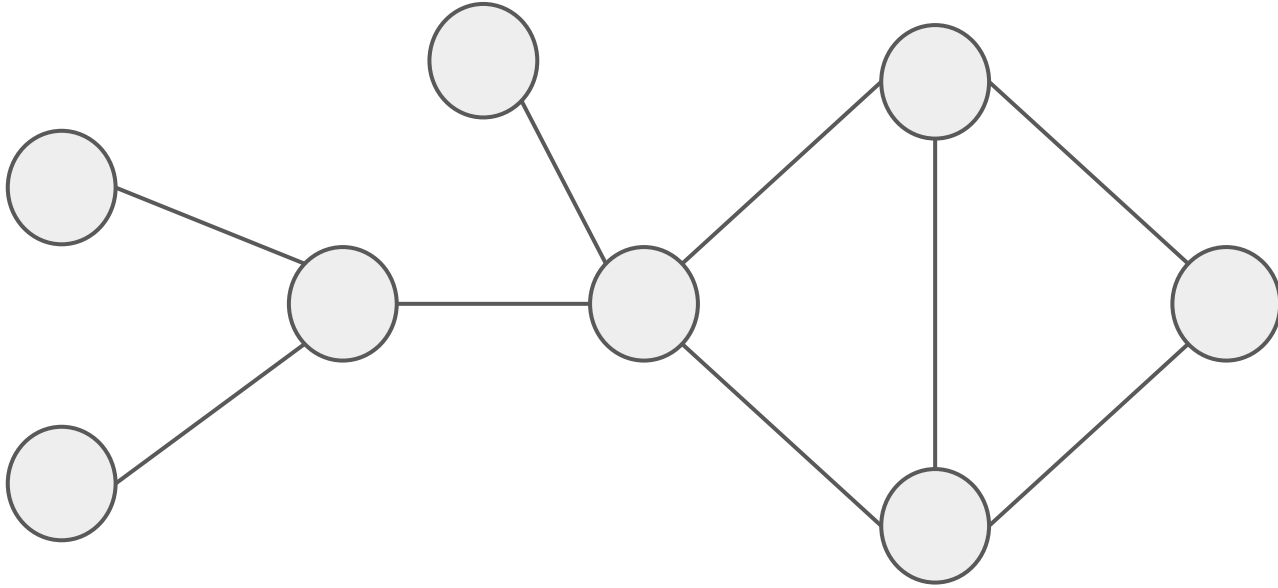


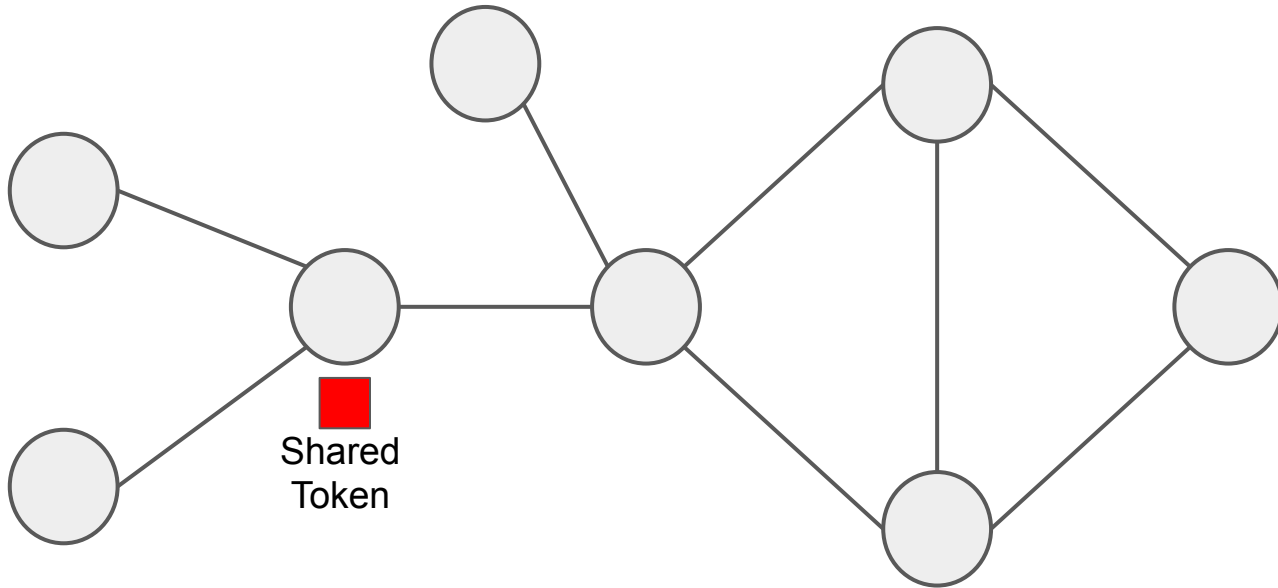
# The Arvy Distributed Directory Protocol

Pankaj Khanchandani, Roger Wattenhofer  
ETH Zurich - Distributed Computing Group (DISCO)

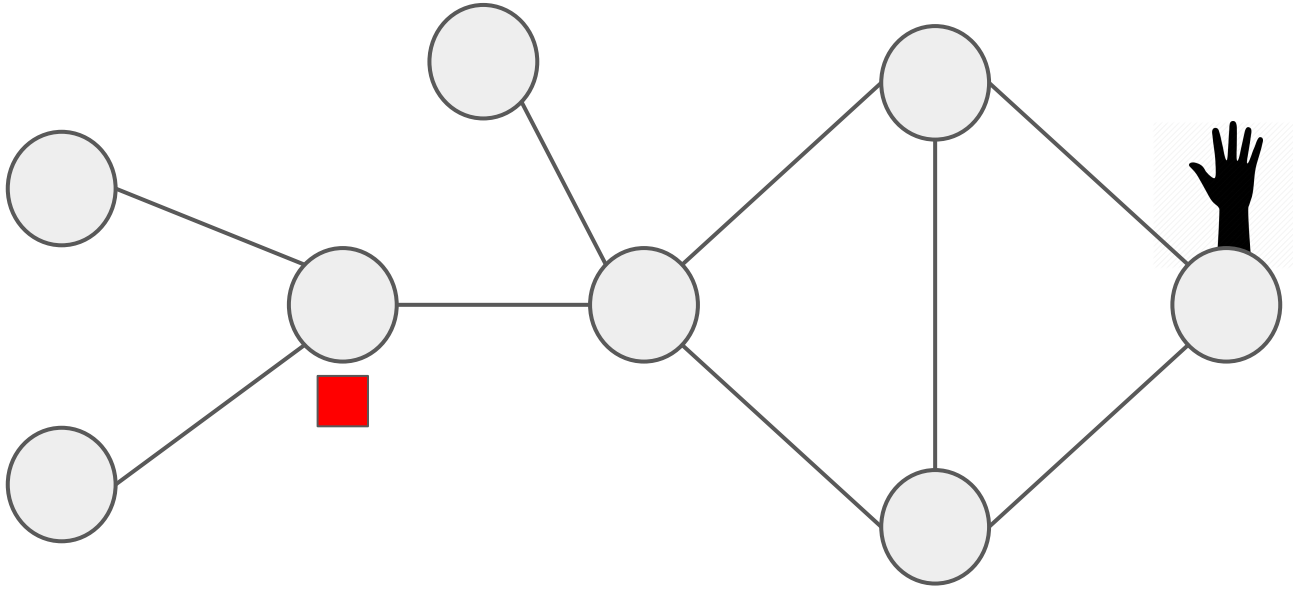
# Distributed Directory



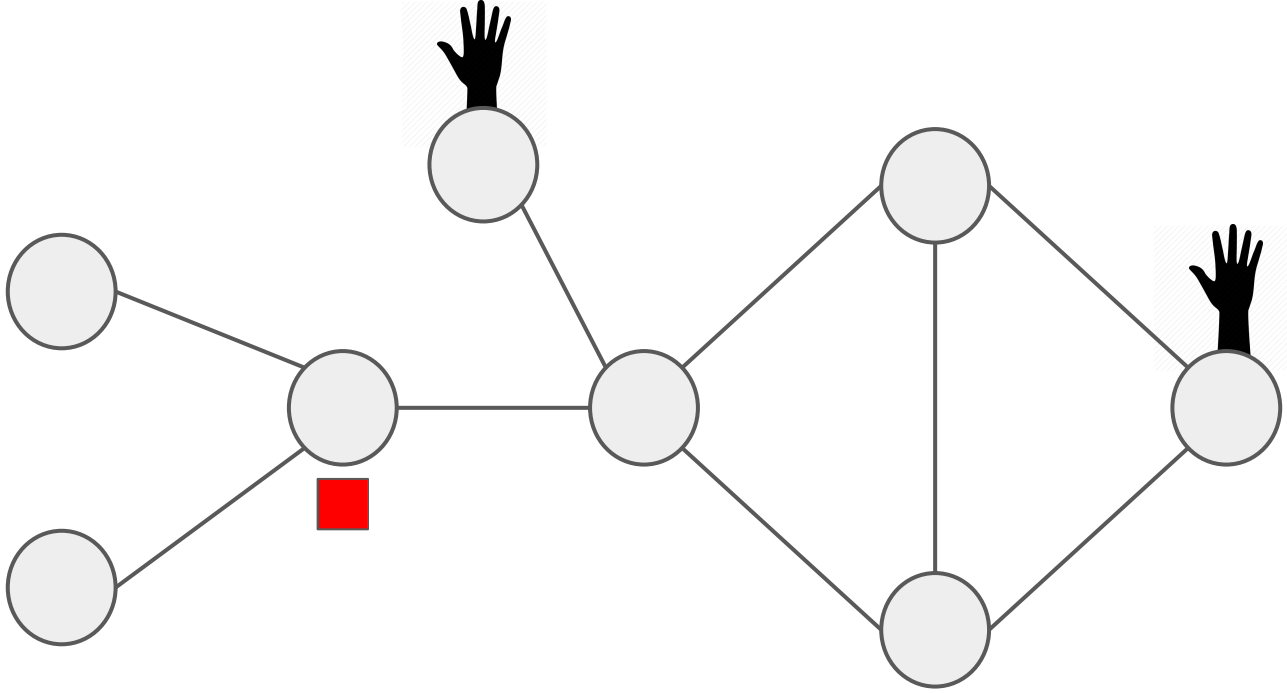
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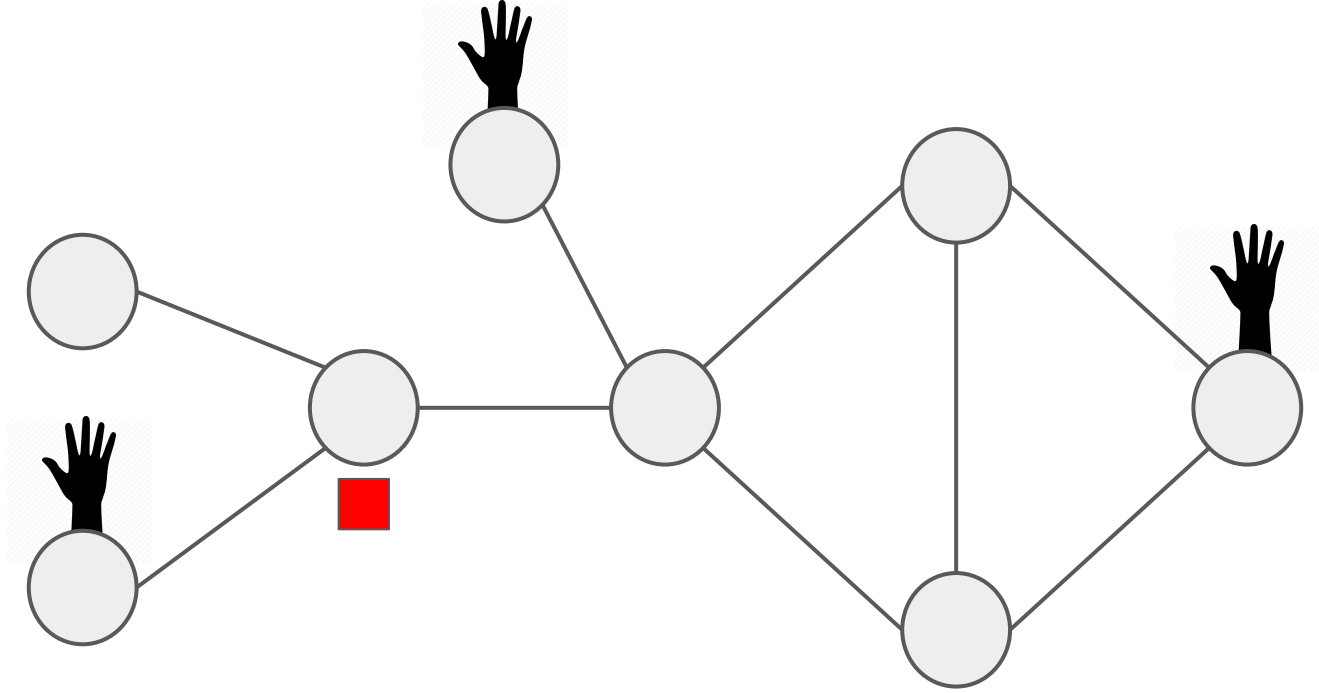
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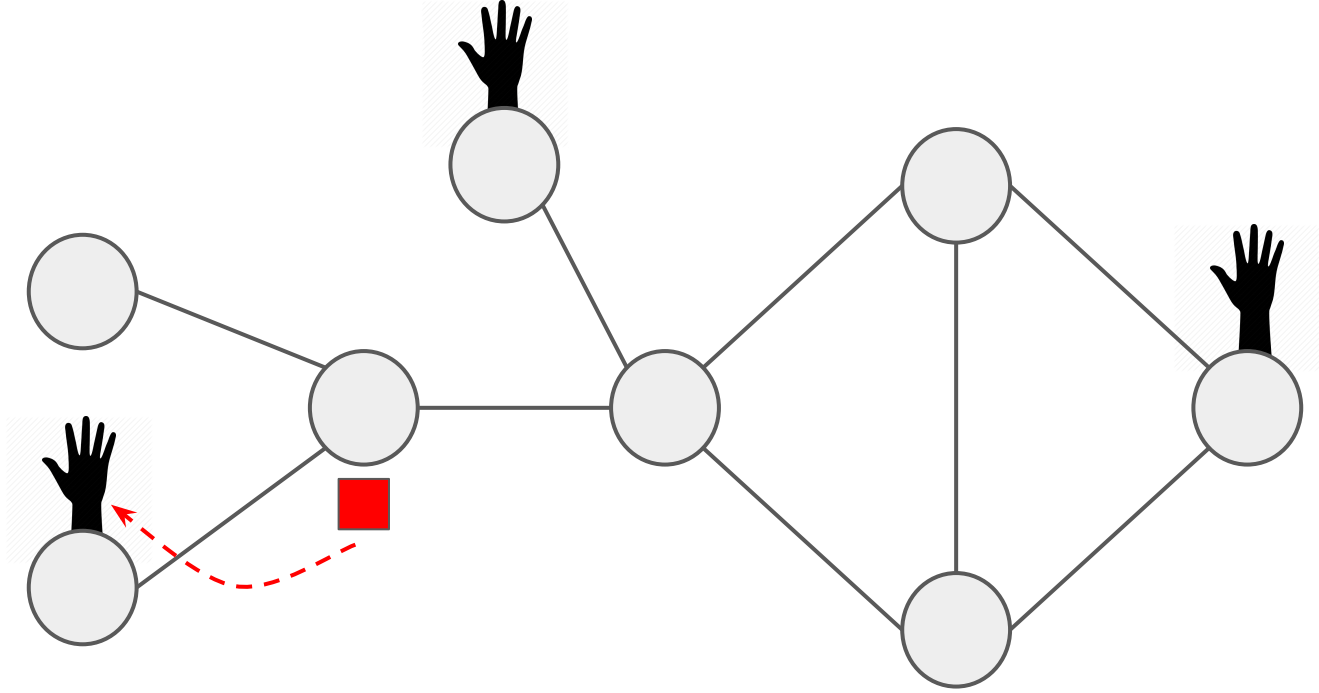
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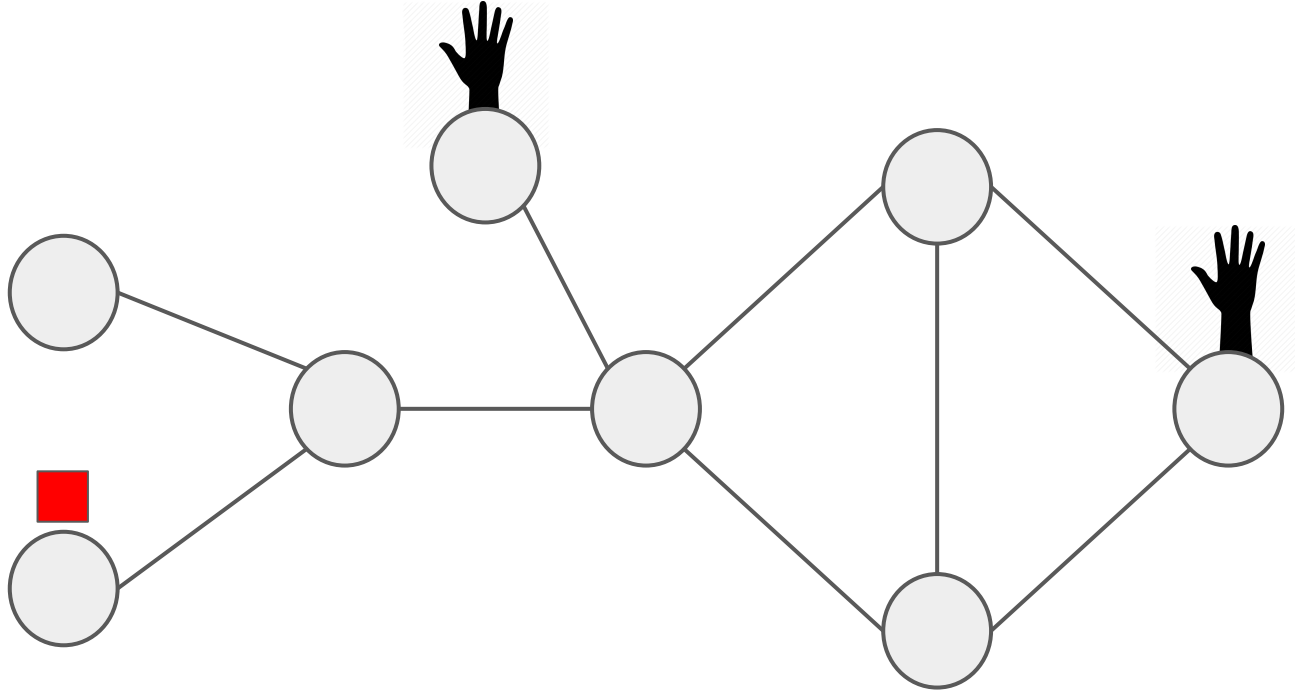
# Distributed Directory



# Distributed Directory

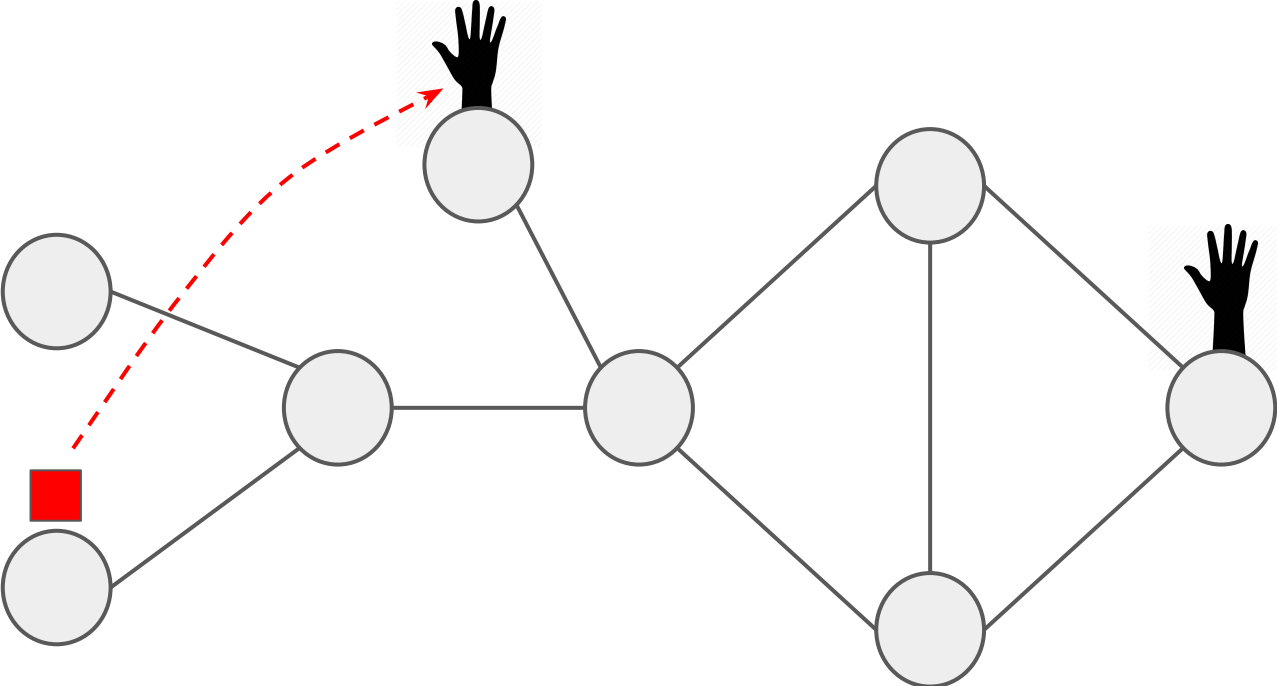


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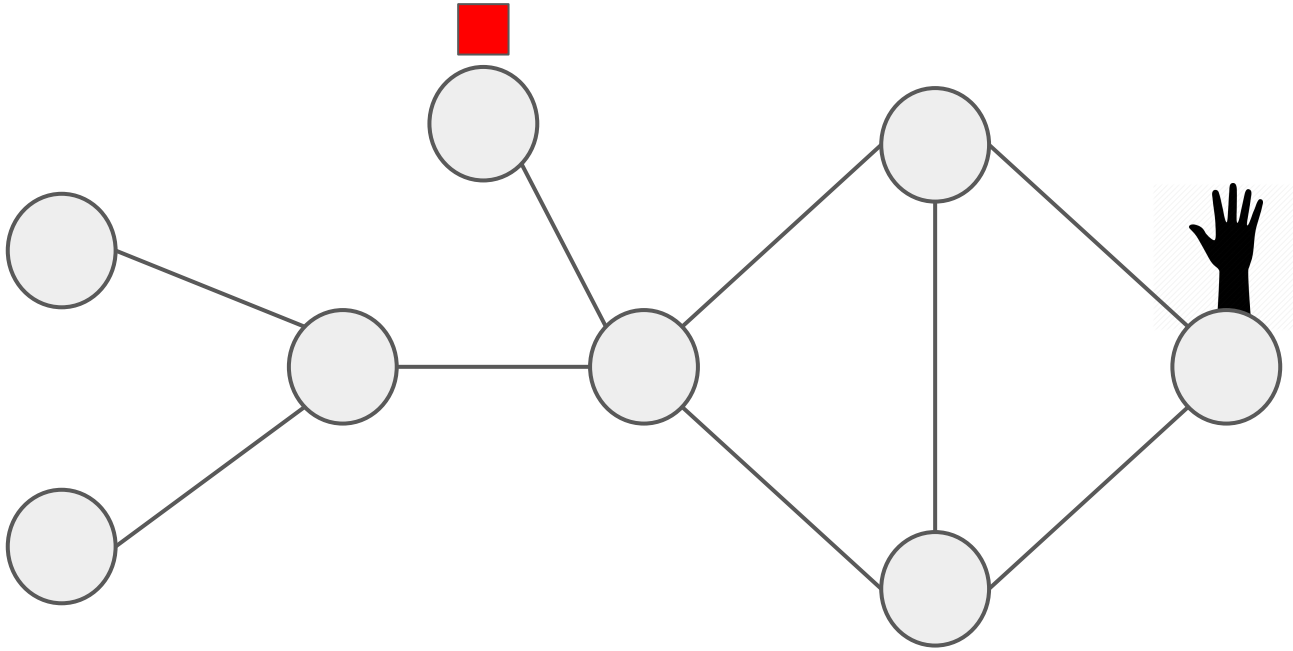




