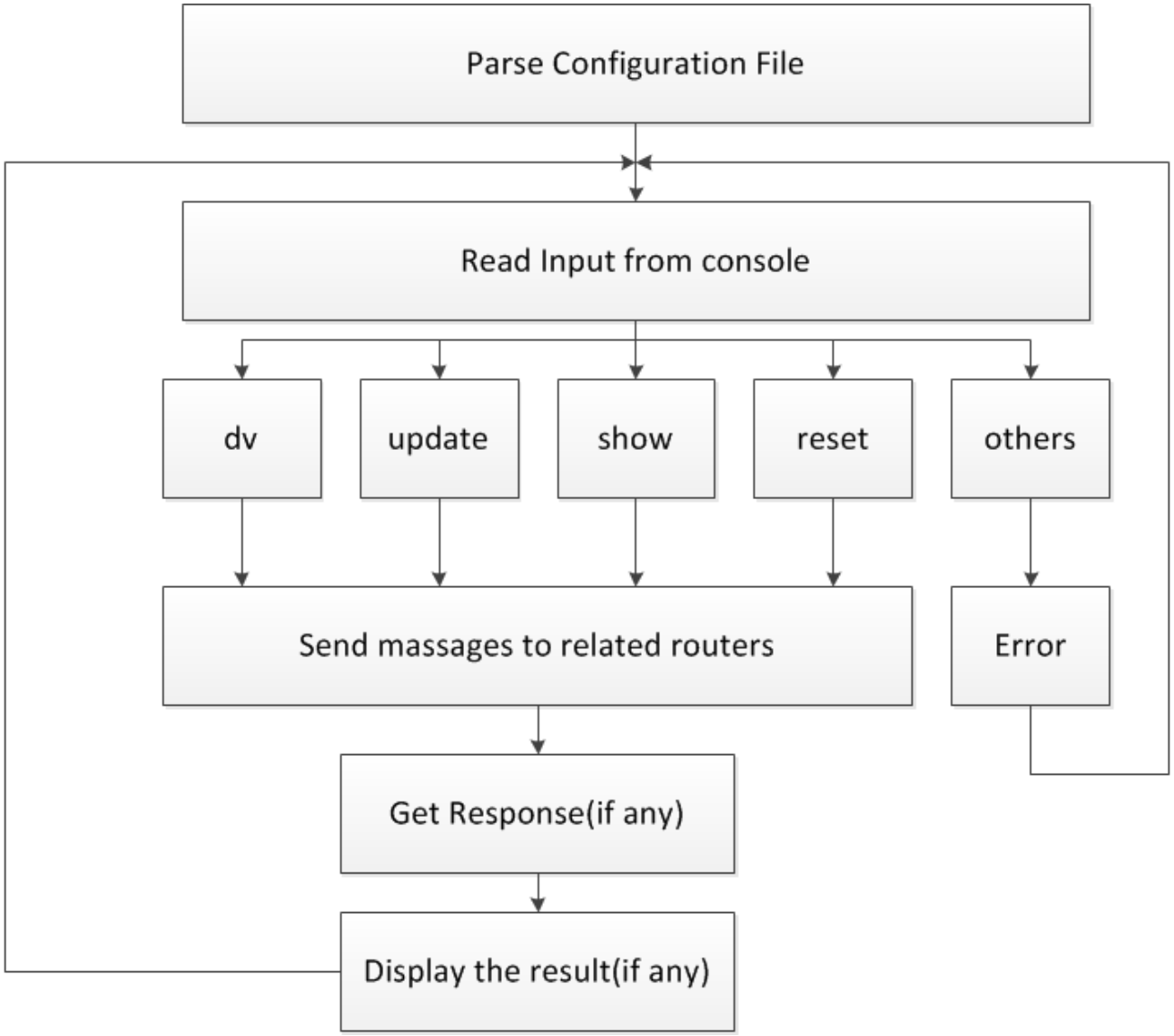
Command #3 - show

- show:4
  - Display the routing table of Router #4, including destination, next hop, and path cost,
  - and the number of DVs Router #4 has received since it starts.