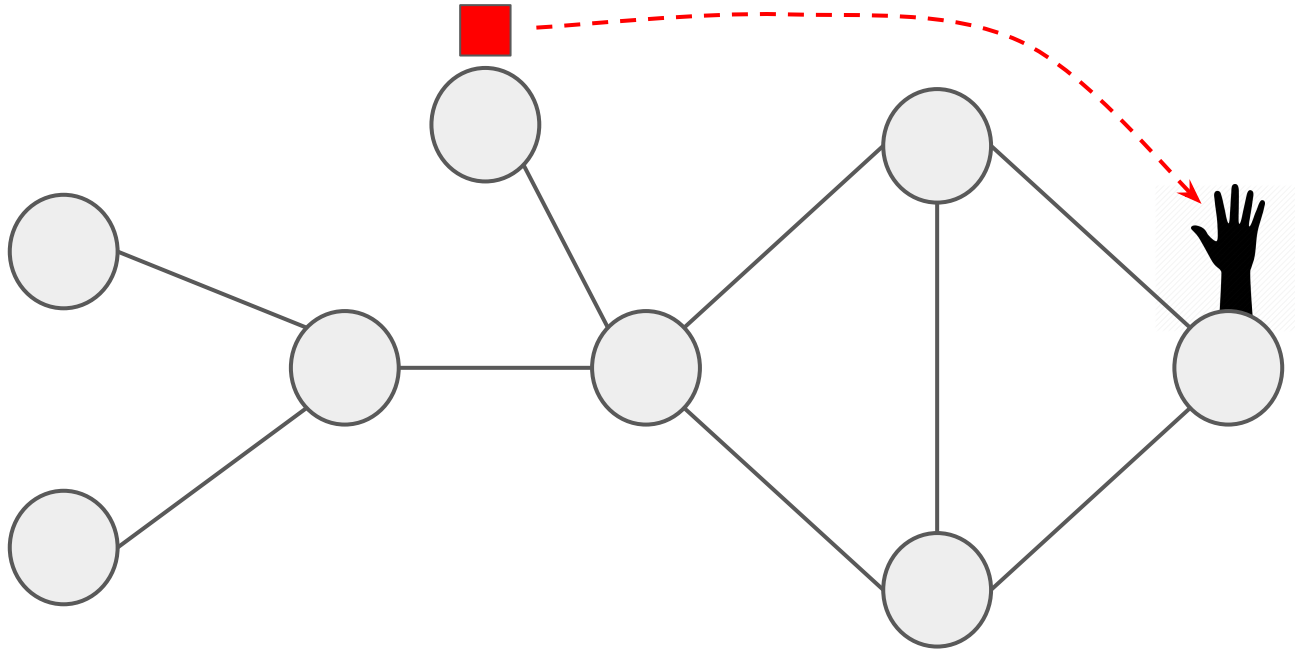
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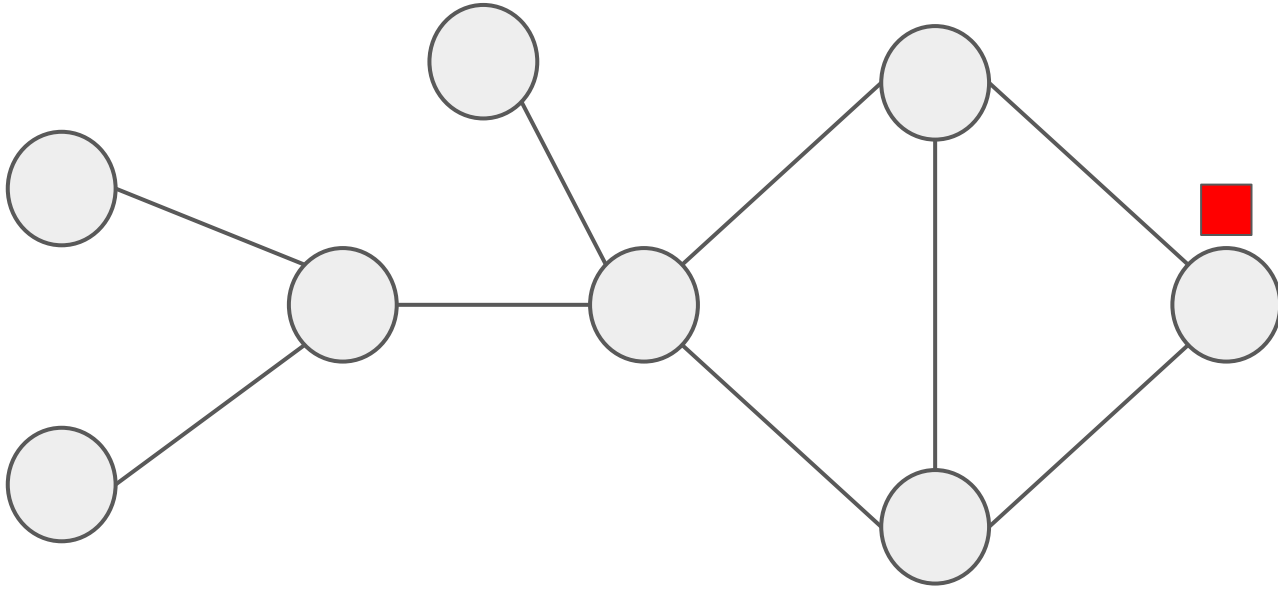
# Distributed Directory



# Distributed Directory



# Distributed Directory

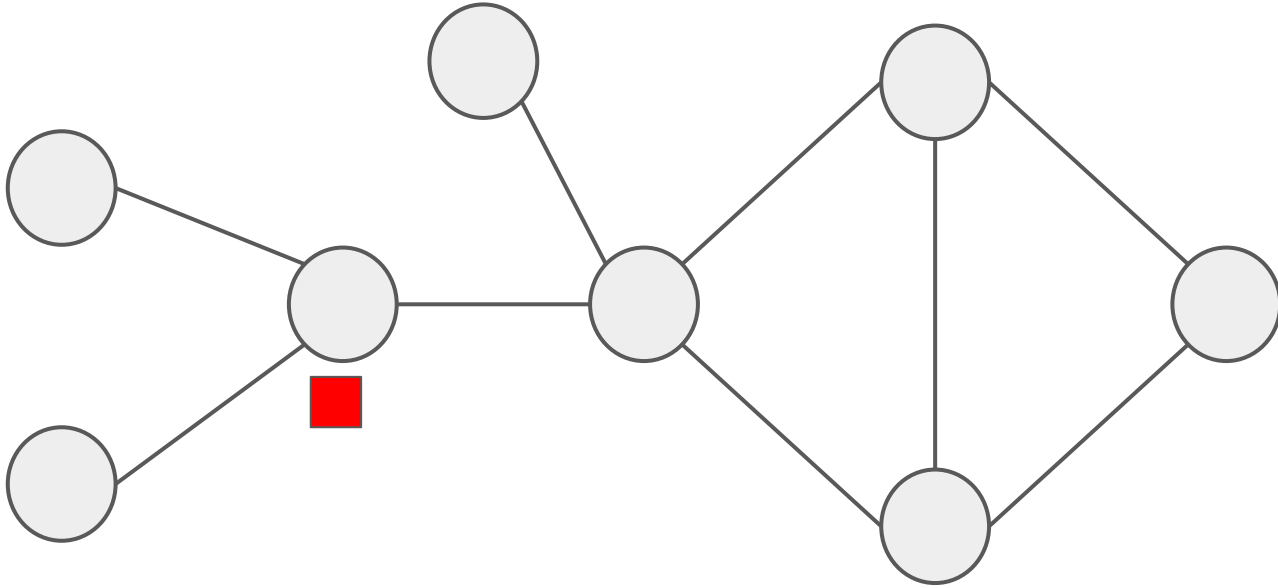


# Arrow

[Demmer & Herlihy 1998]

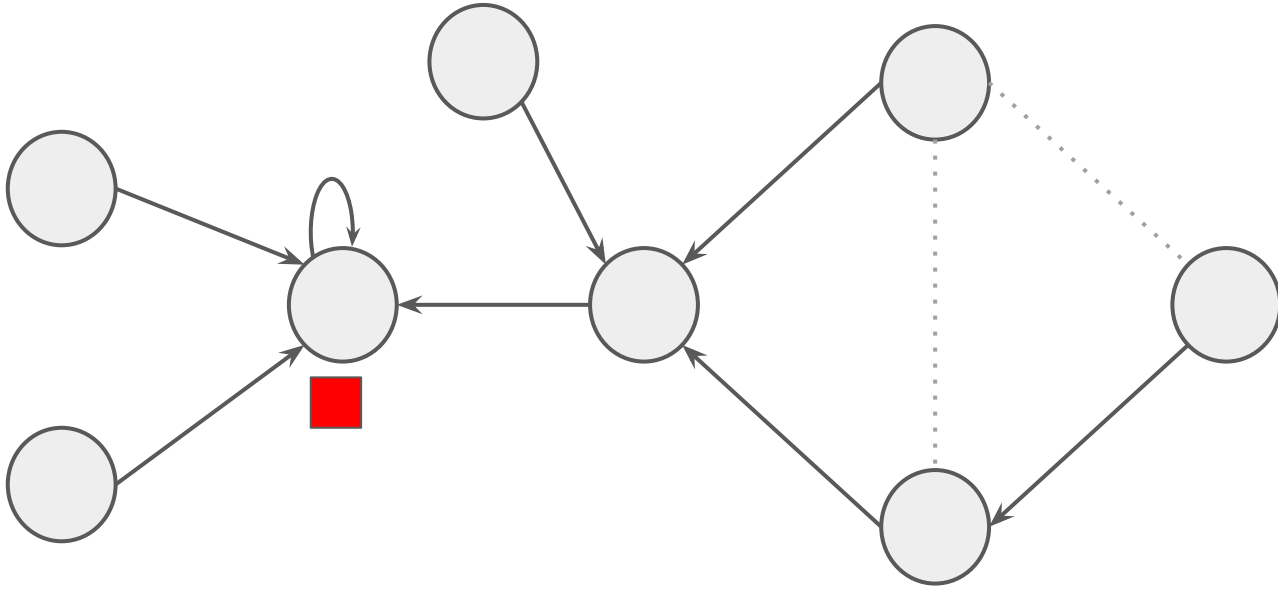
# Arrow

[Demmer & Herlihy 1998]



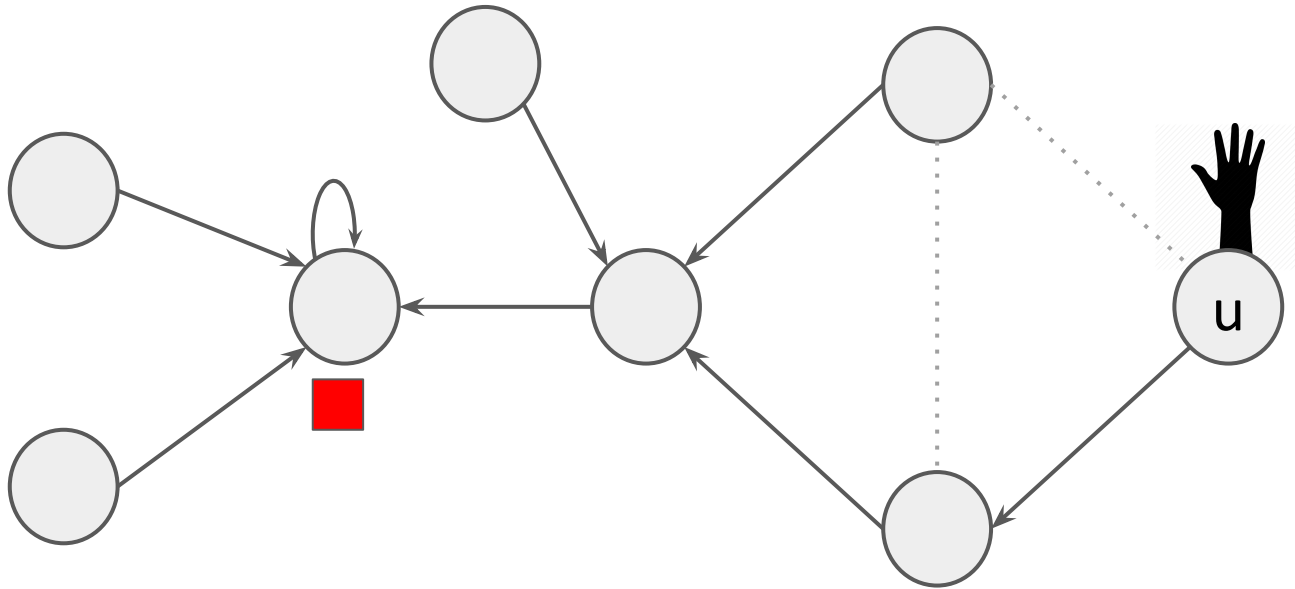
# Arrow

[Demmer & Herlihy 1998]



# Arrow

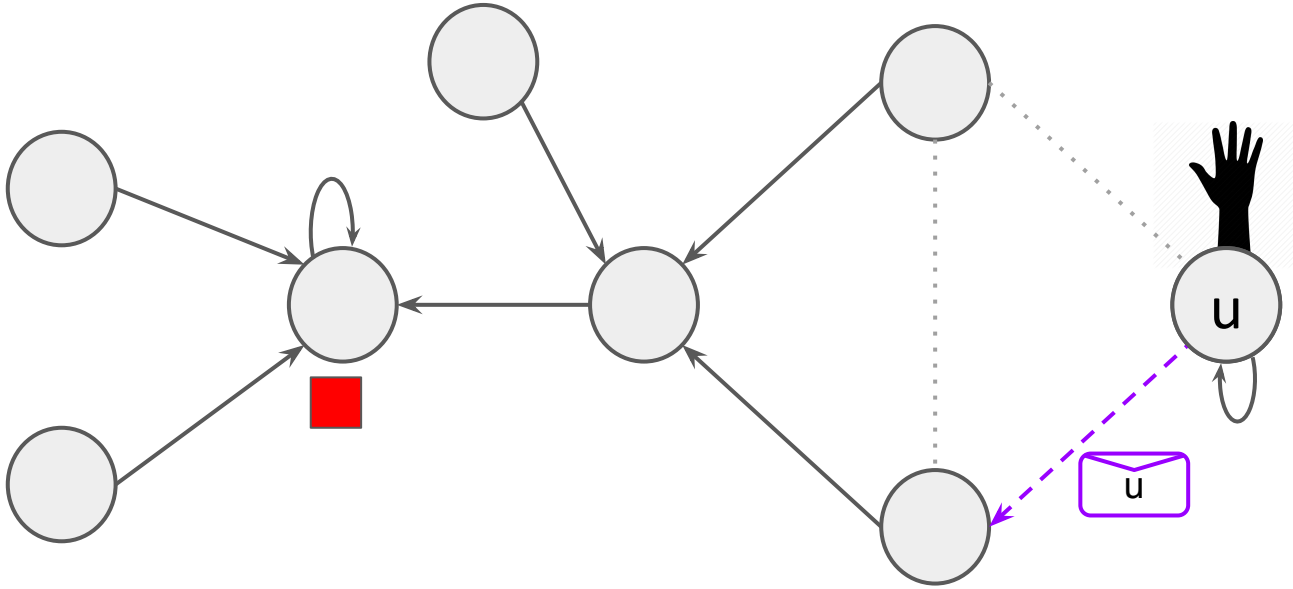
[Demmer & Herlihy 1998]





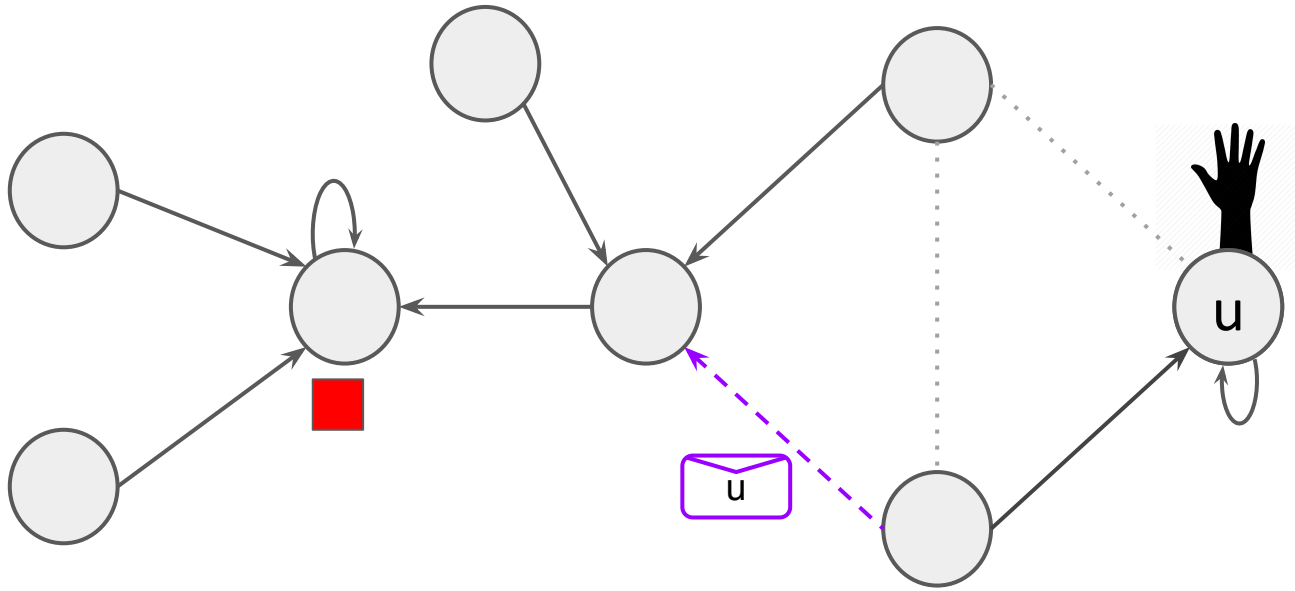
# Arrow

[Demmer & Herlihy 1998]



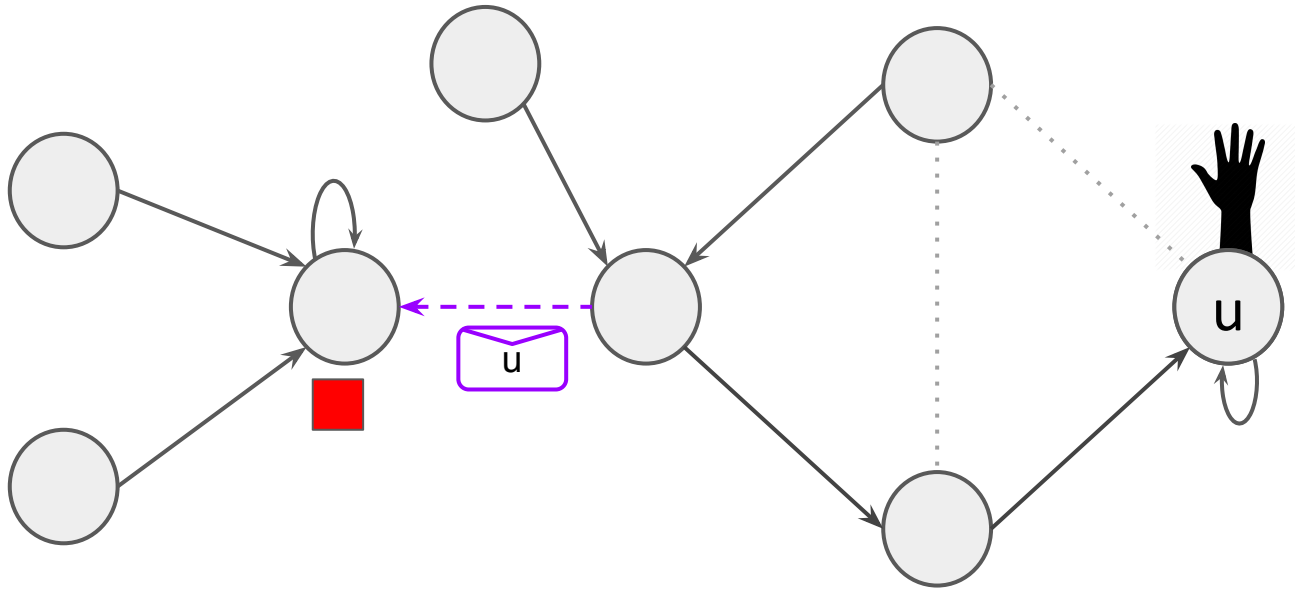
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[Demmer & Herlihy 1998]



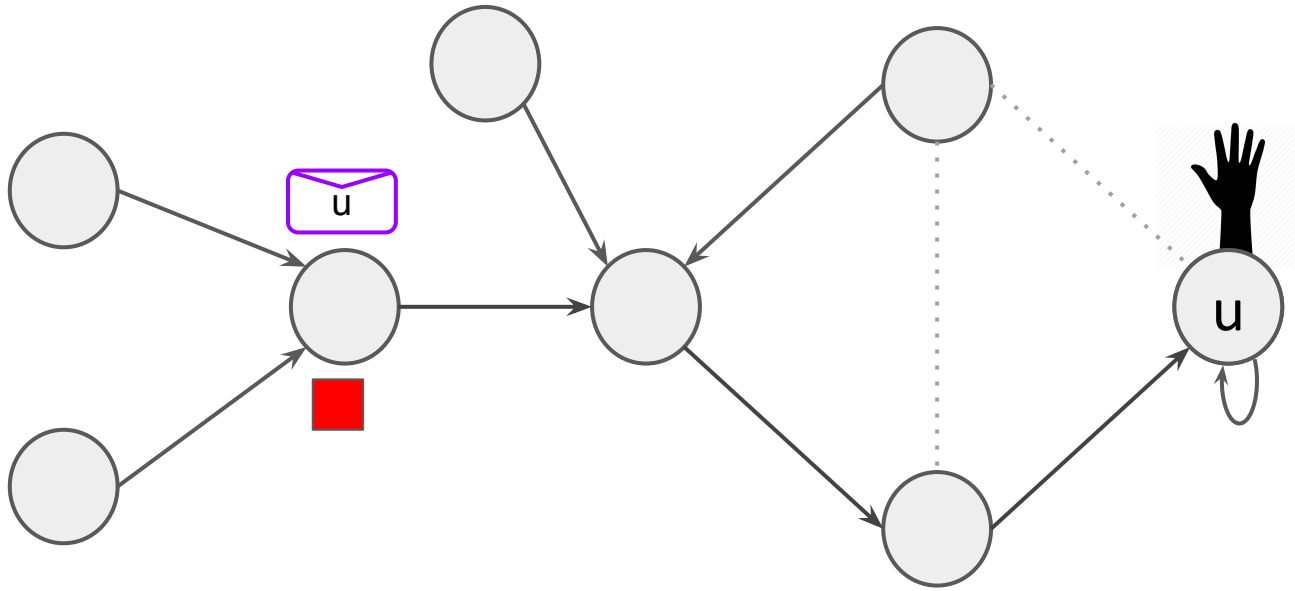
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[Demmer & Herlihy 1998]



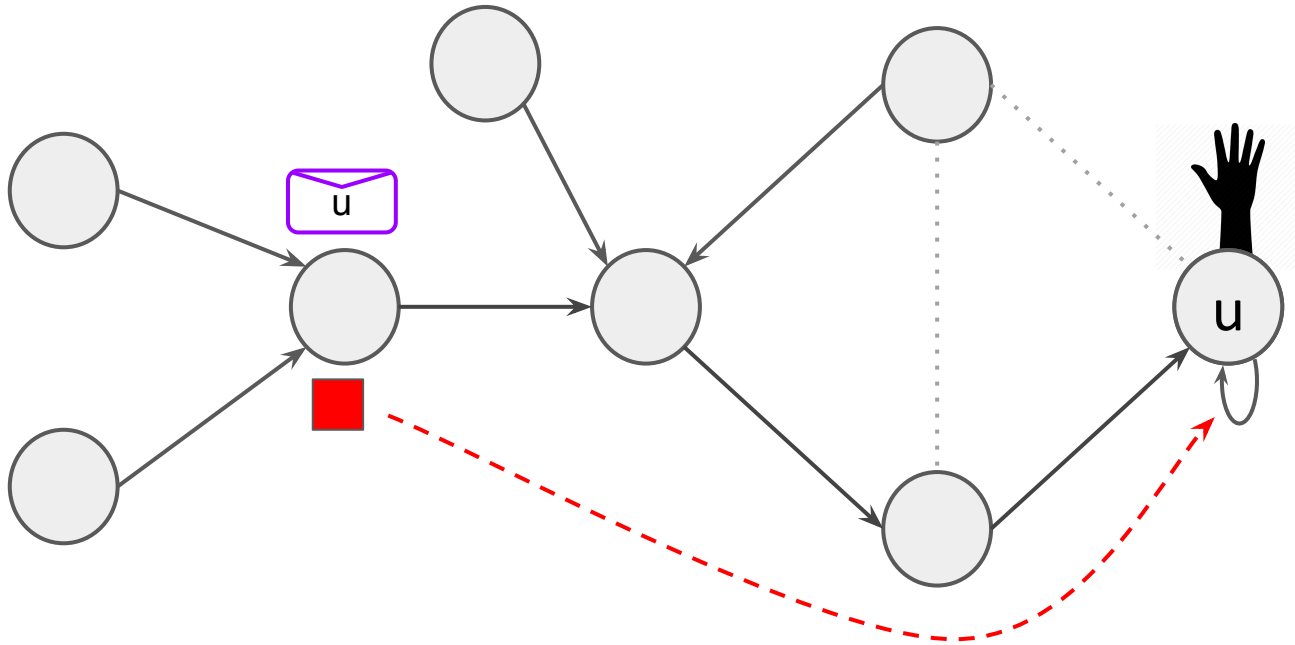
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[Demmer & Herlihy 1998]



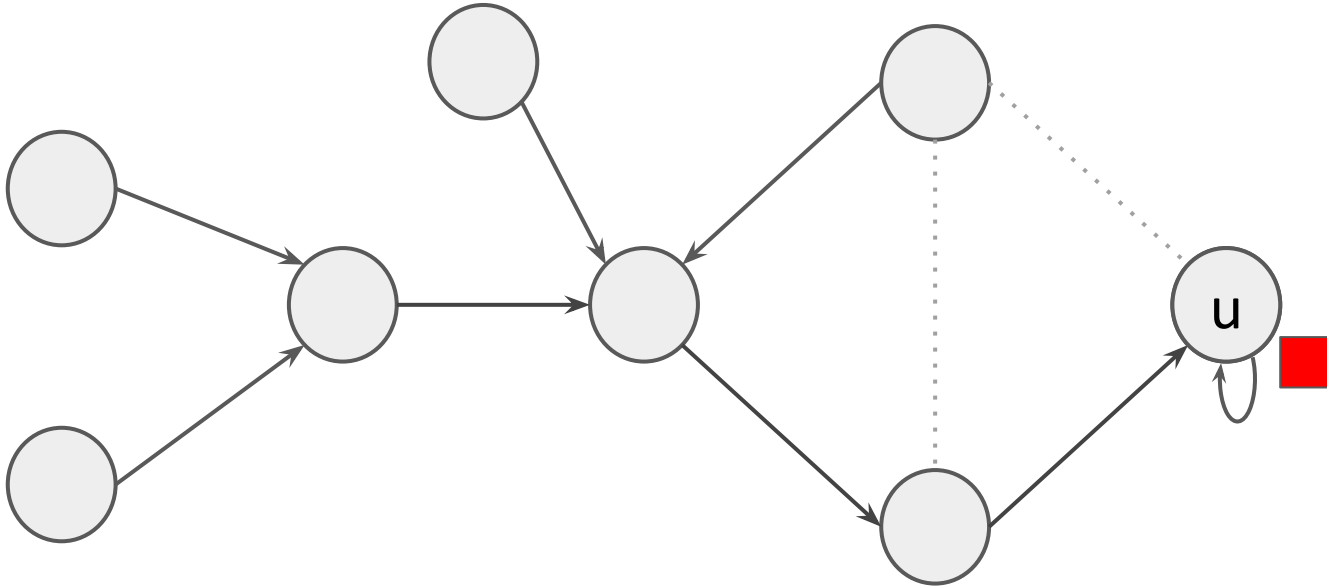
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[Demmer & Herlihy 1998]



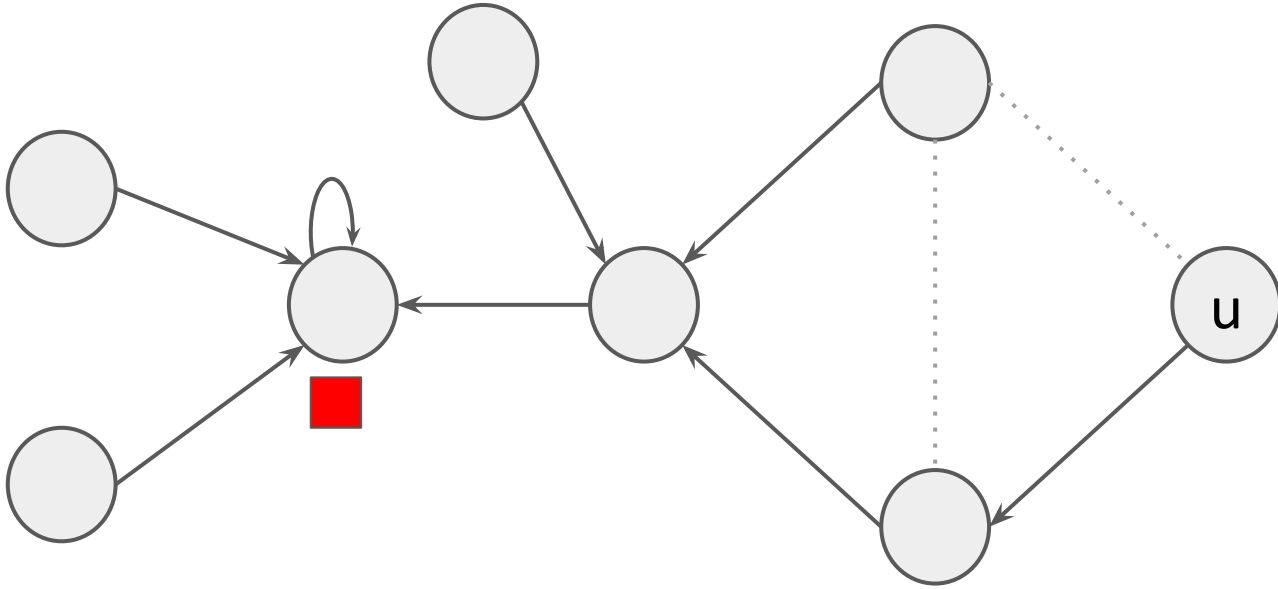
# Arrow

[Demmer & Herlihy 1998]



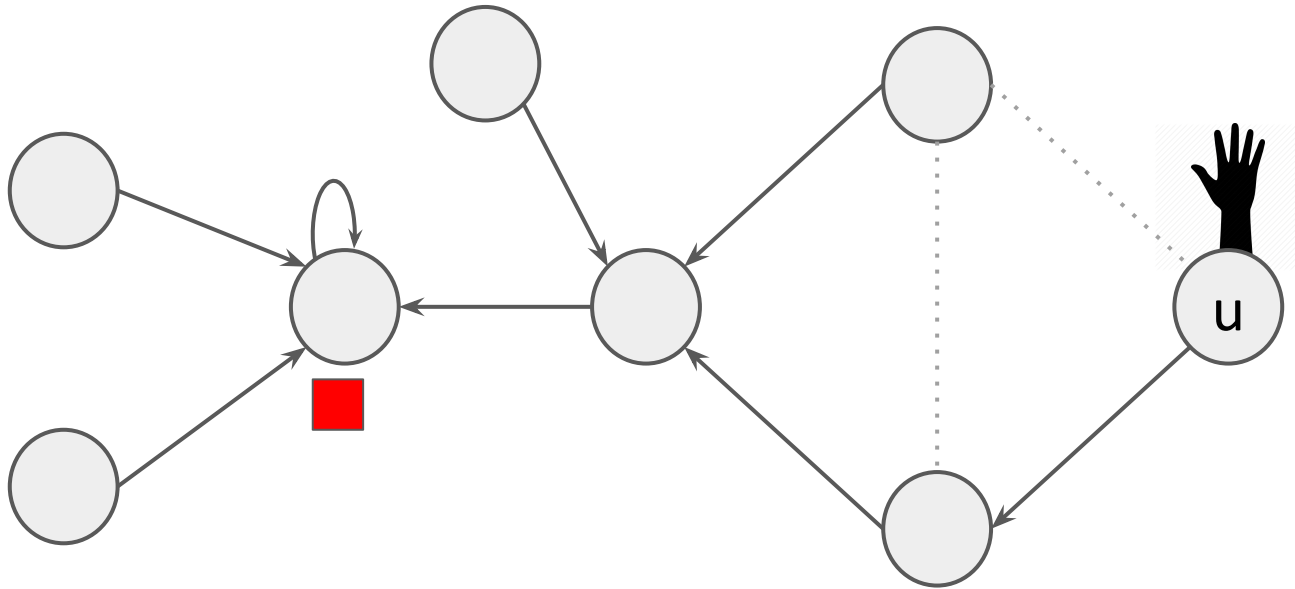
# Arrow

[Demmer & Herlihy 1998]



# Arrow

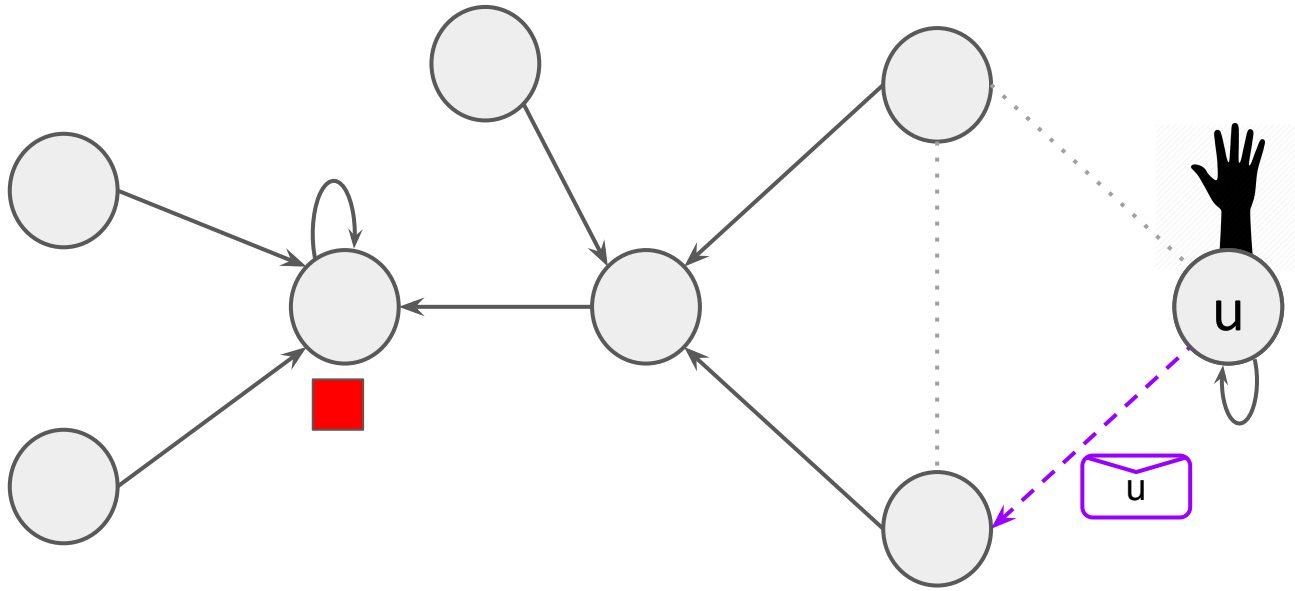
[Demmer & Herlihy 1998]





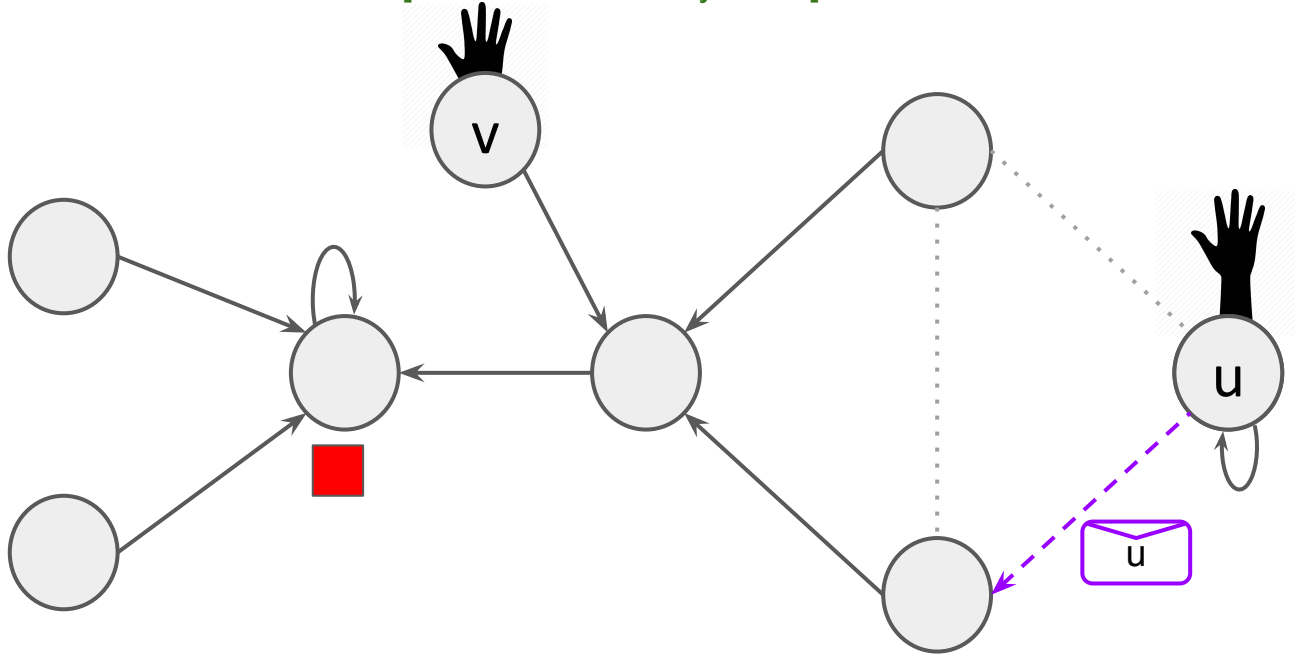
# Arrow

[Demmer & Herlihy 1998]



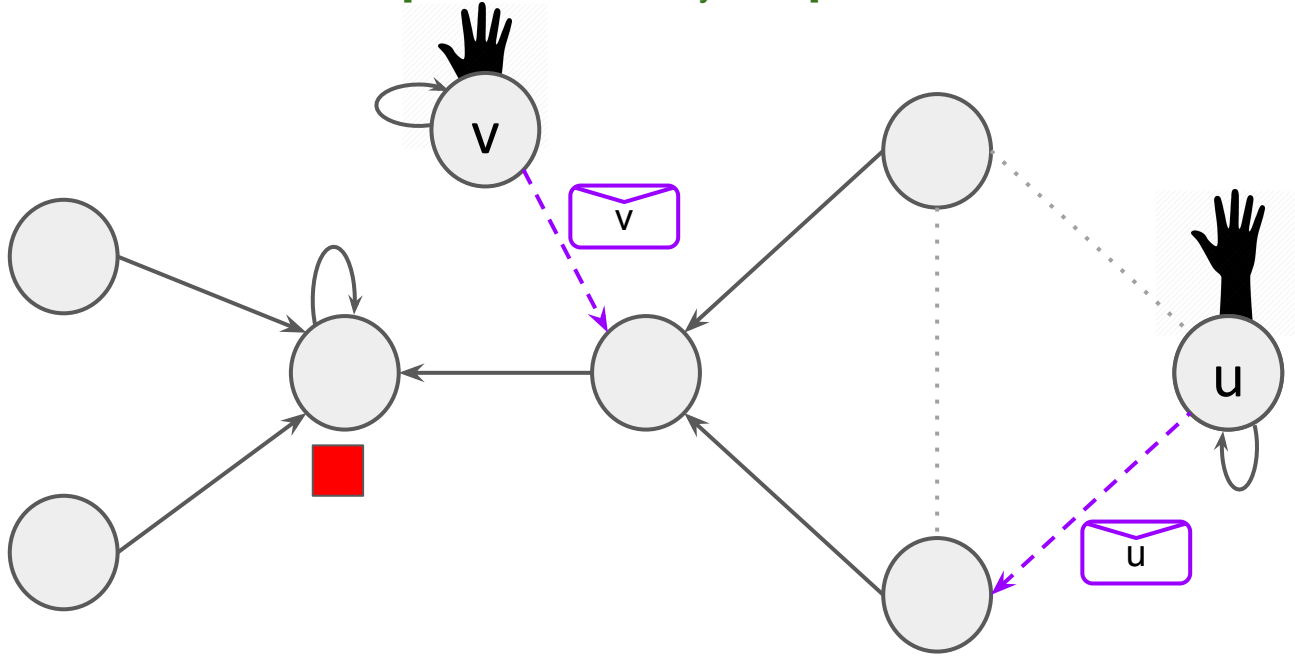
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[Demmer & Herlihy 1998]



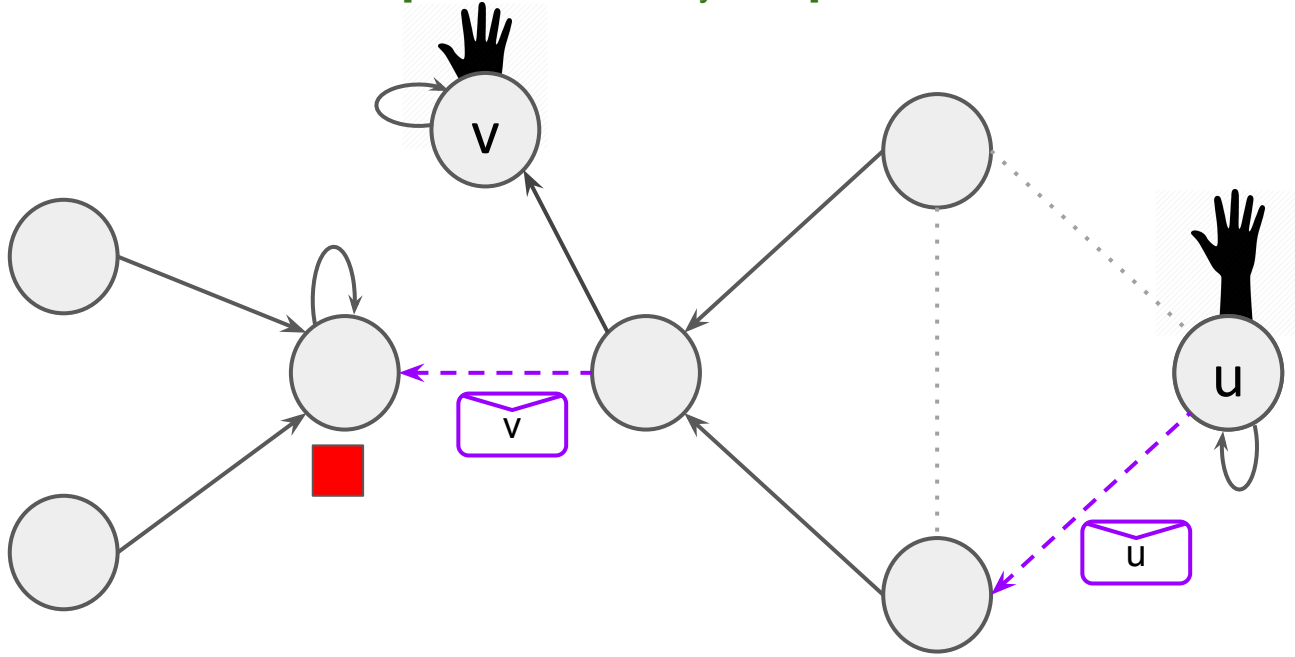
# Arrow

[Demmer & Herlihy 1998]



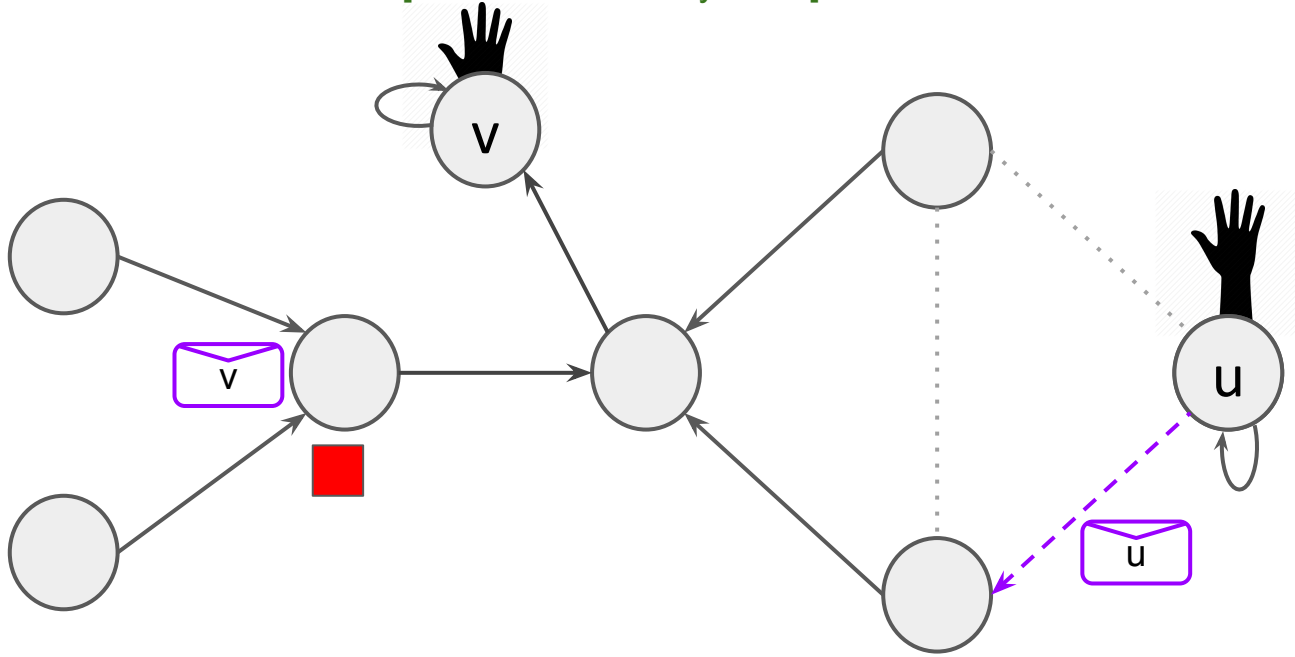
# Arrow

[Demmer & Herlihy 1998]



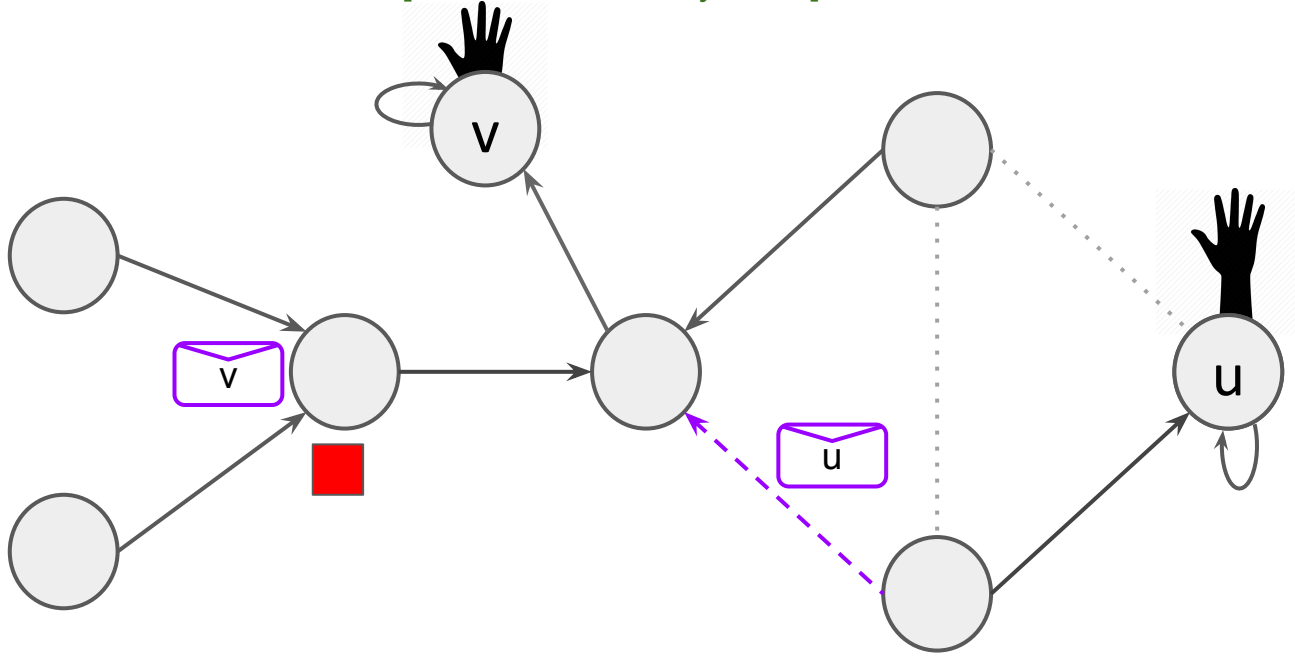
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[Demmer & Herlihy 1998]



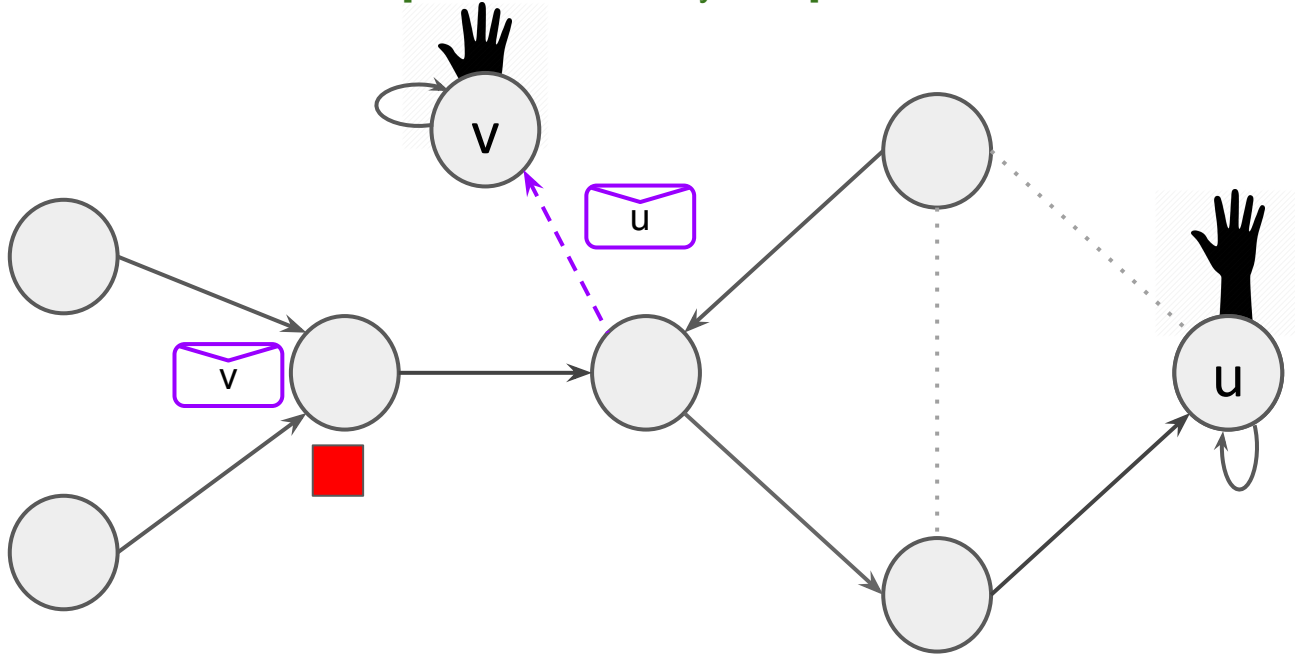
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[Demmer & Herlihy 1998]



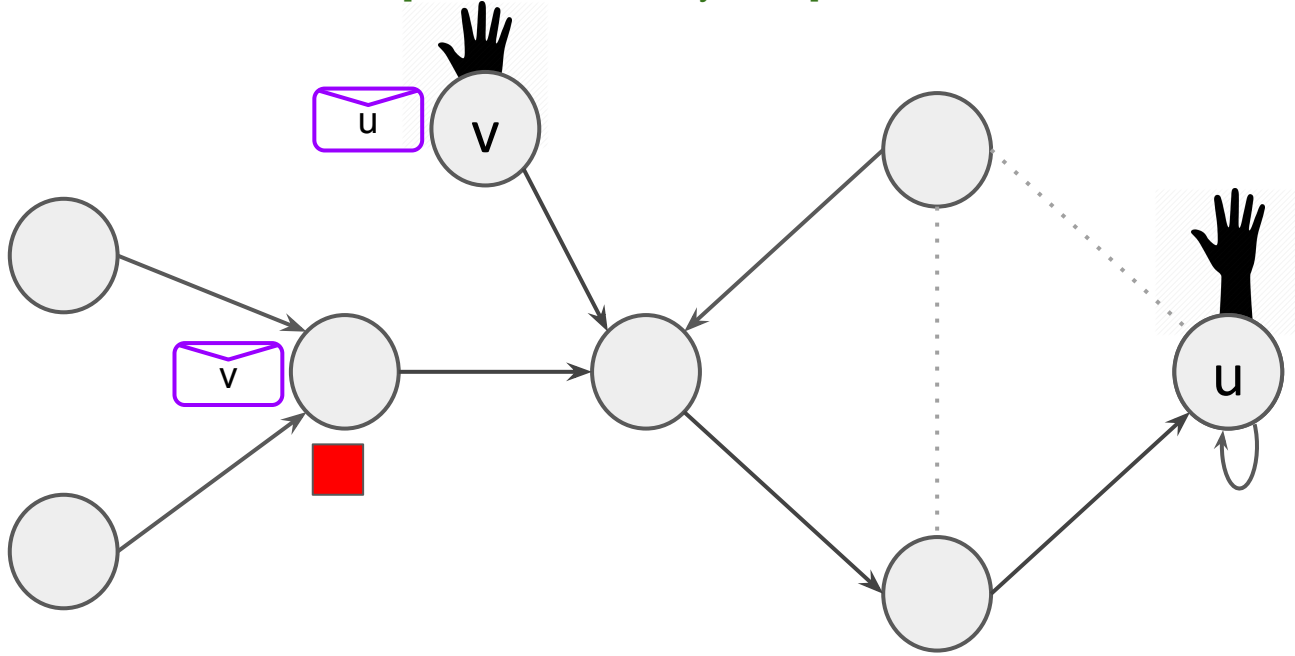
# Arrow

[Demmer & Herlihy 1998]