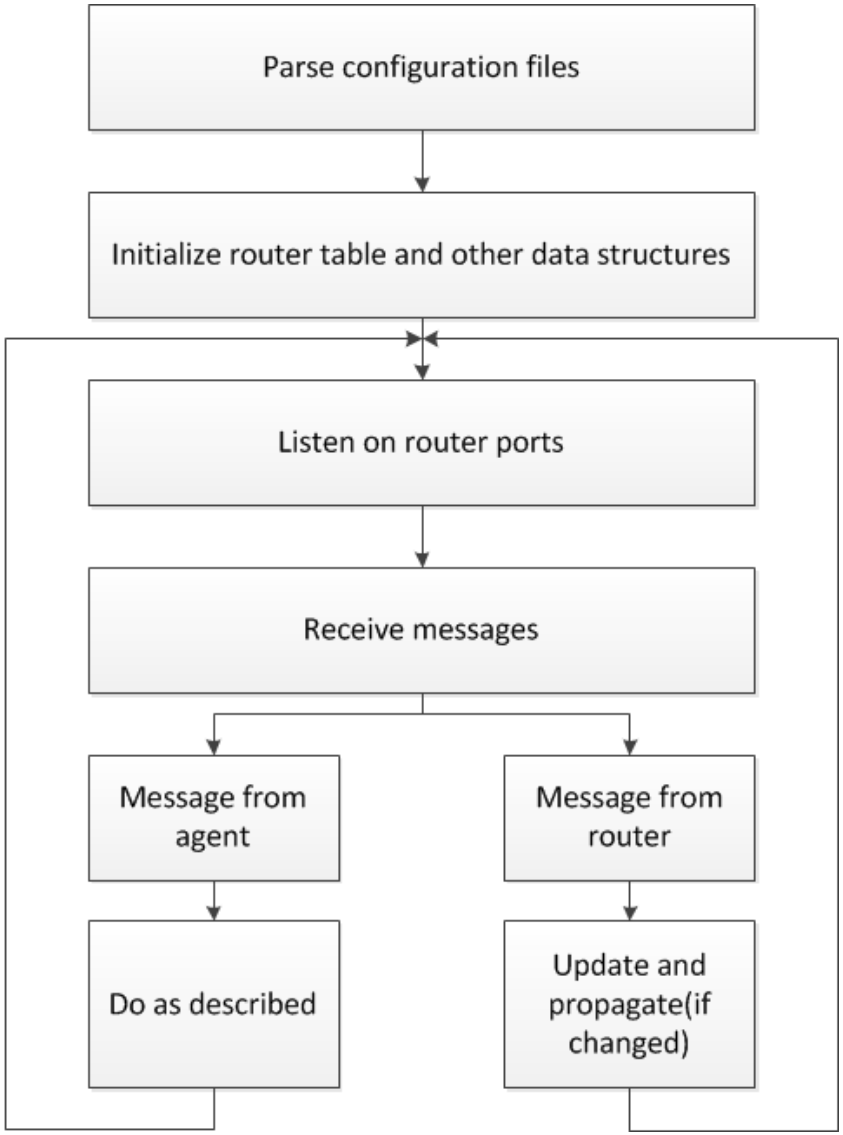
Command #4 - reset

- reset:4
  - Set the counter of distance vectors received by Router #4 to 0.

Work flow of the Agent



Work flow of the Router



Protocol messages

- Define your own format!

Command	Router Involved	Response
dv	all	optional
update	couple	optional
show	single	required
reset	single	optional

A Demo

- An simple demo, and we would perform the following commands(omit show commands here):
  - Dv
  - Update:2,3,5
  - Dv
  - Update:2,1,1
  - Dv
  - Update:2,1,20
  - Dv
  - Update:3,2,-1
  - Dv
  - Update:2,3,4
  - Dv
  - Reset:1

End

- Individual-base Assignment!

- Thank you!