# Arrow

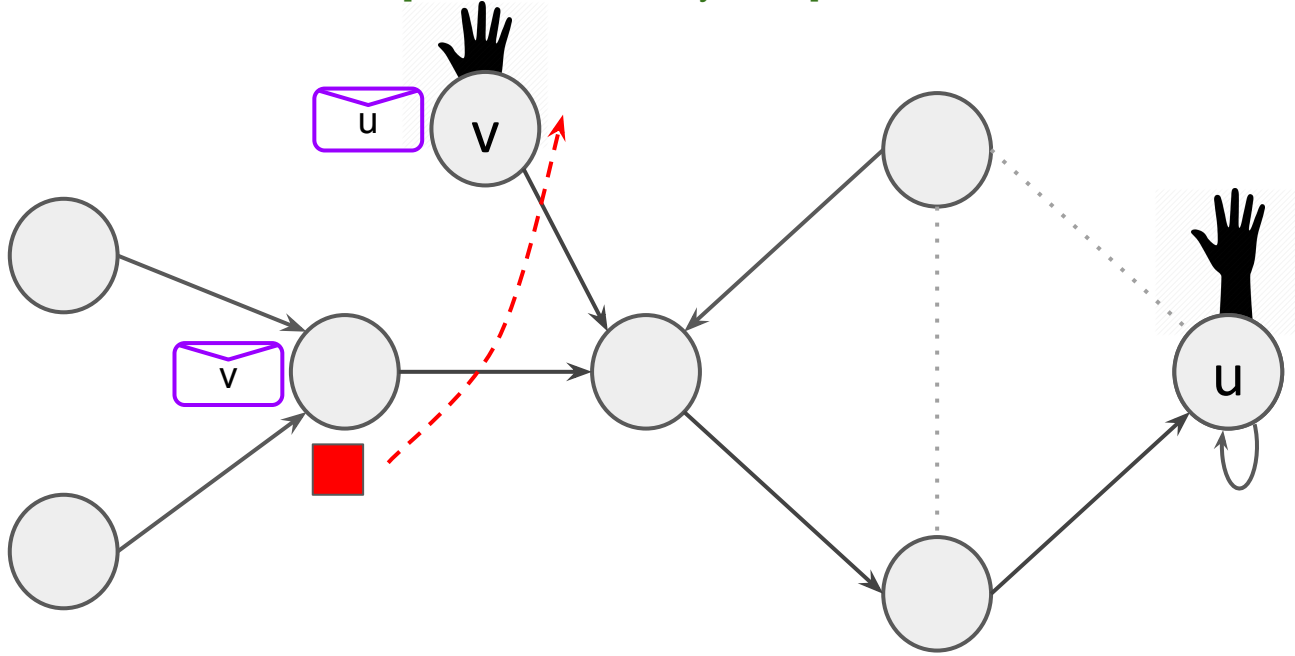
[Demmer & Herlihy 1998]





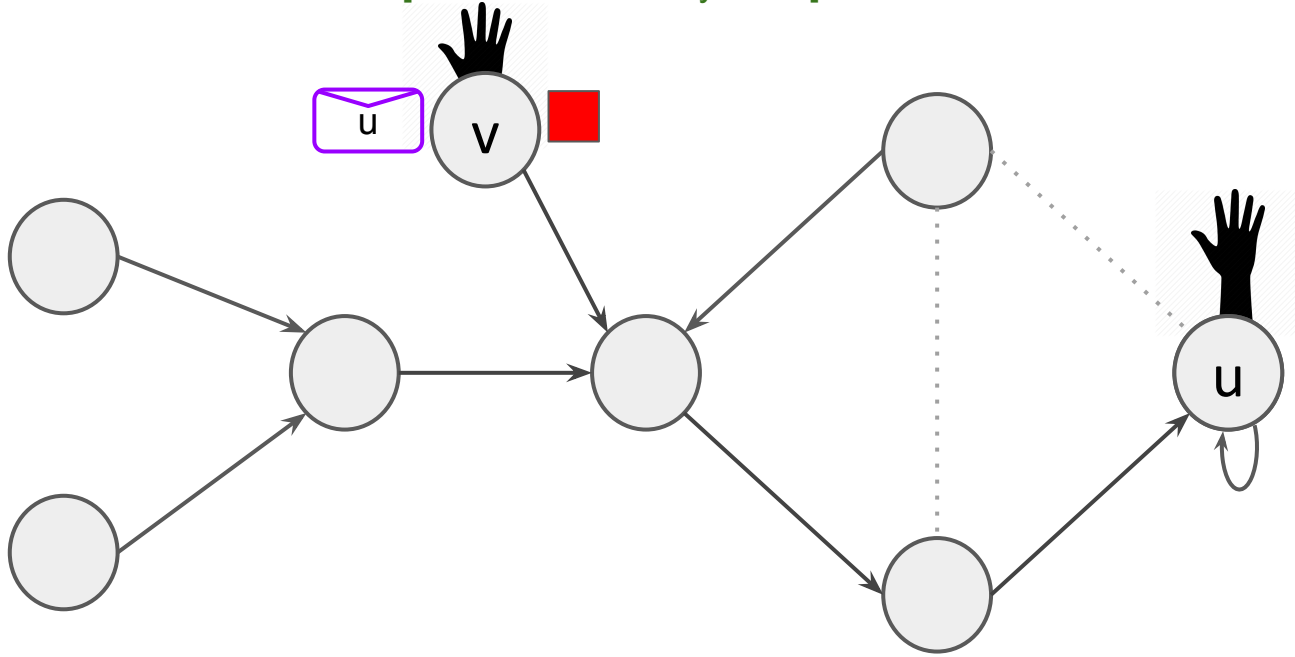
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[Demmer & Herlihy 1998]



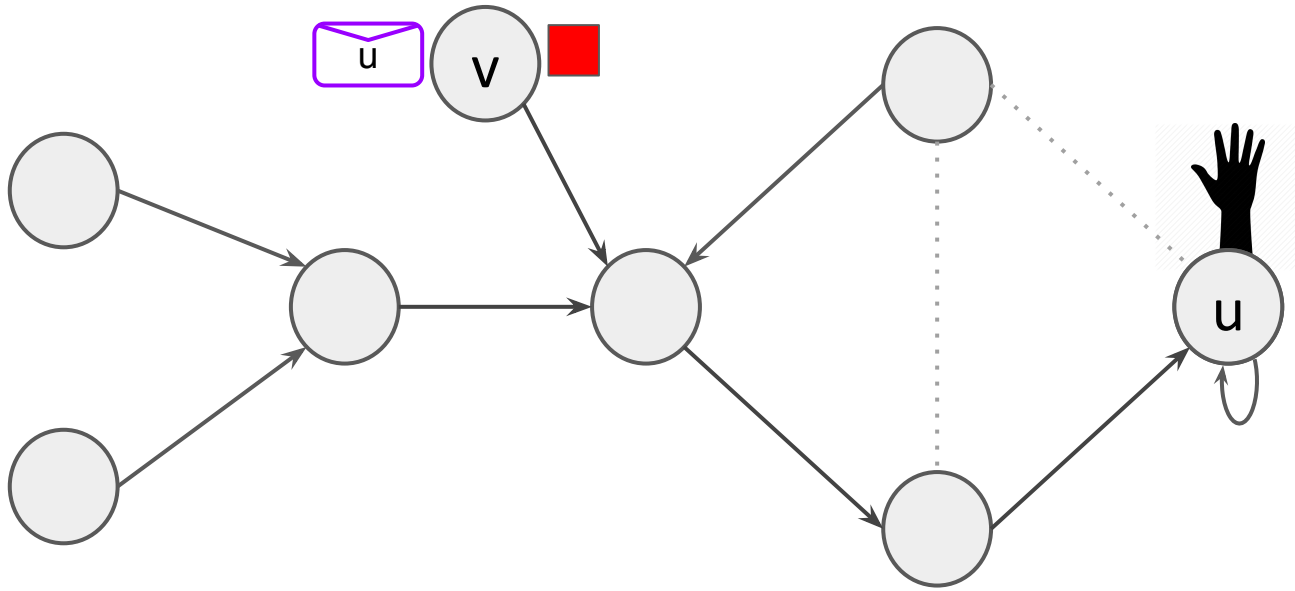
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[Demmer & Herlihy 1998]



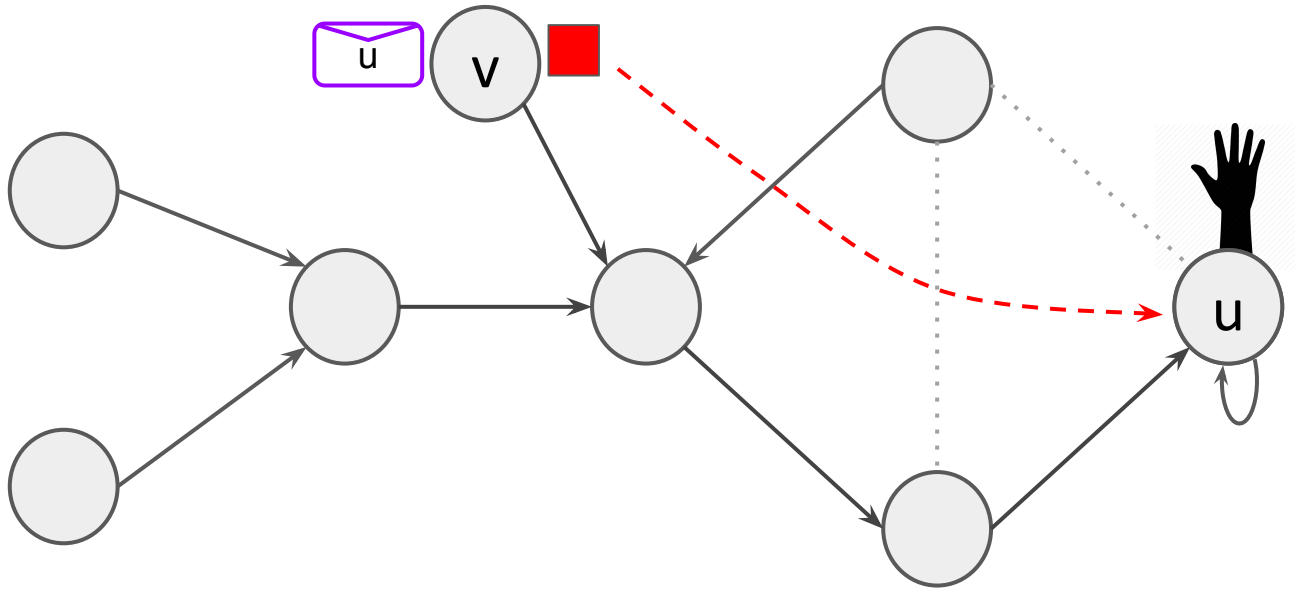
# Arrow

[Demmer & Herlihy 1998]



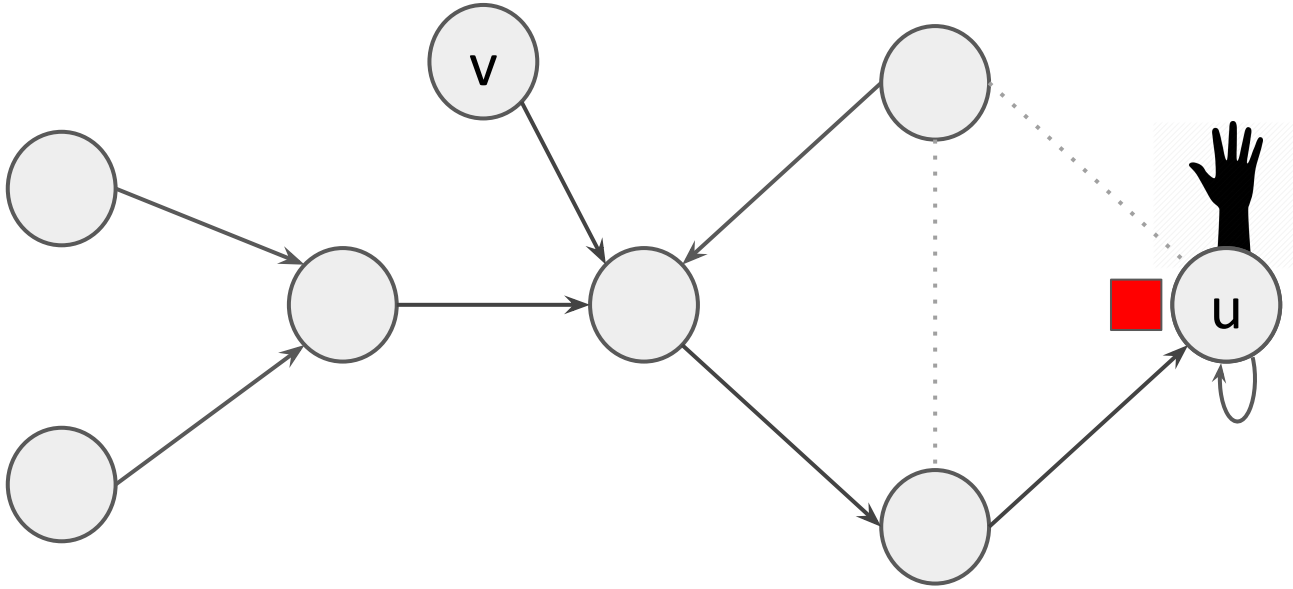
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[Demmer & Herlihy 1998]



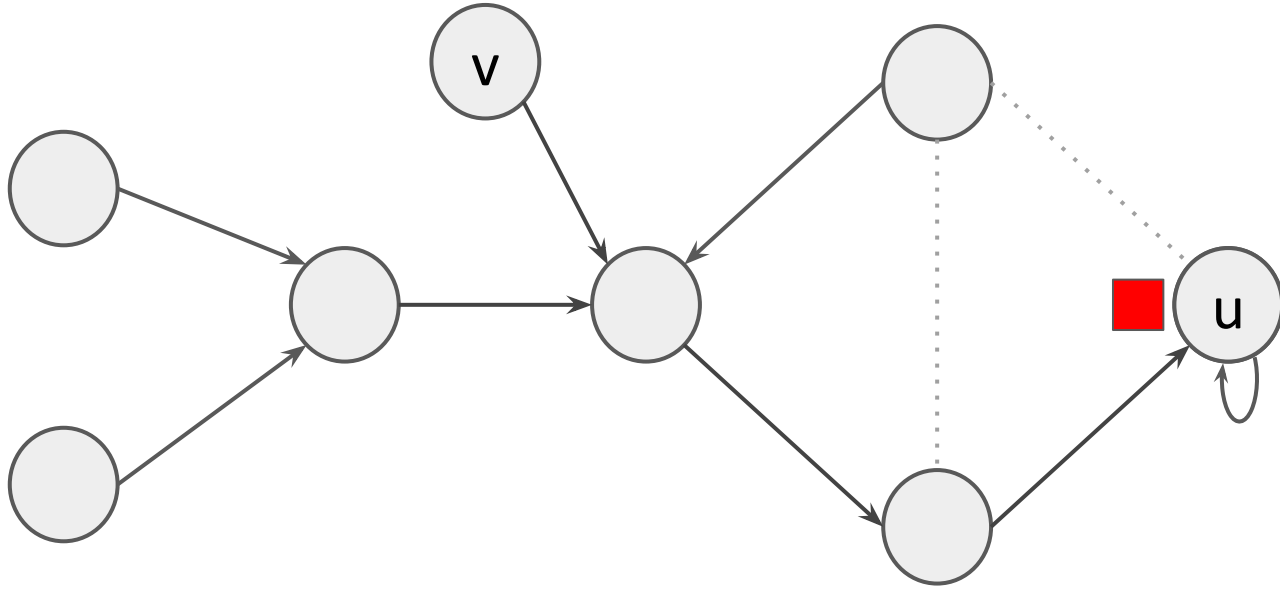
# Arrow

[Demmer & Herlihy 1998]

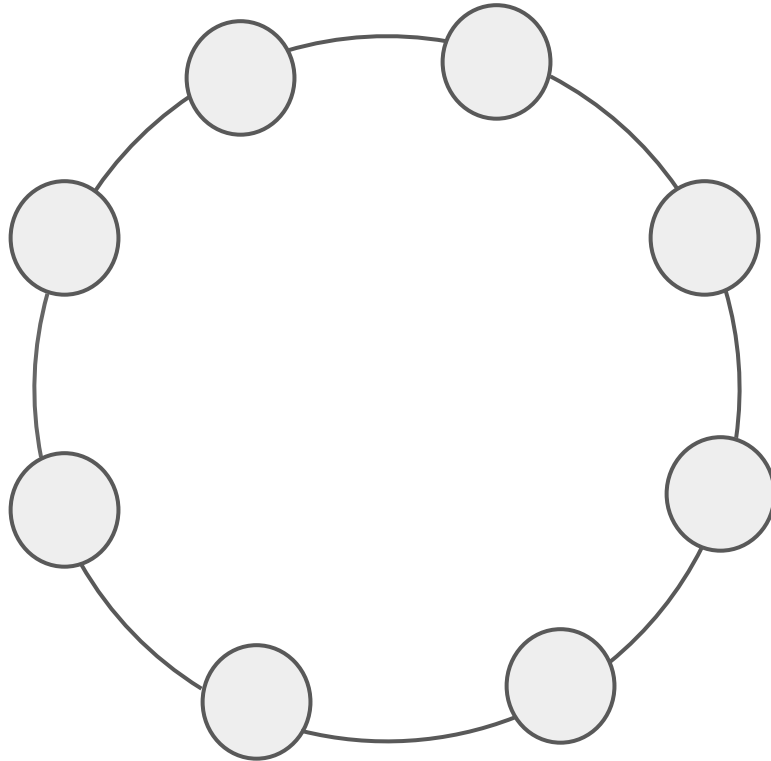


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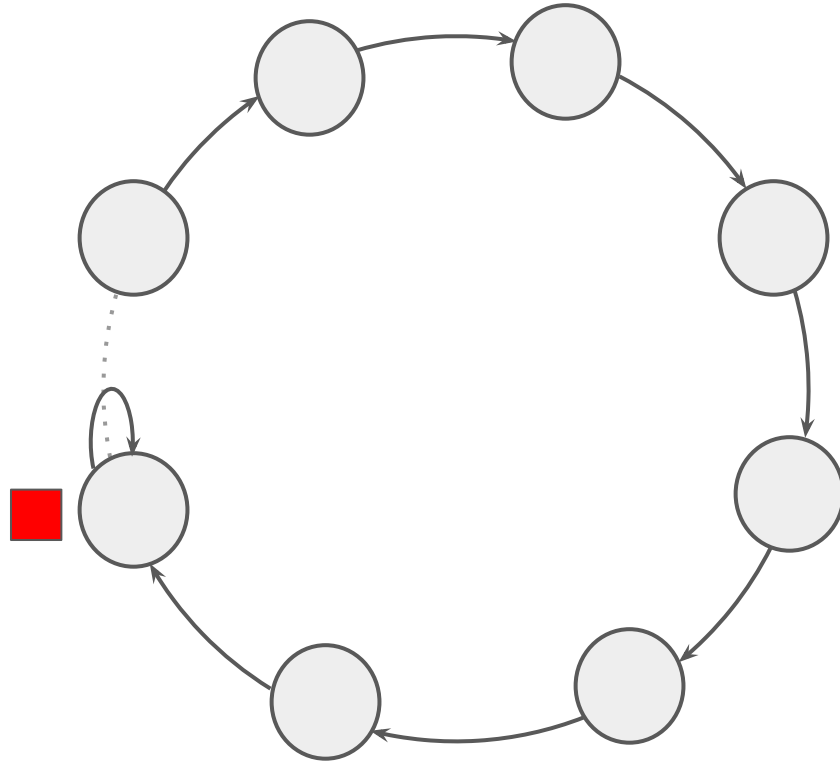
[Demmer & Herlihy 1998]



# Arrow on Rings

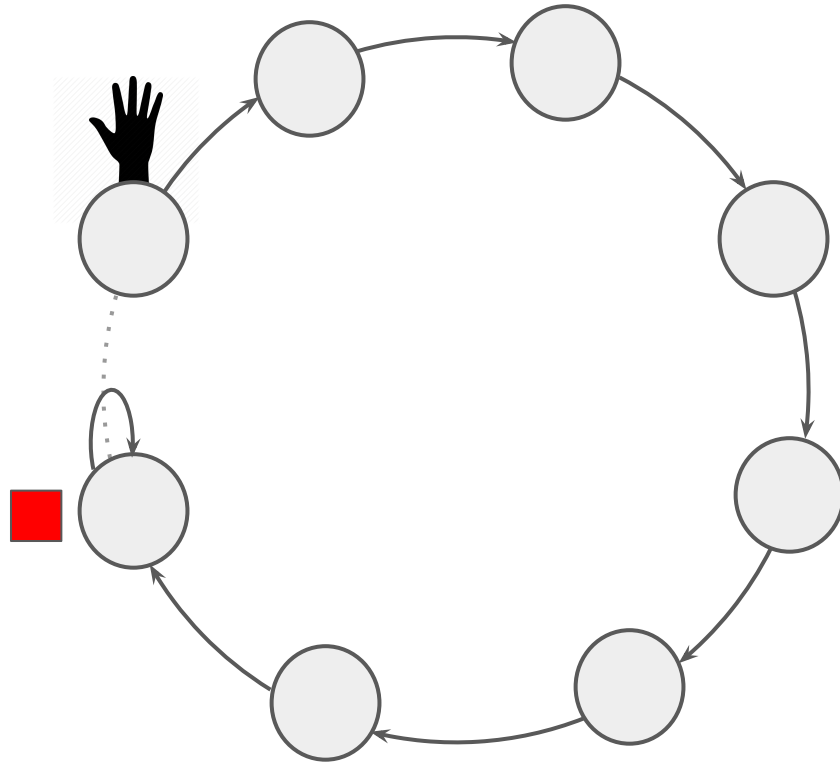


# Arrow on Rings

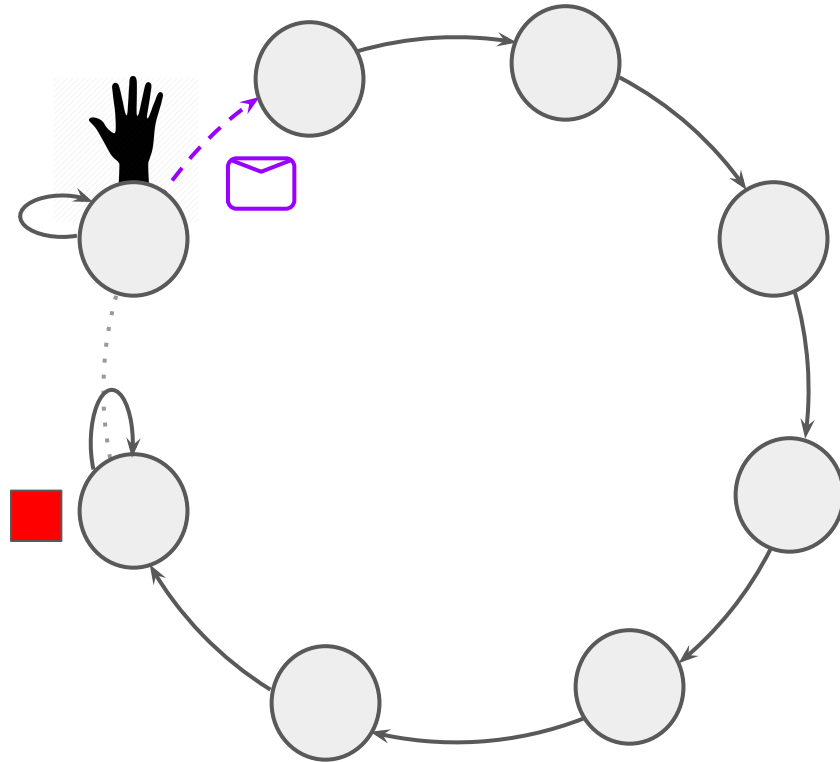




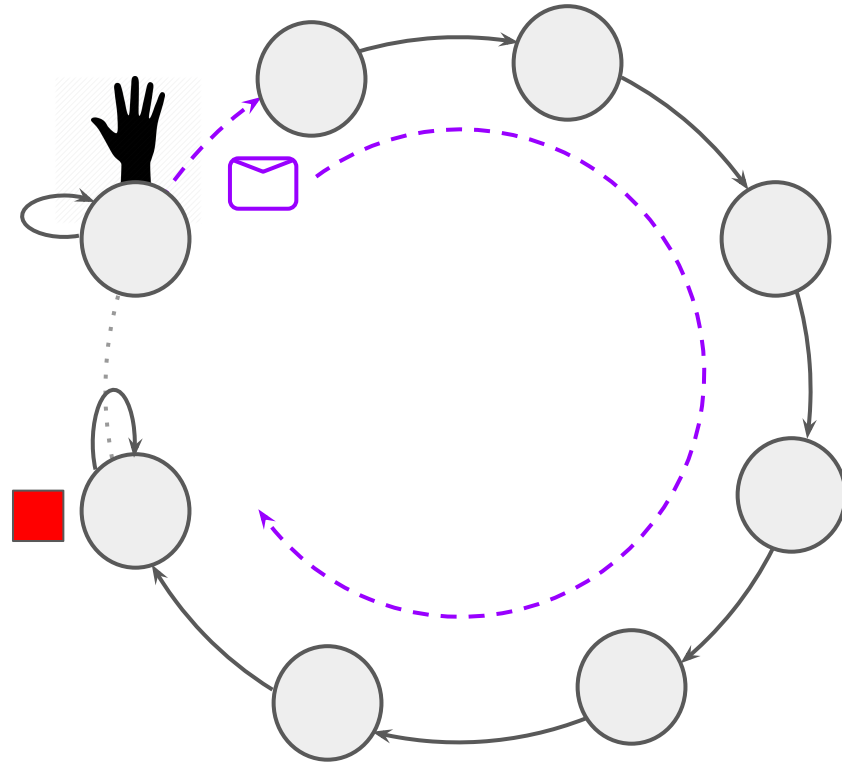
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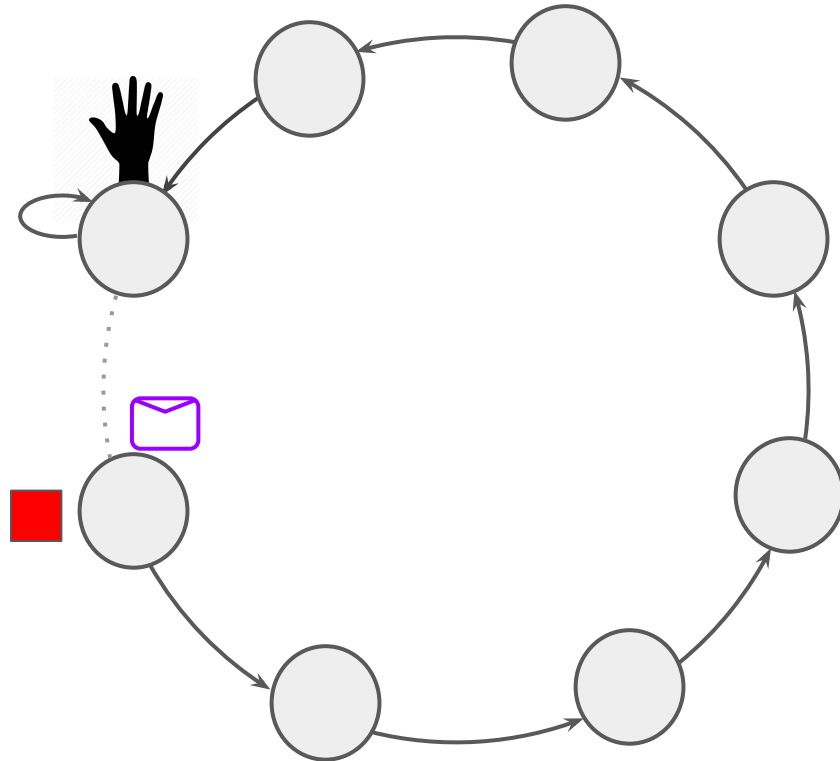
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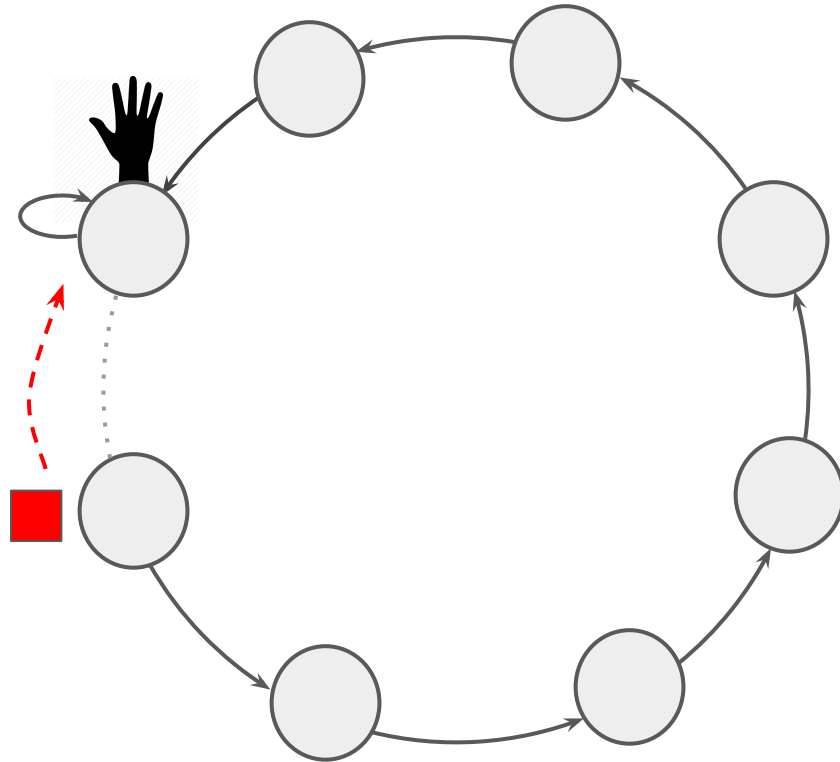
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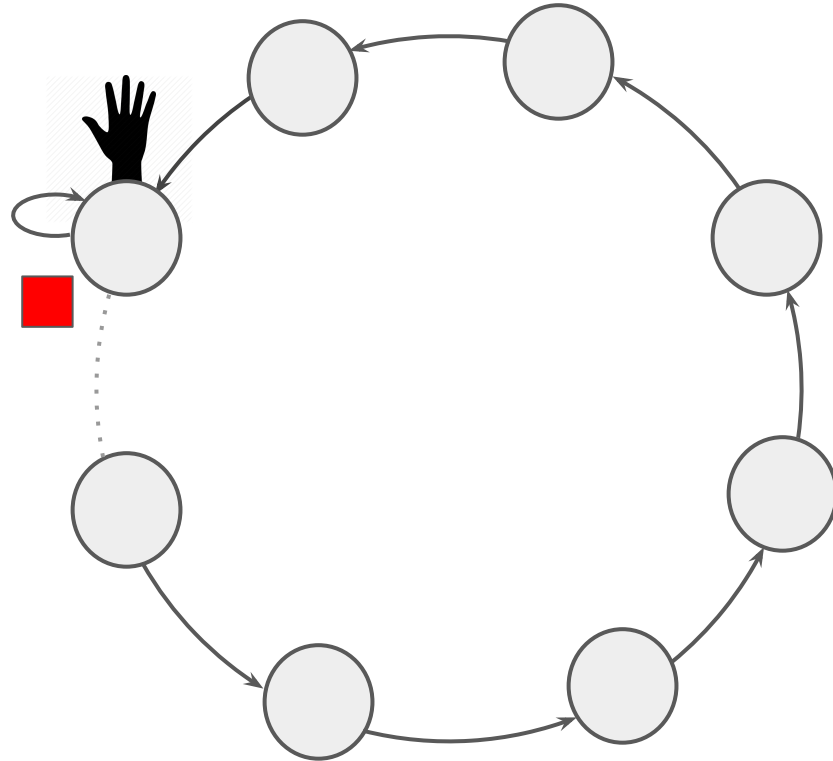
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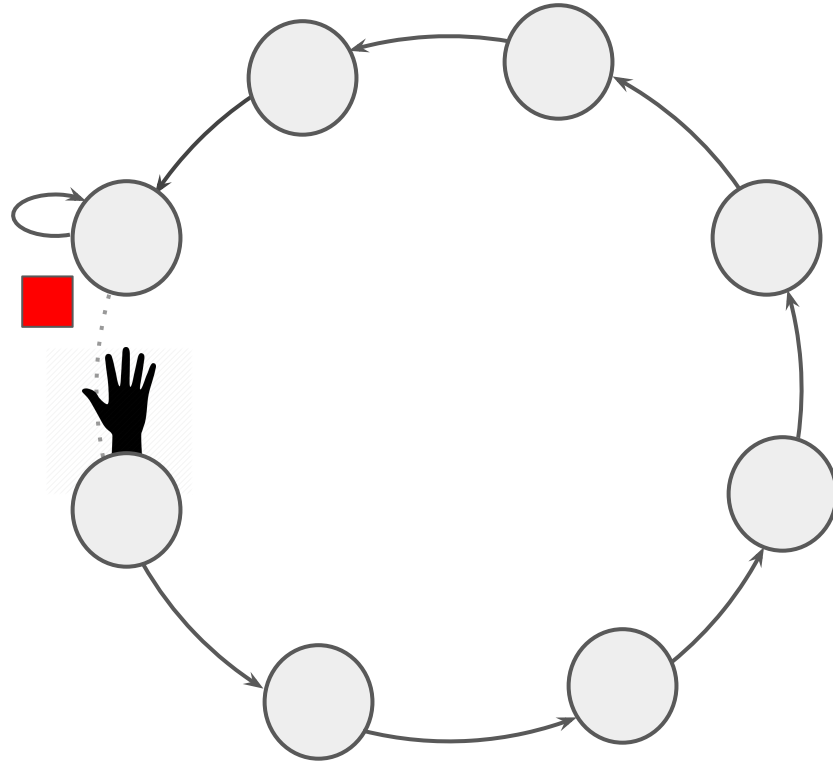
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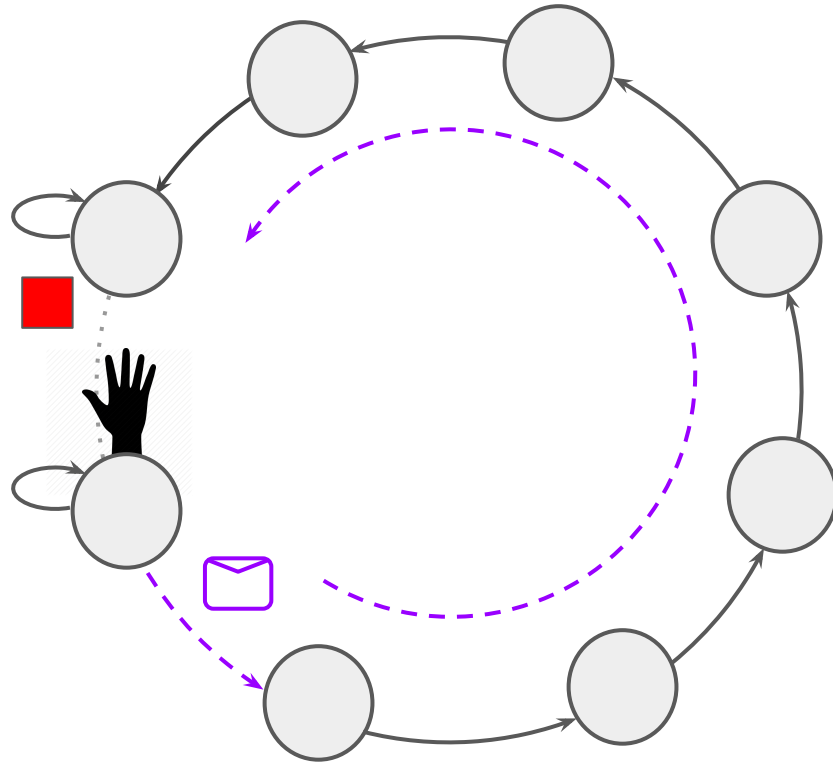
# Arrow on Rings



# Arrow on Rings

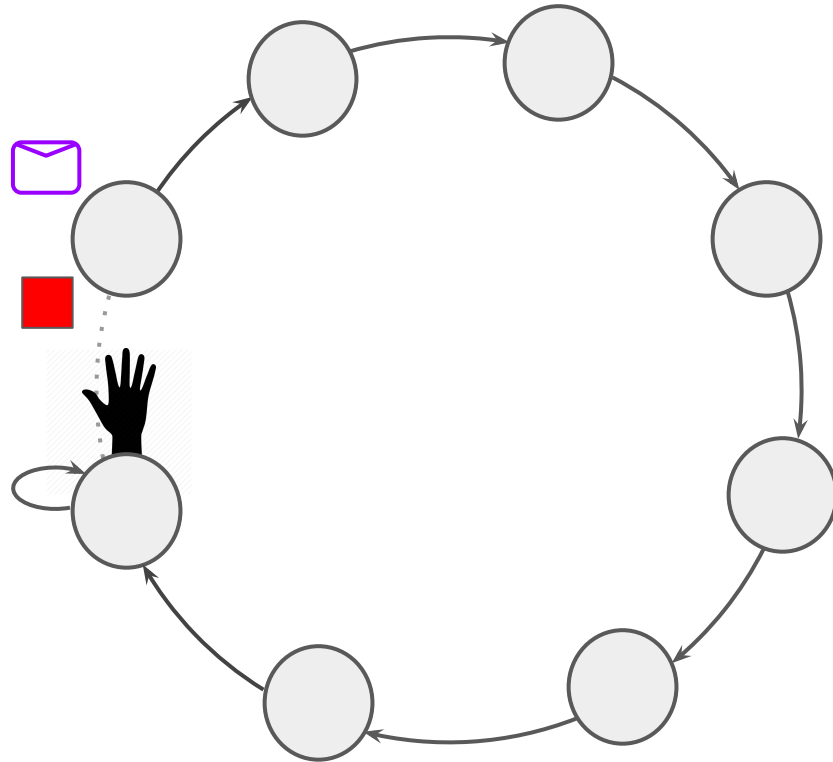


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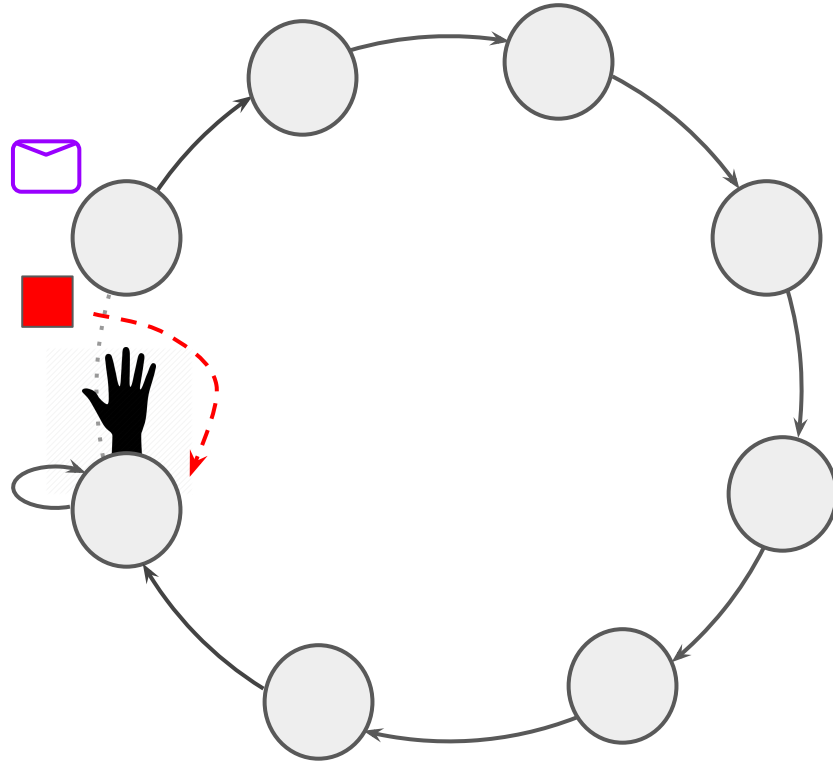




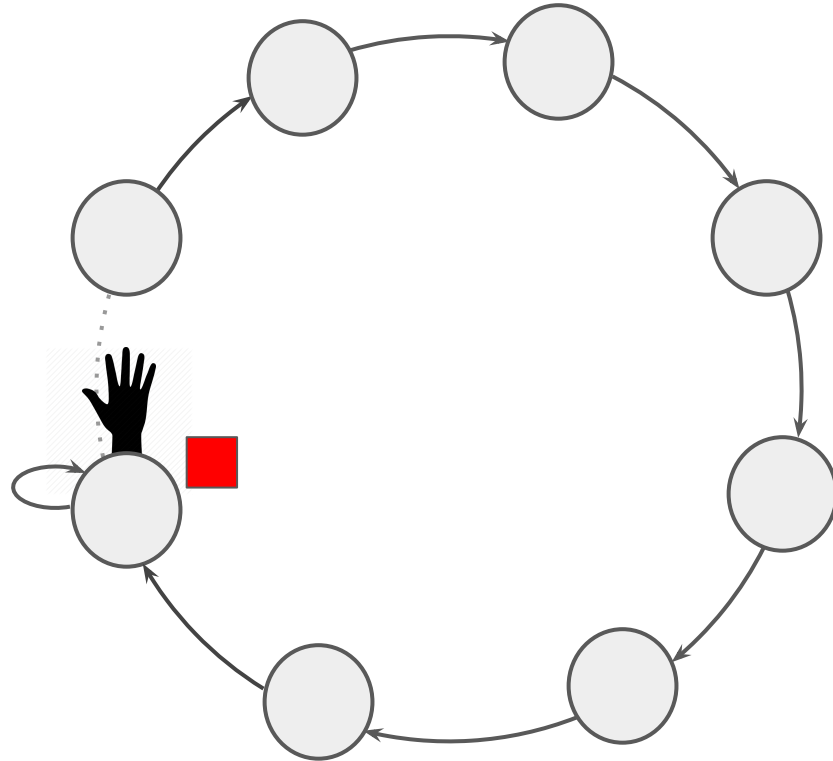
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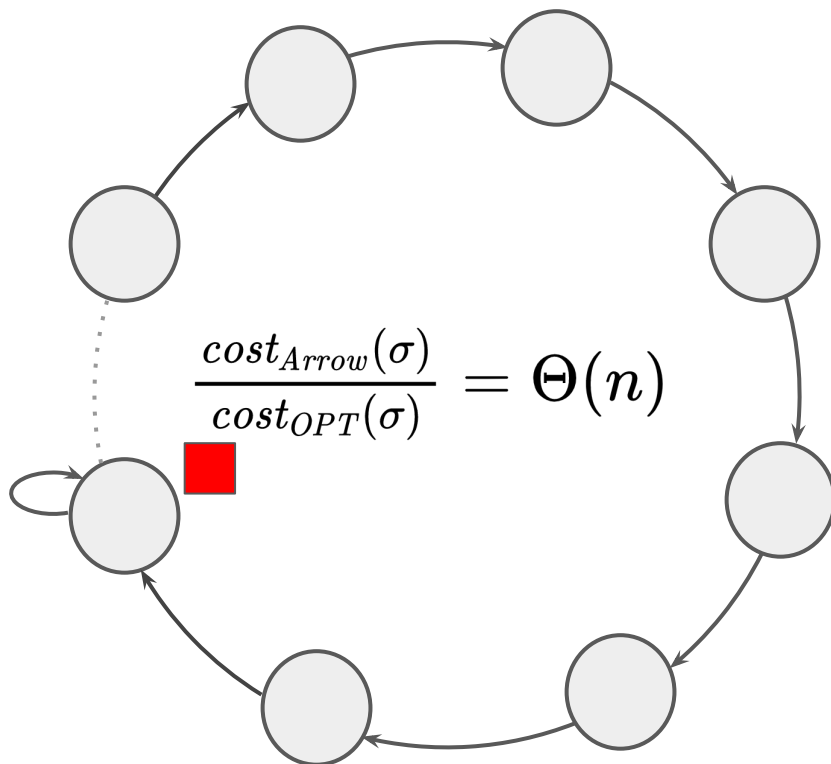
# Arrow on Rings



# Arrow on Rings

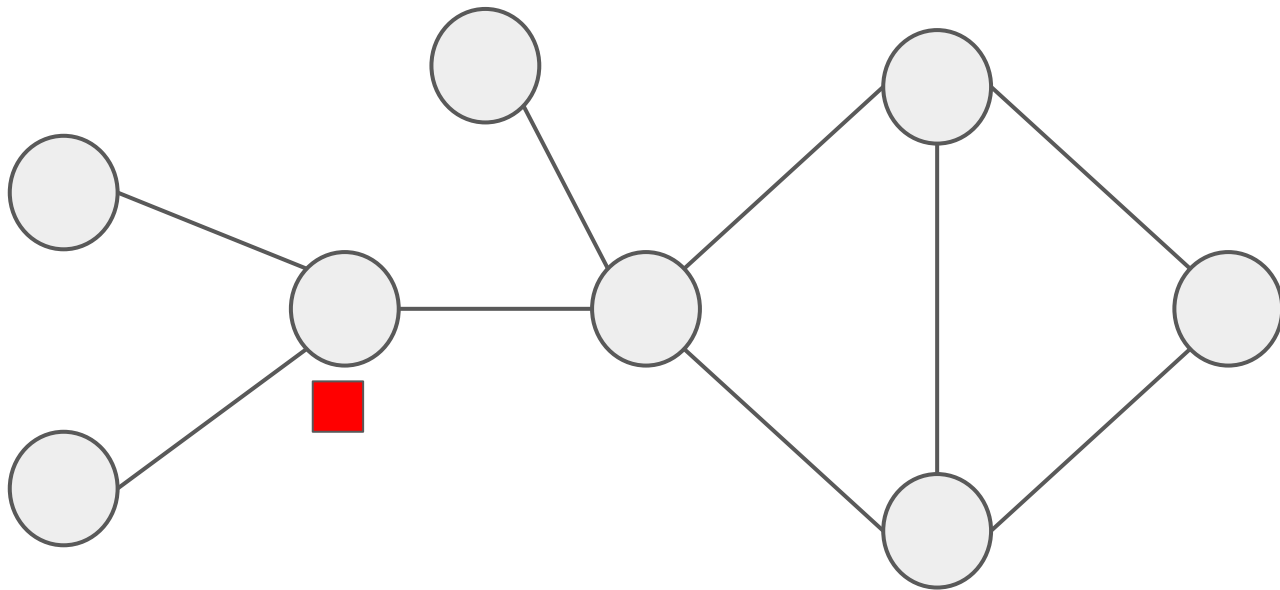


# Arrow on Rings



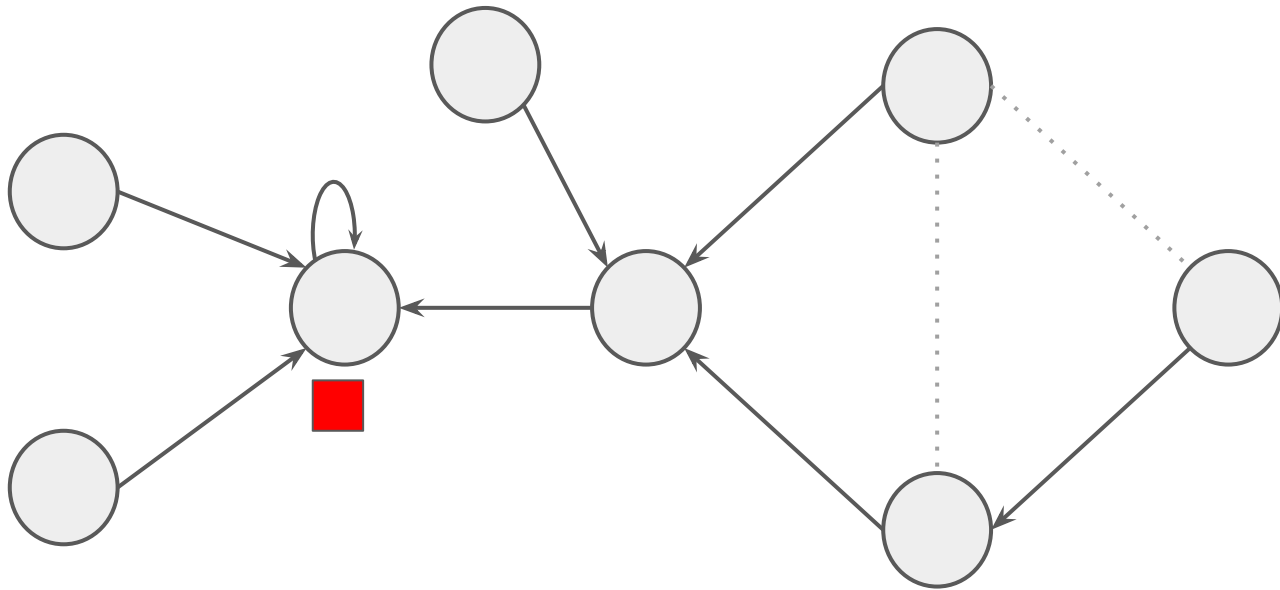
# Ivy

[Li and Hudak 1986]



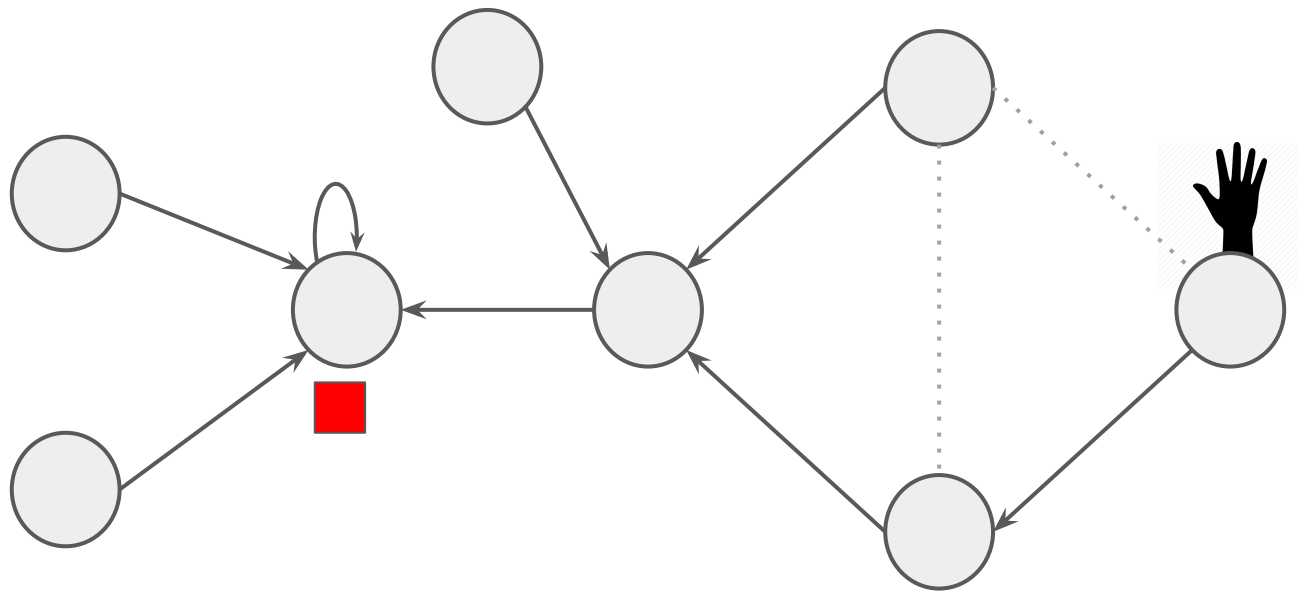
# Ivy

[Li and Hudak 1986]



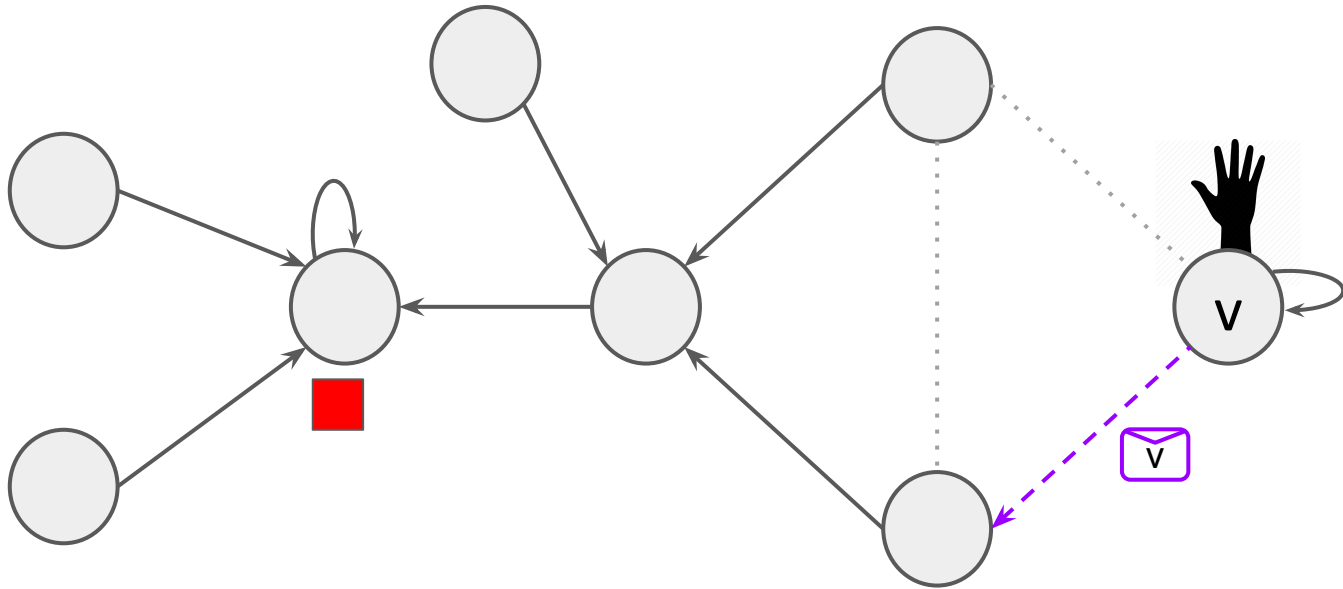
# Ivy

[Li and Hudak 1986]



# Ivy

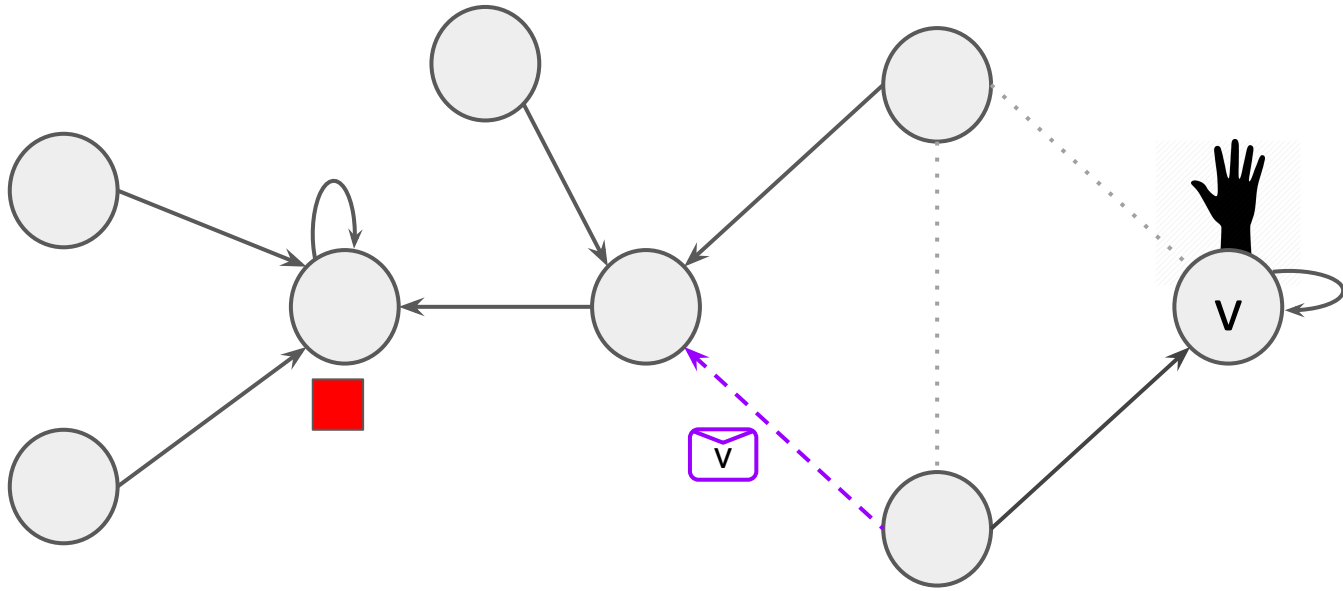
[Li and Hudak 1986]





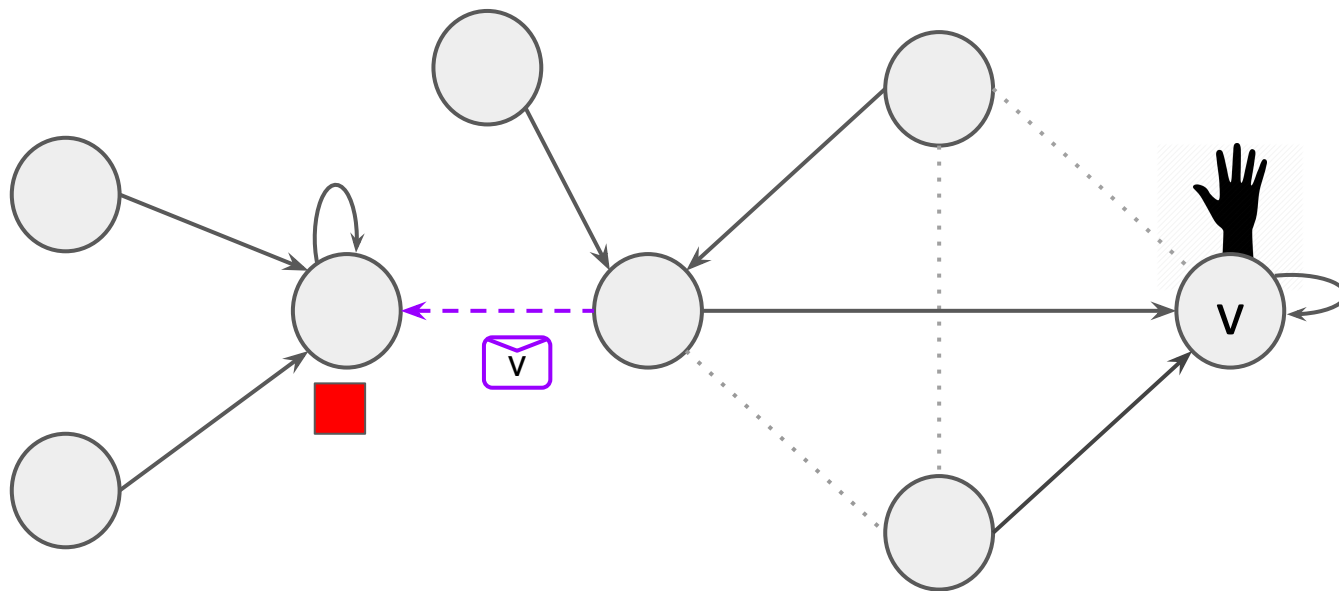
# Ivy

[Li and Hudak 1986]



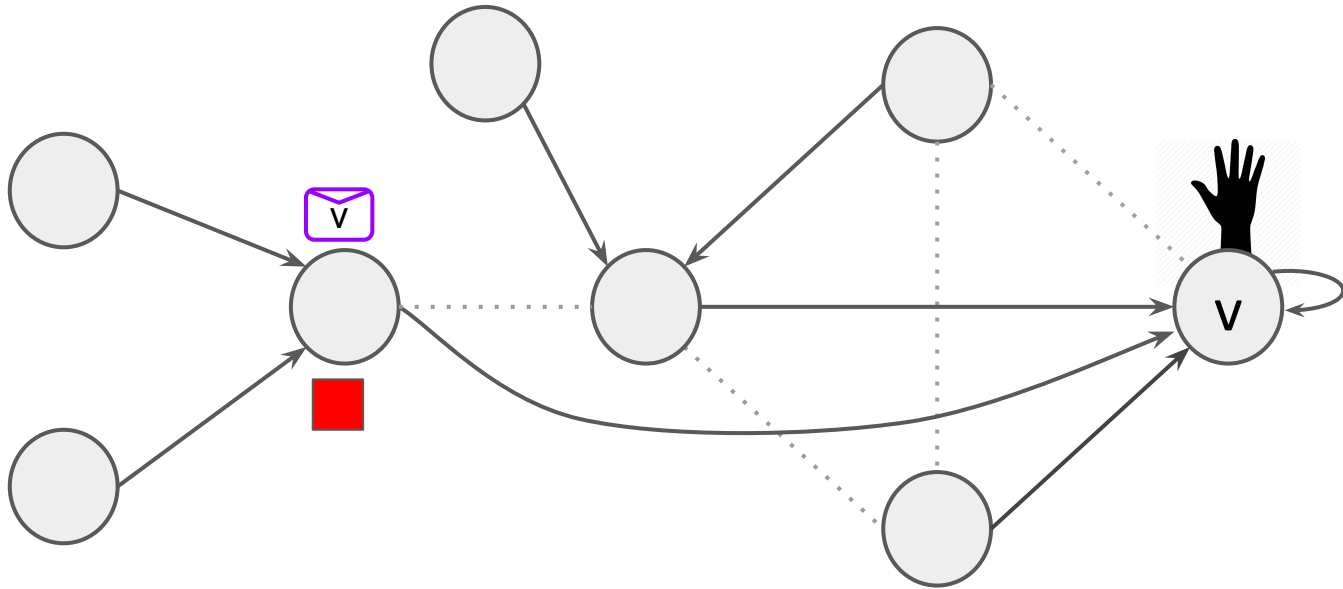
# Ivy

[Li and Hudak 1986]



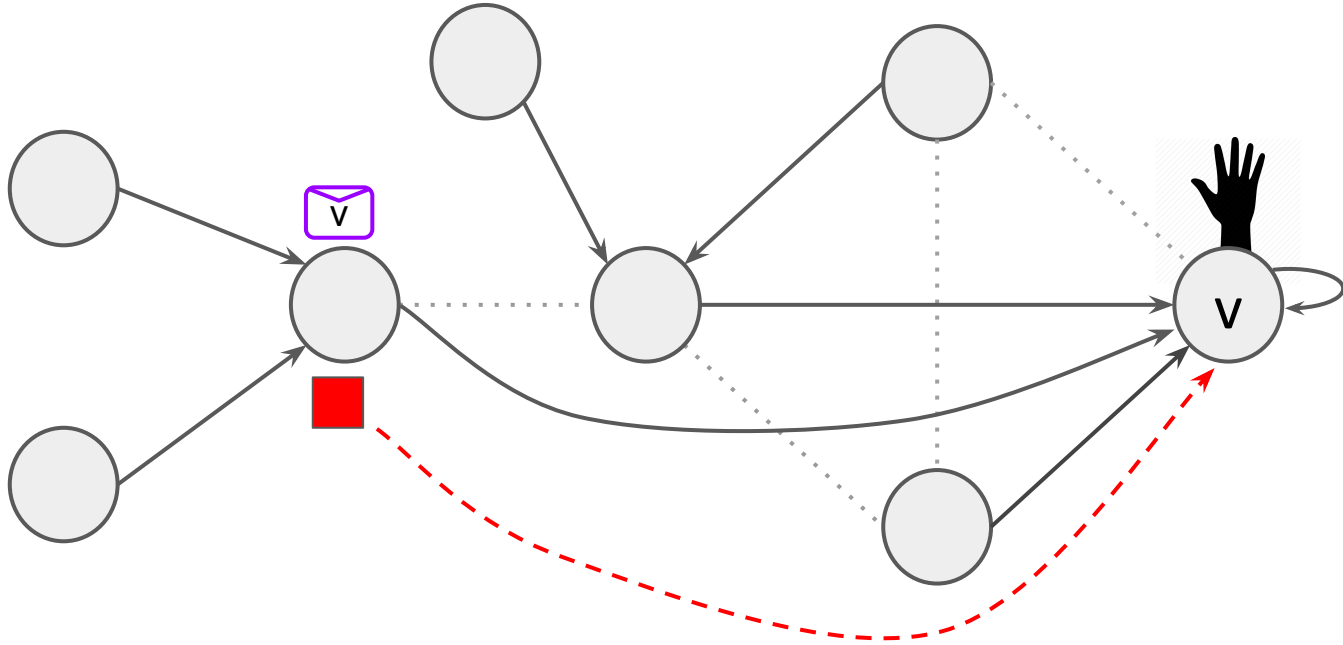
# Ivy

[Li and Hudak 1986]



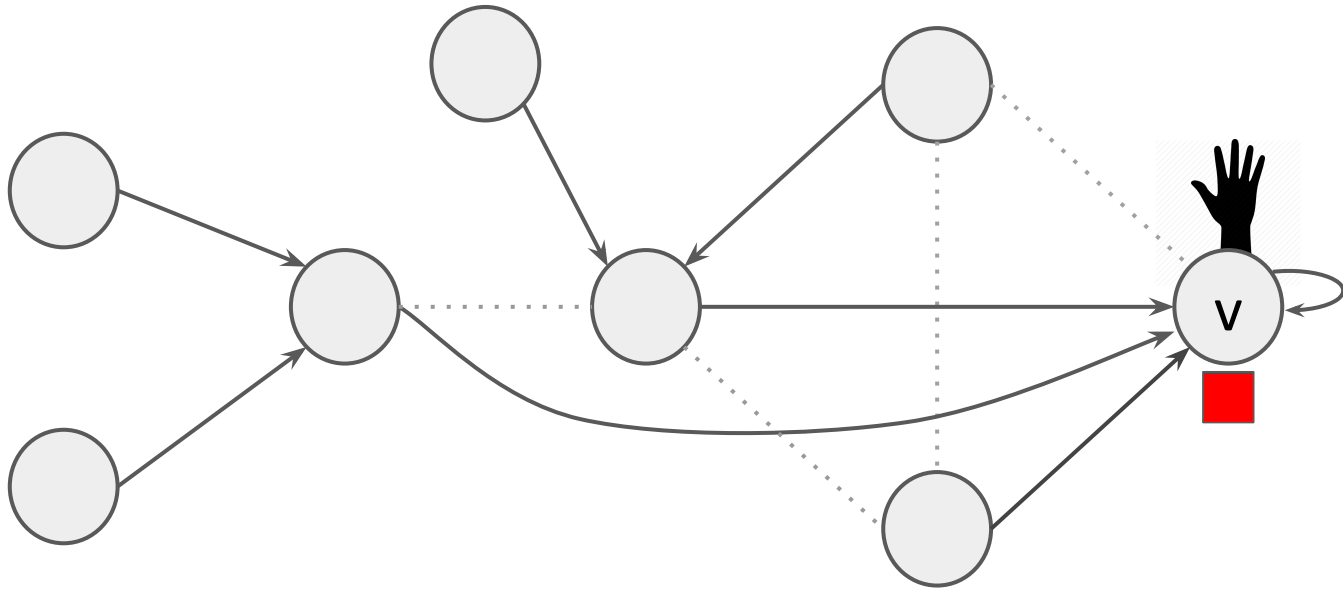
# Ivy

[Li and Hudak 1986]



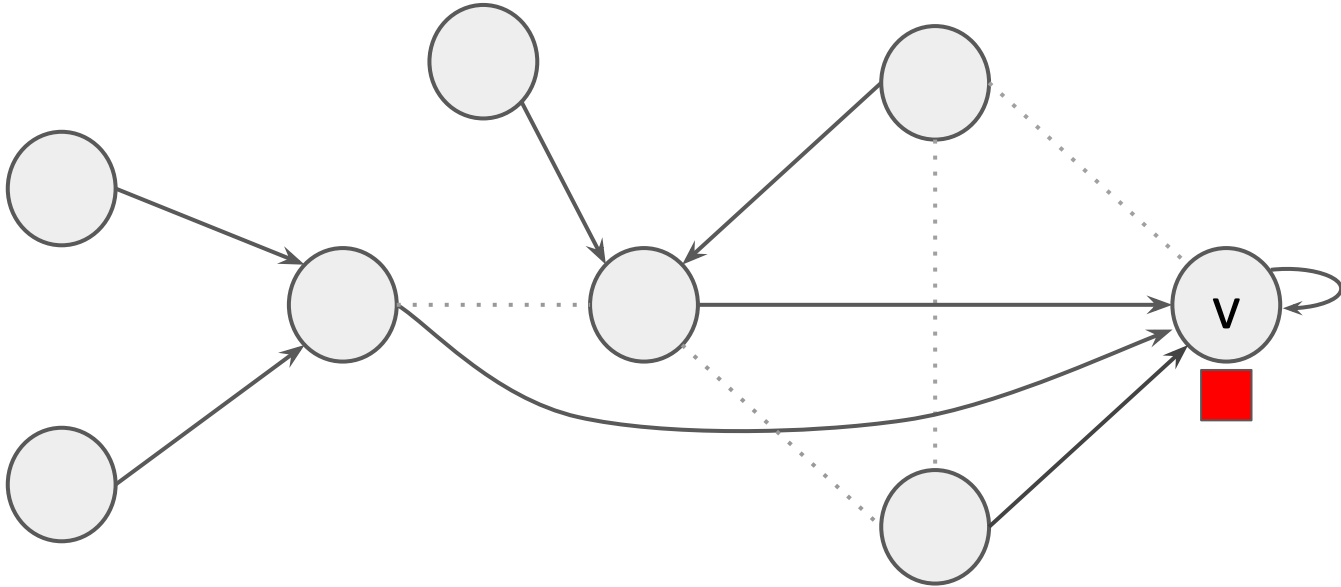
# Ivy

[Li and Hudak 1986]

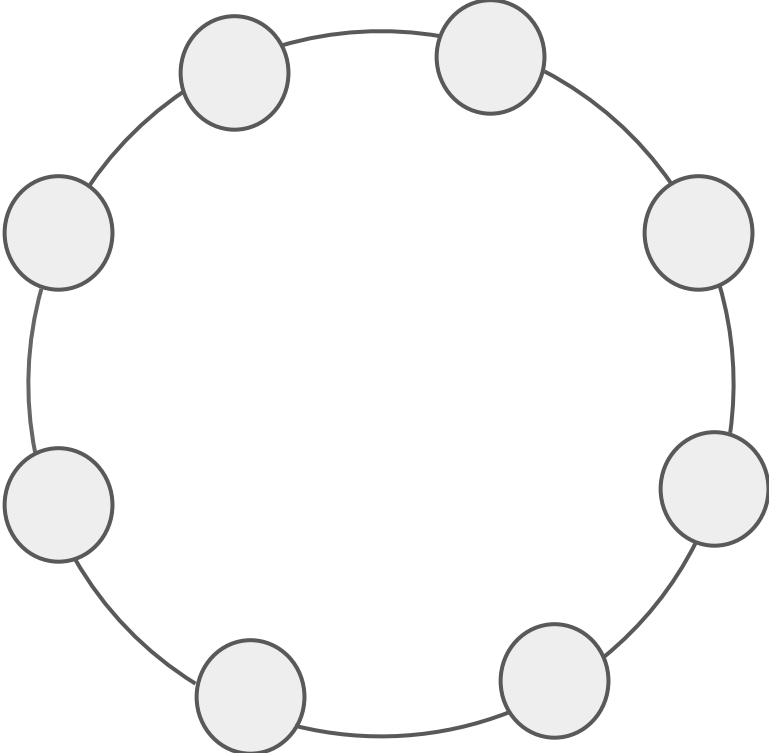


# Ivy

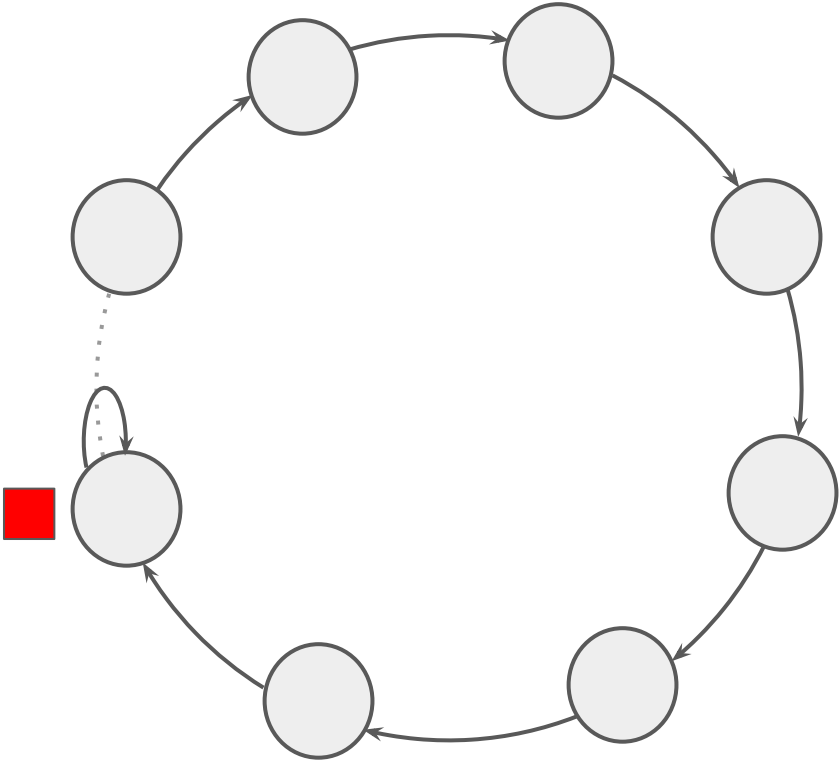
[Li and Hudak 1986]



# Ivy on Rings

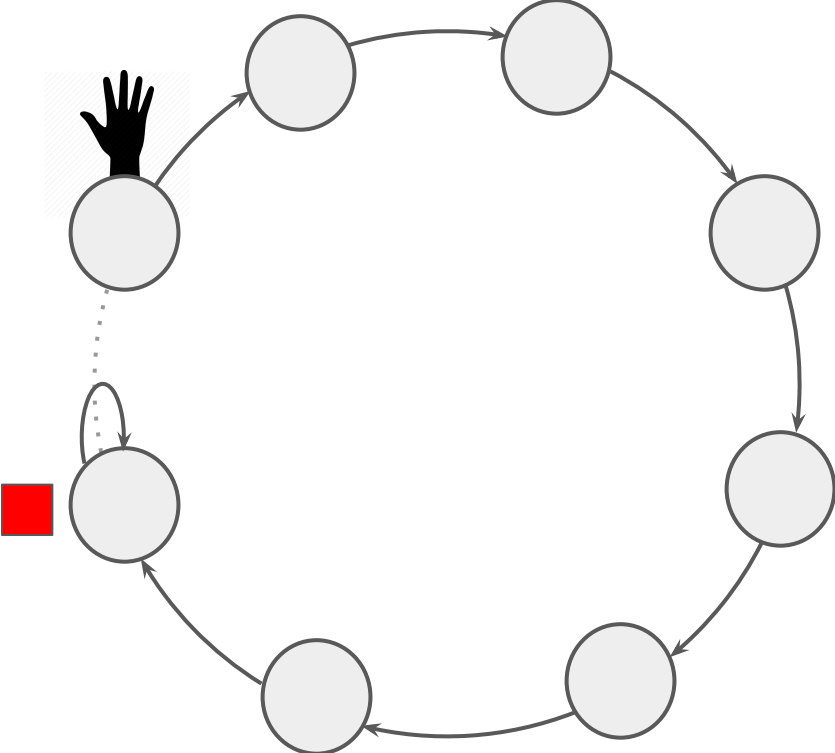


# Ivy on Rings

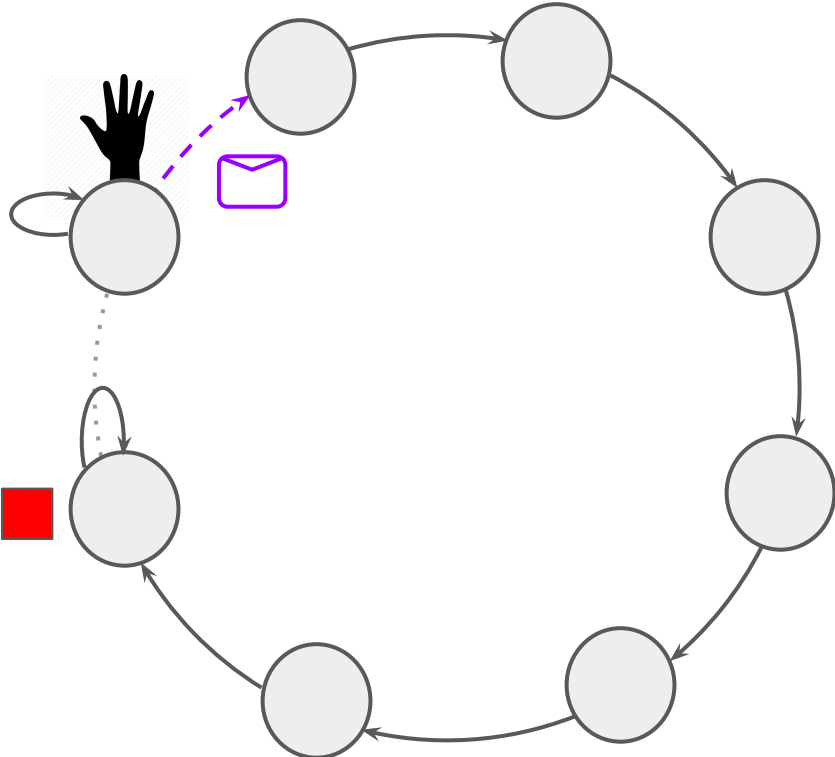




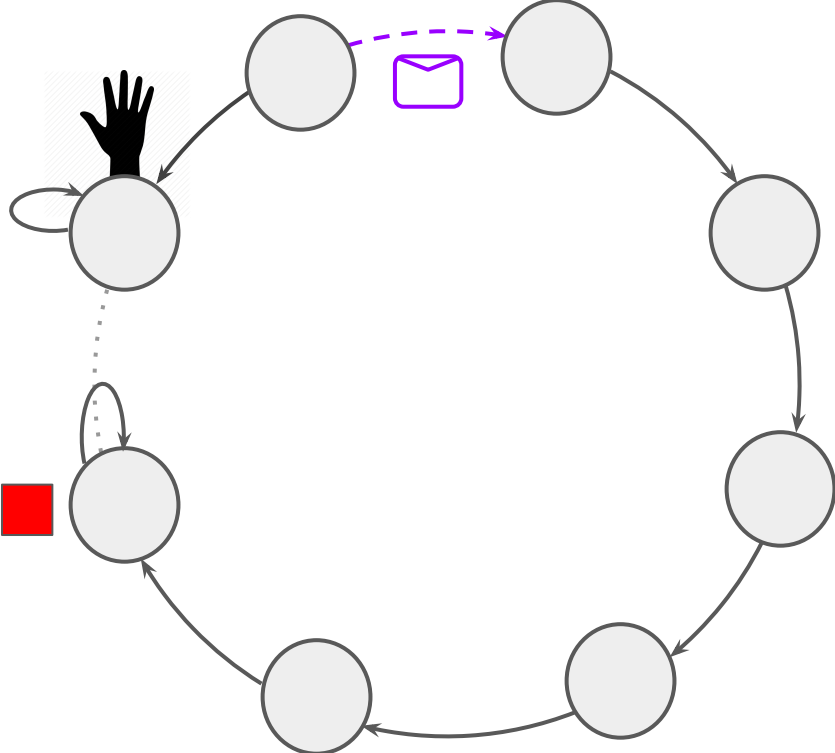
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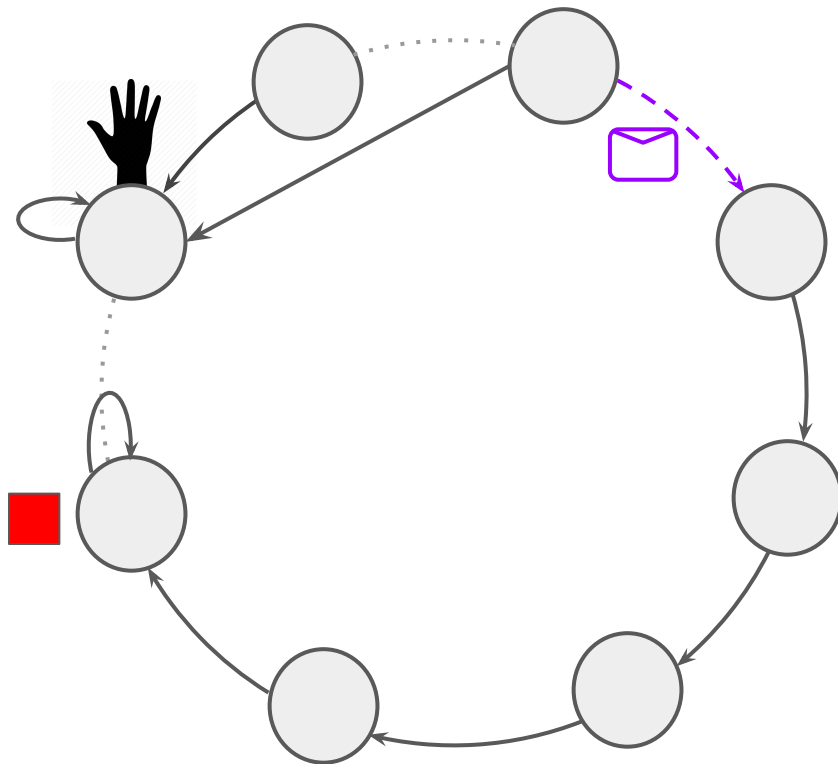
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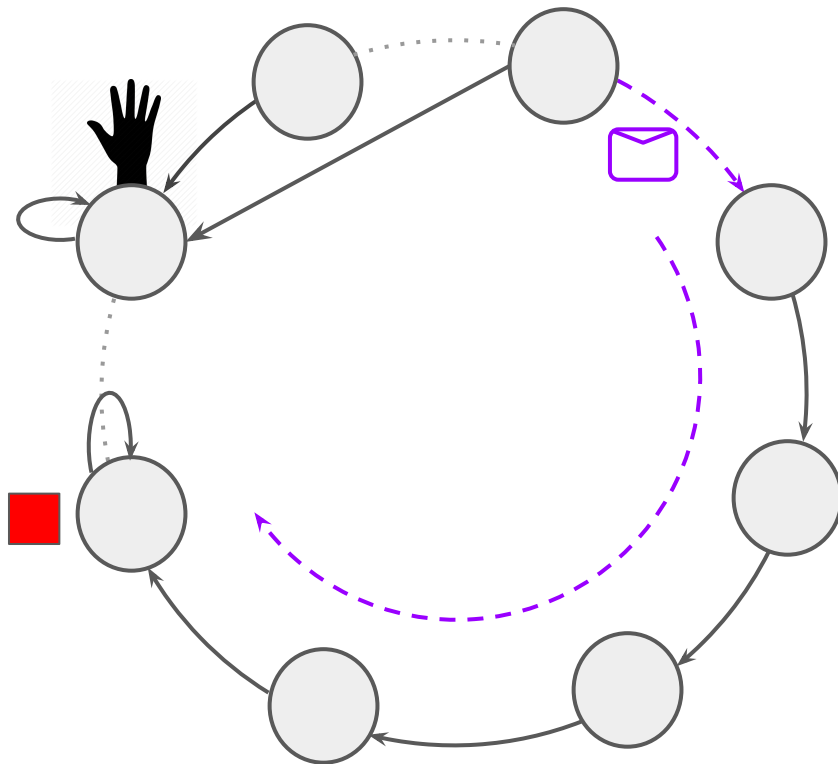
# Ivy on Rings



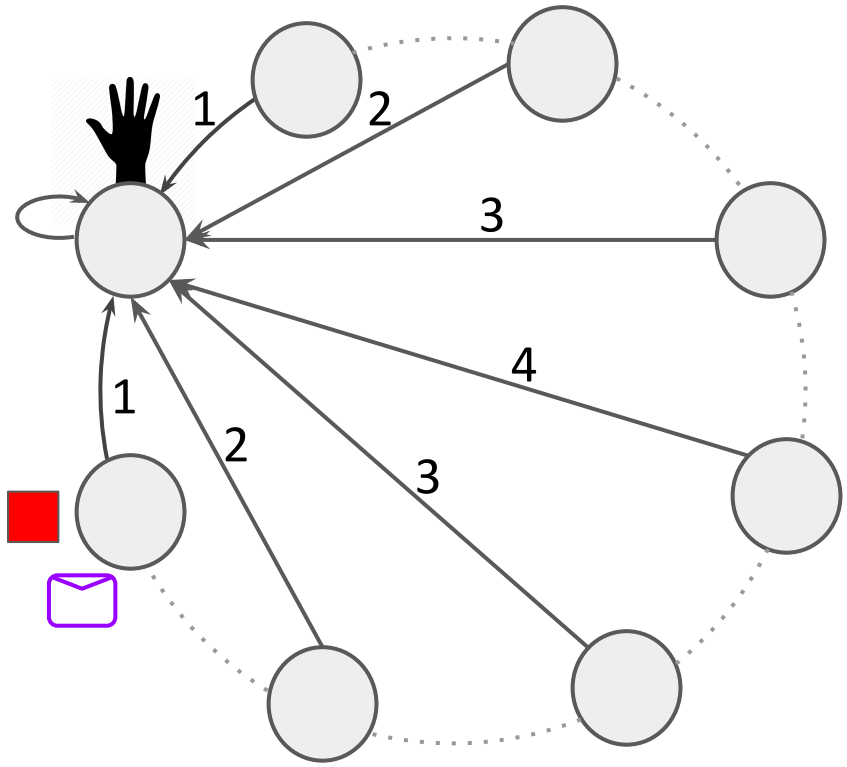
# Ivy on Rings



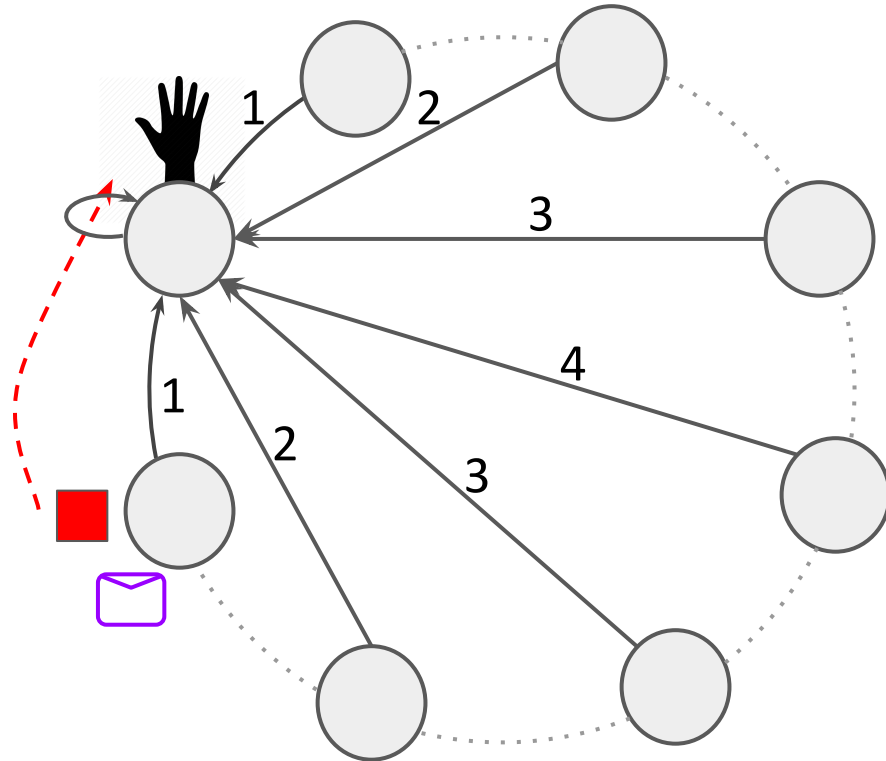
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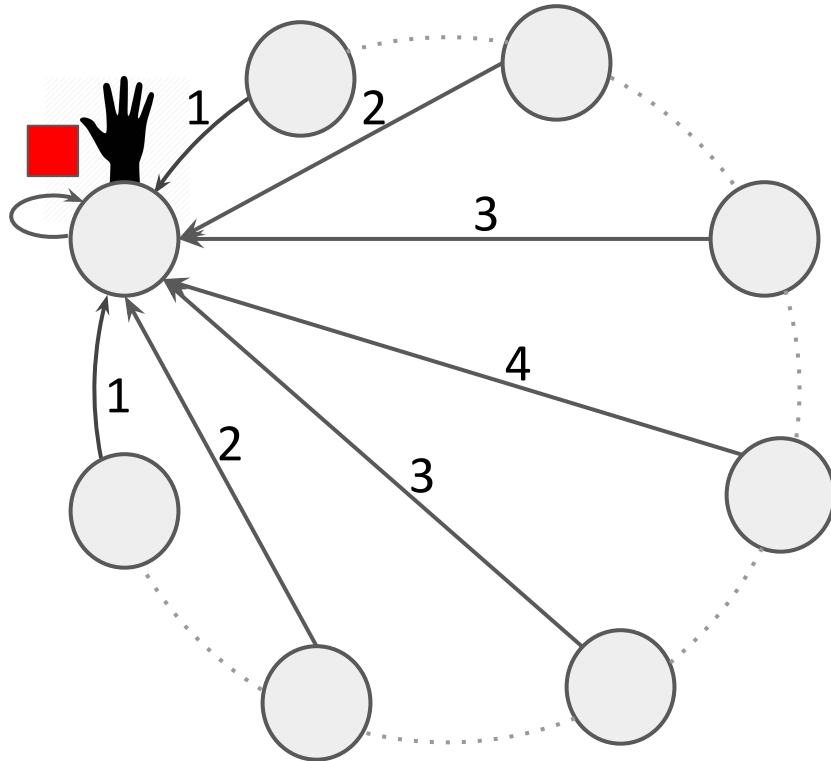
# Ivy on Rings



# Ivy on Rings

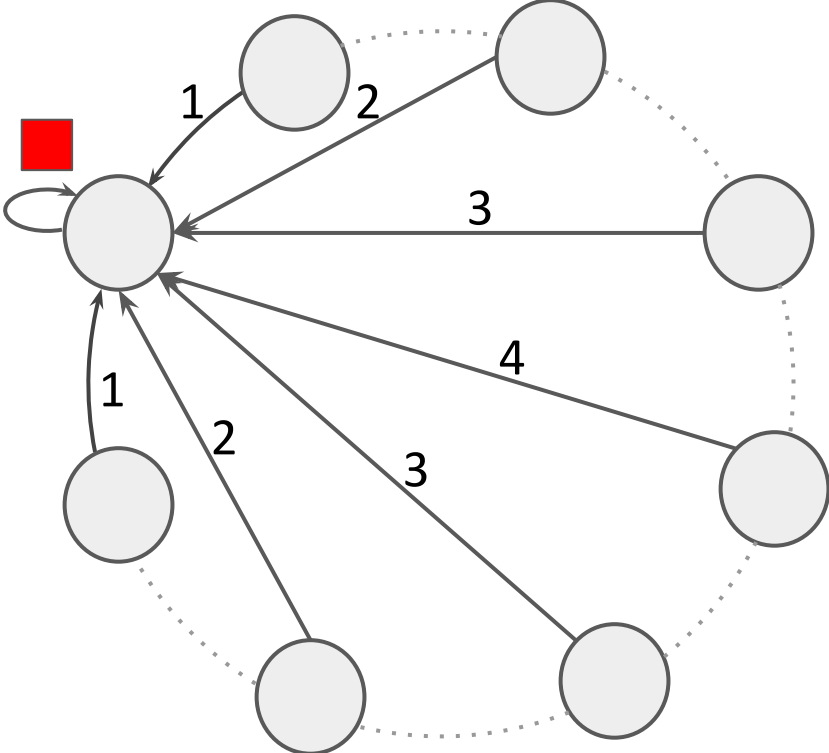


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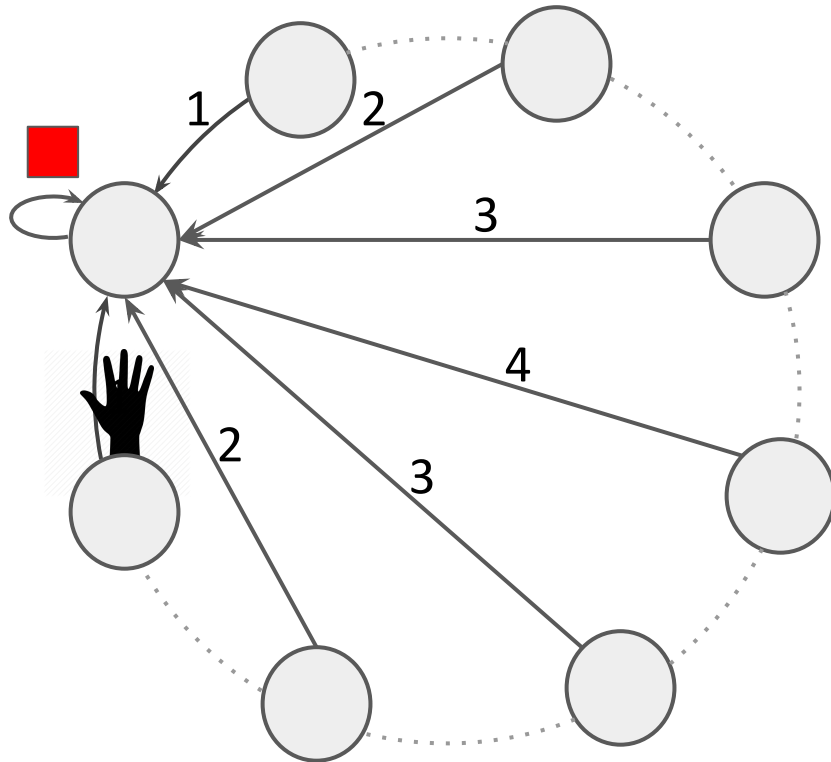




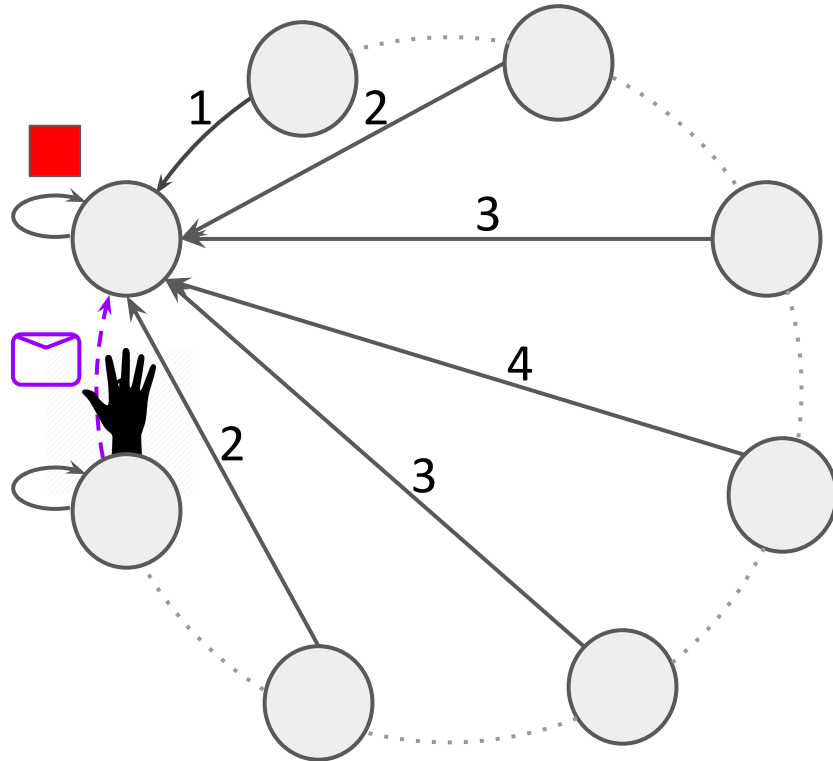
# Ivy on Rings



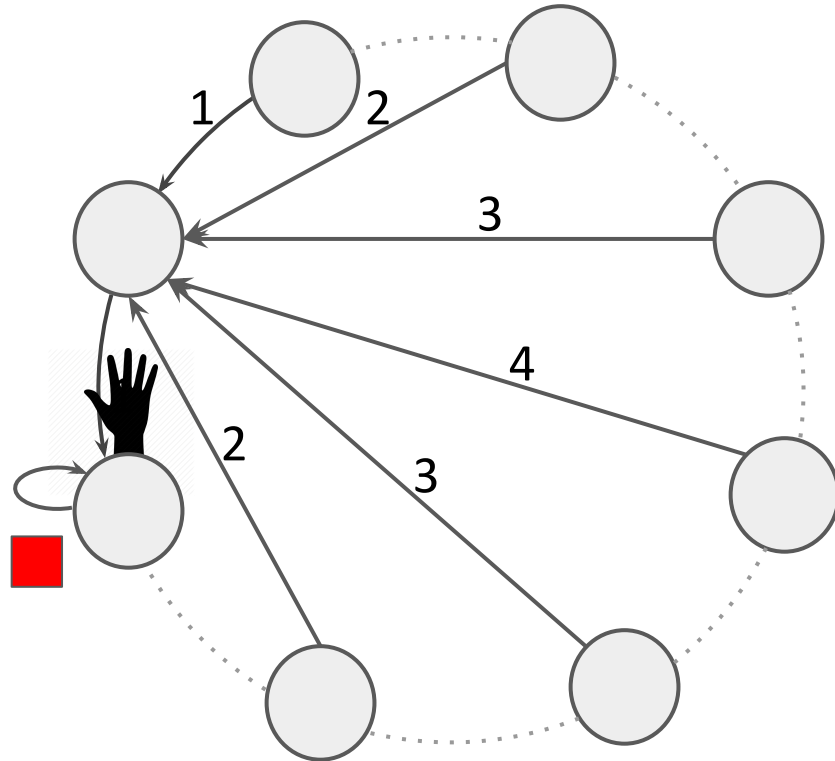
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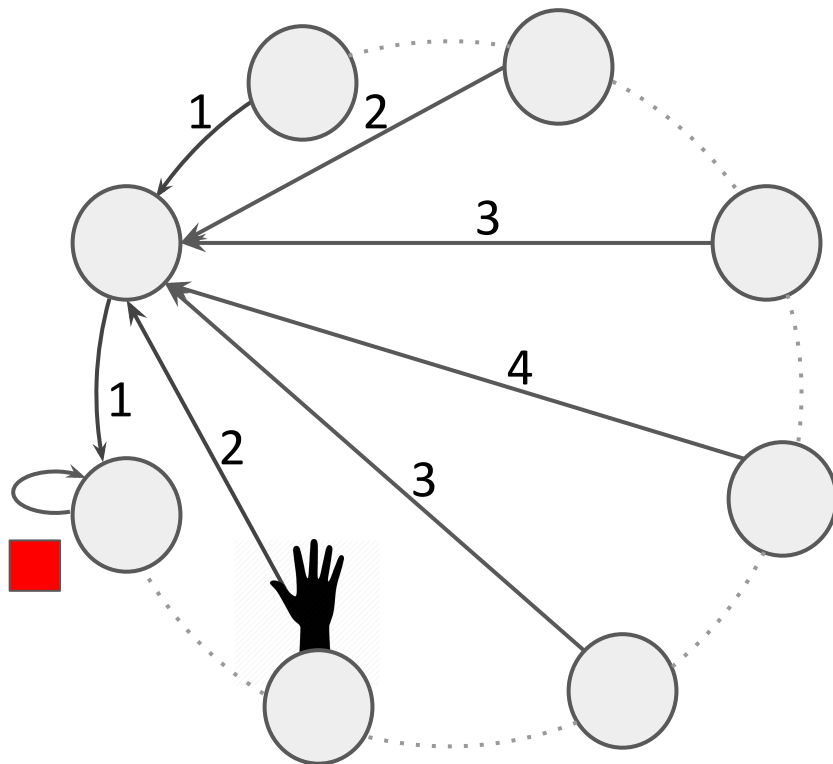
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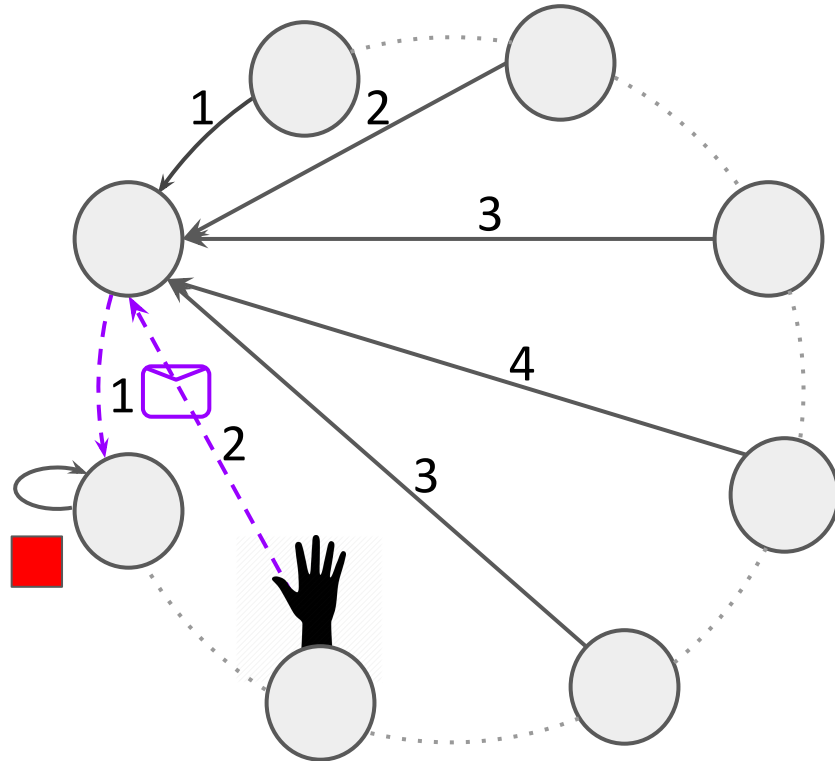
# Ivy on Rings



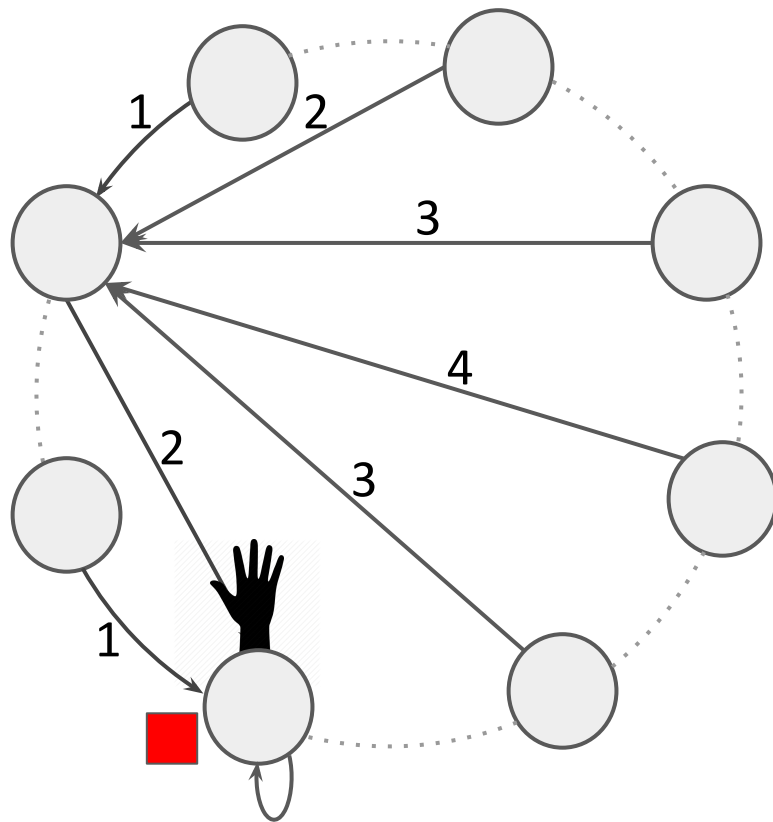
# Ivy on Rings



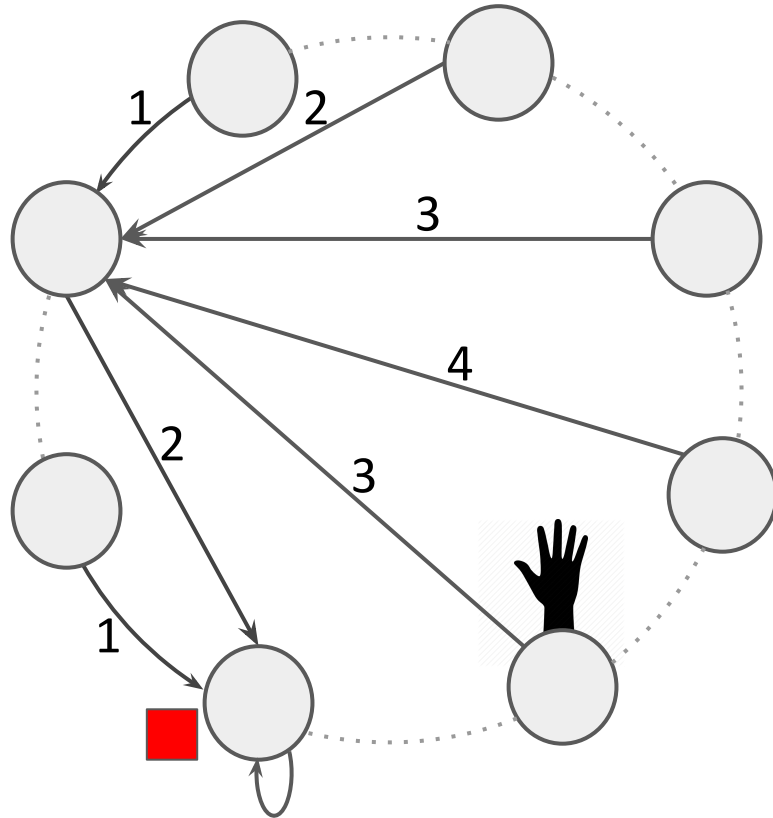
# Ivy on Rings



# Ivy on Rings

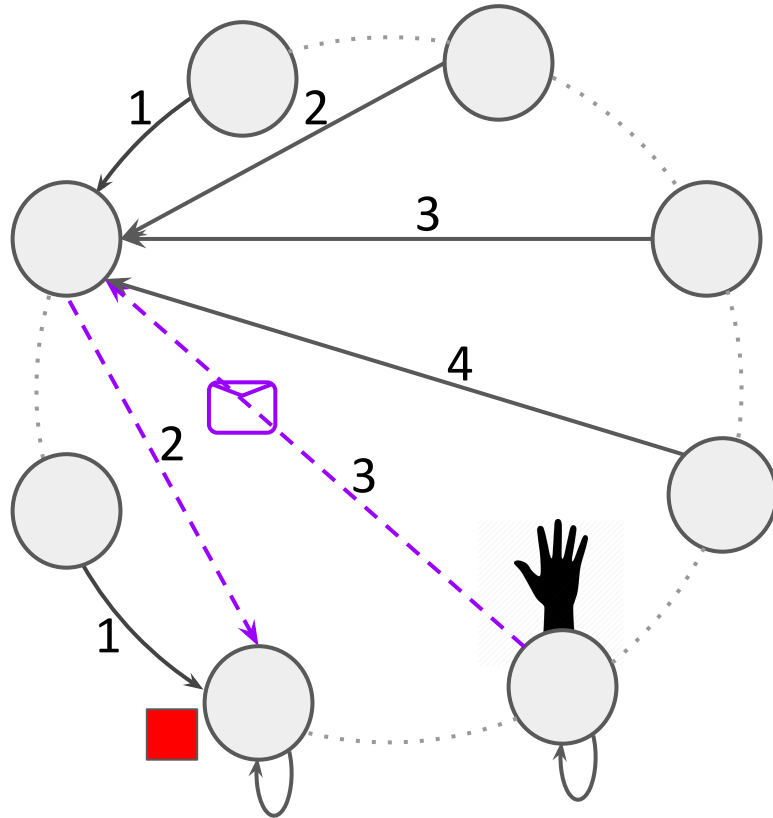


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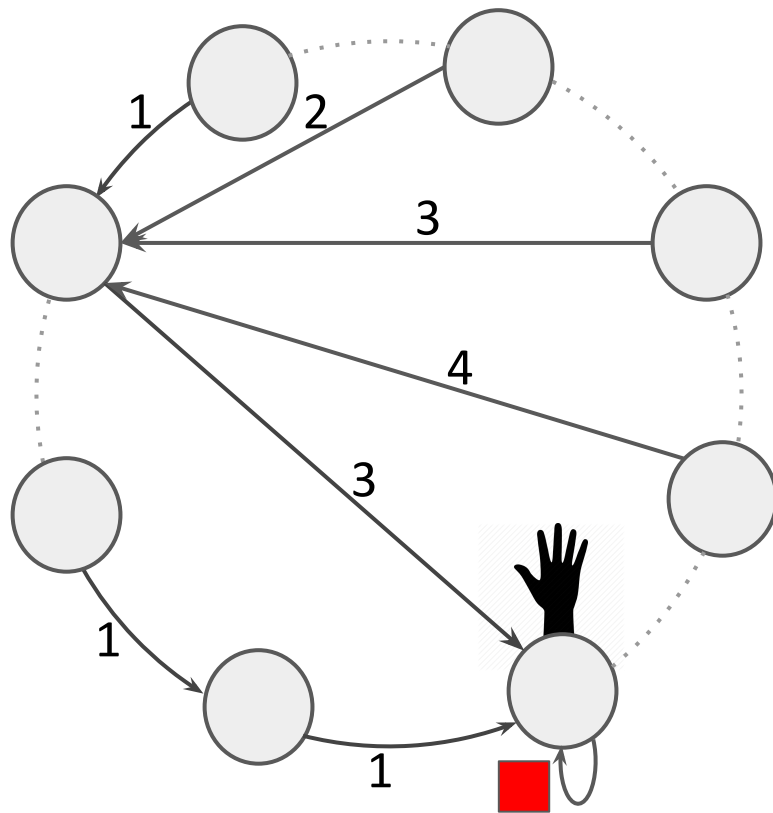




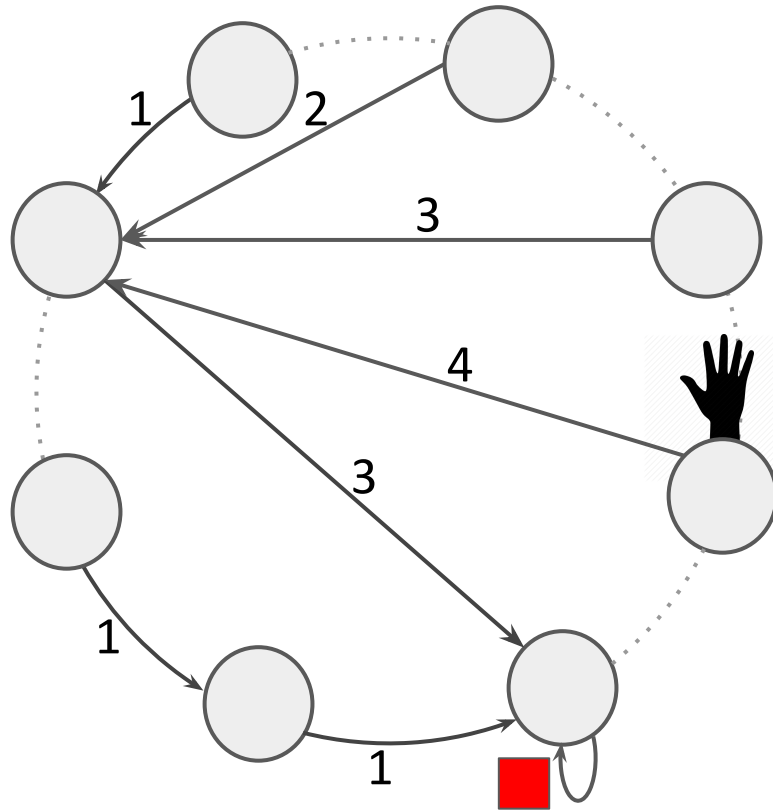
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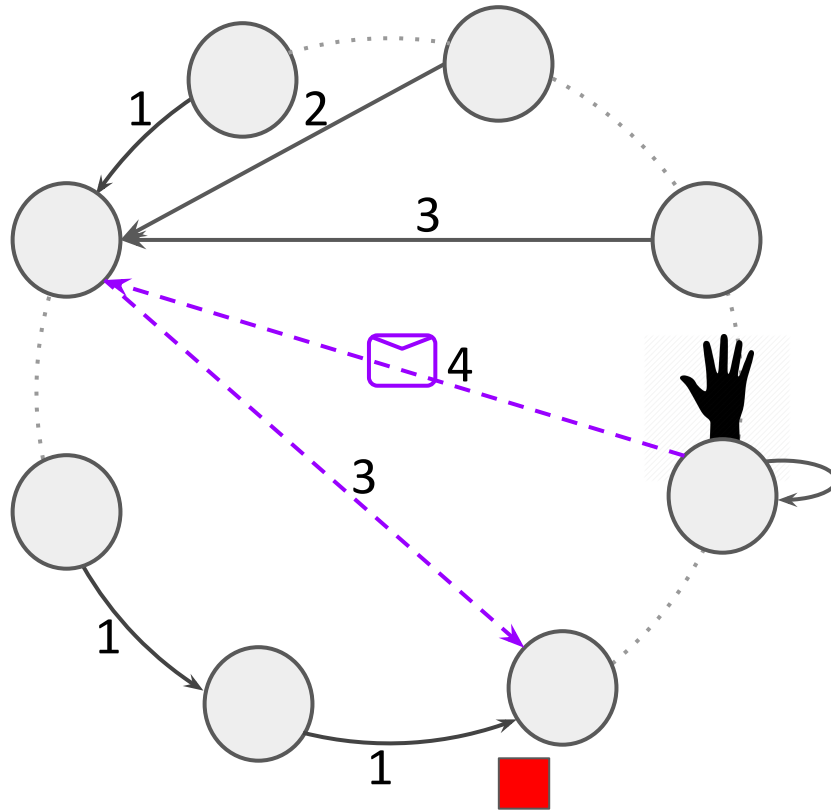
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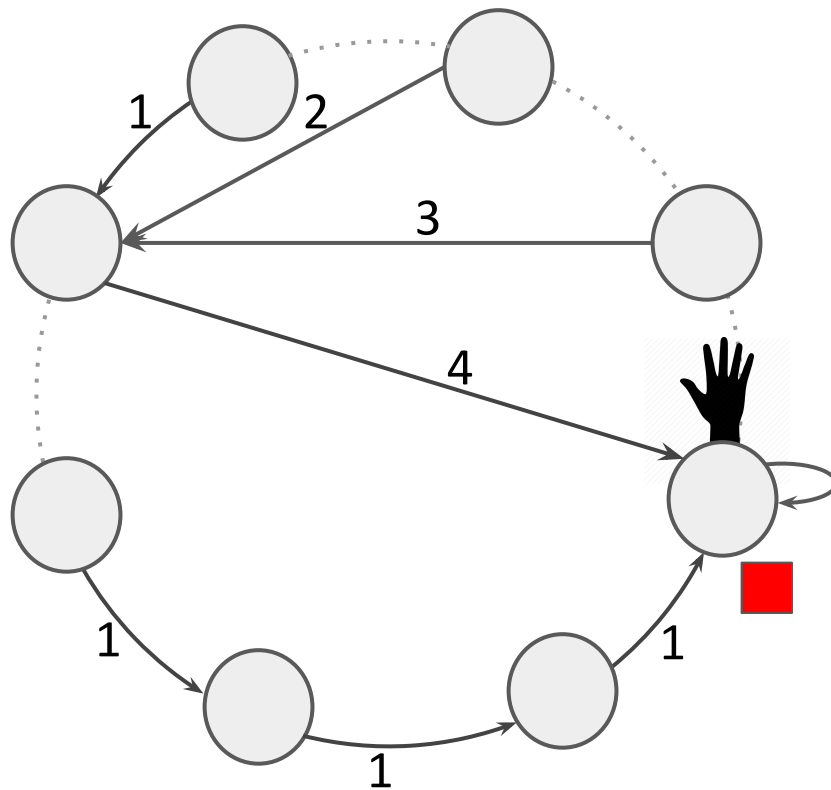
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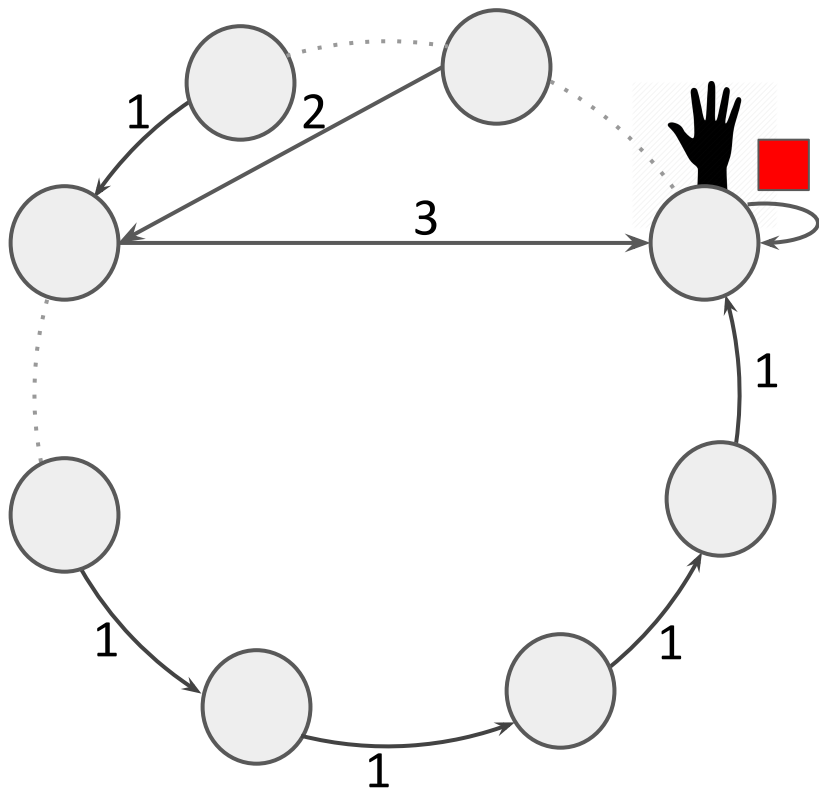
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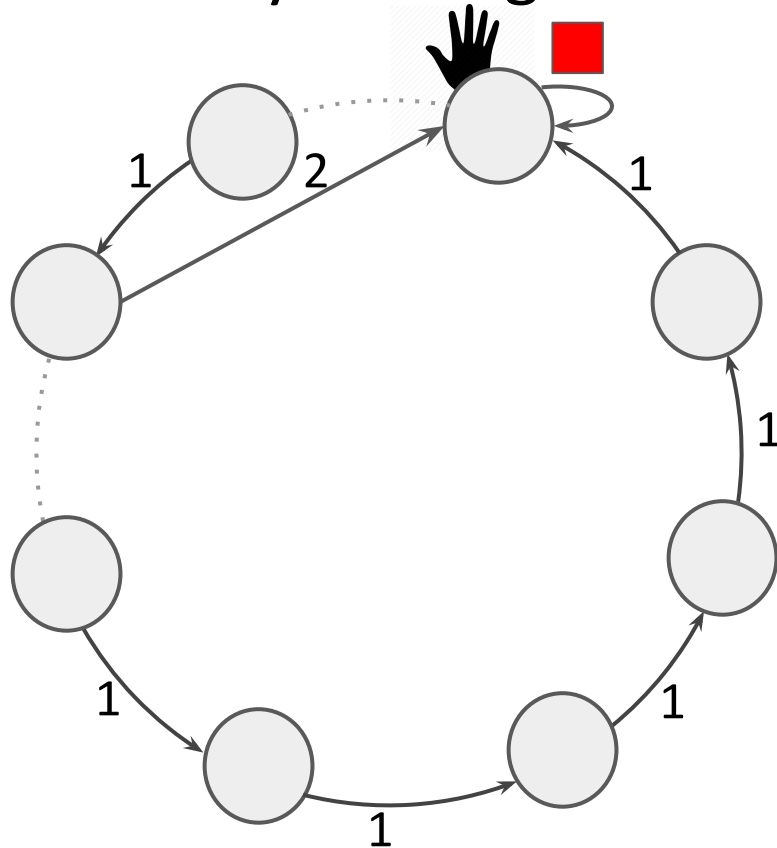
# Ivy on Rings



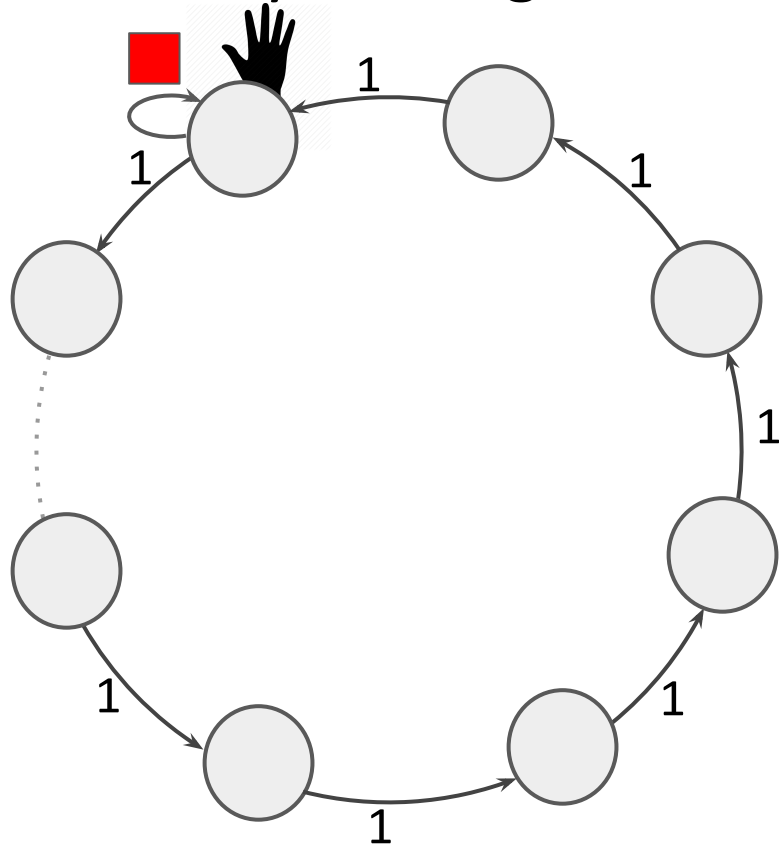
# Ivy on Rings



# Ivy on Rings

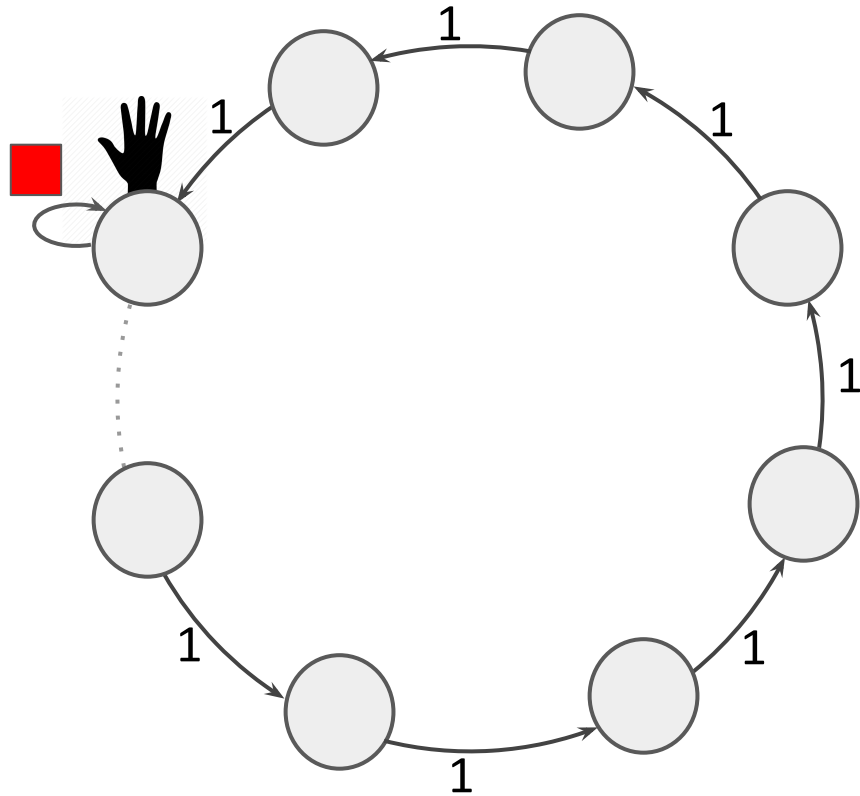


# Ivy on Rings

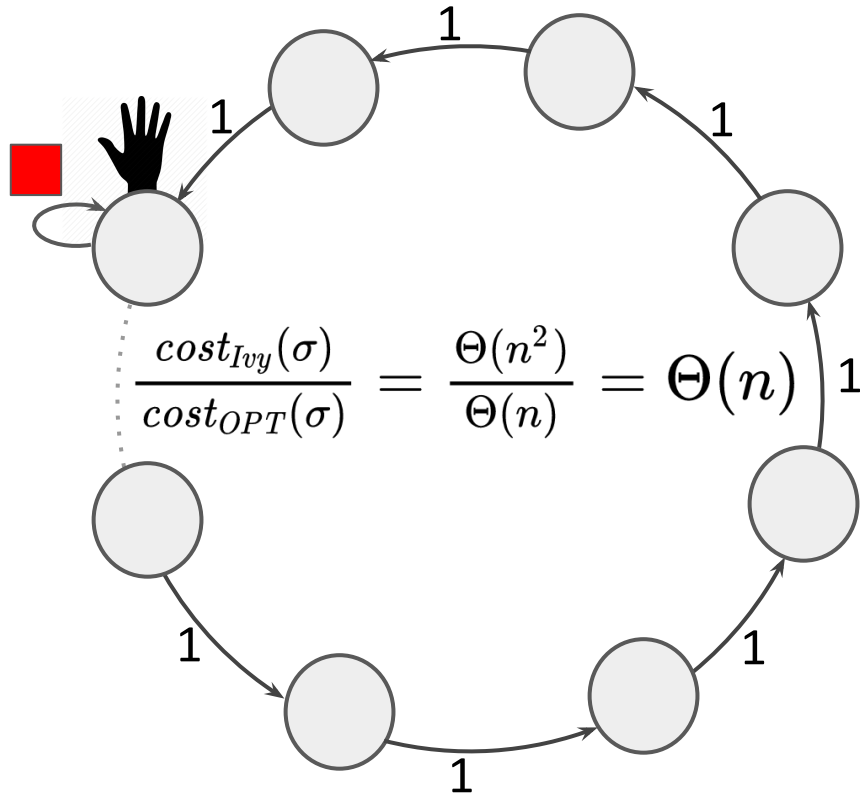




# Ivy on Rings

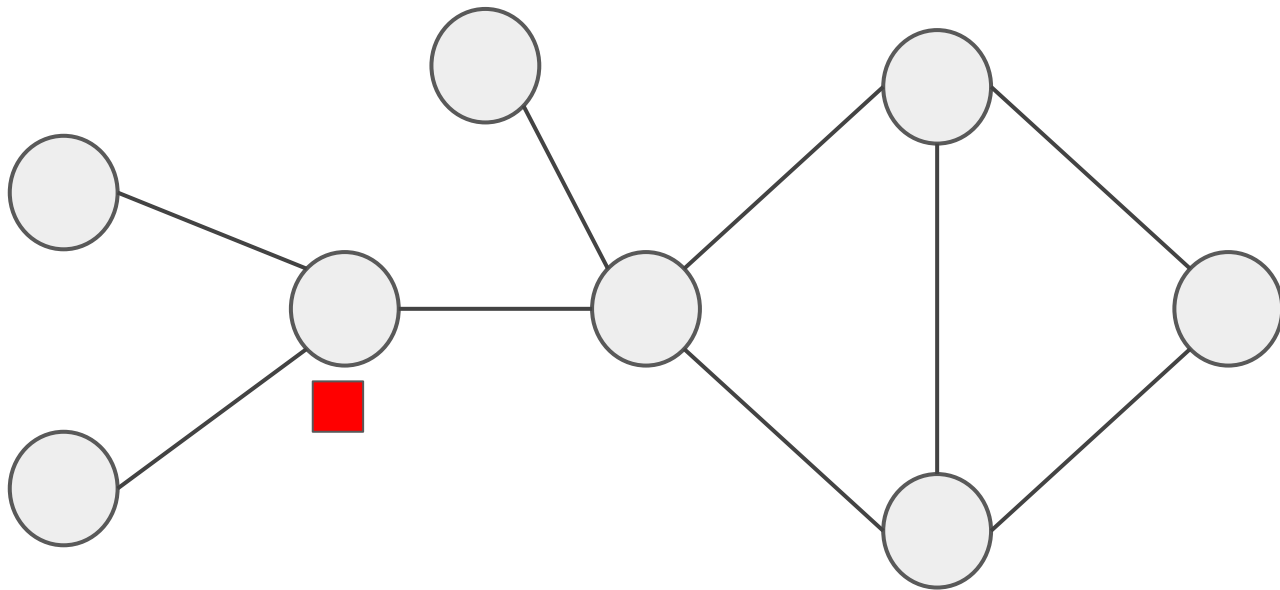


# Ivy on Rings

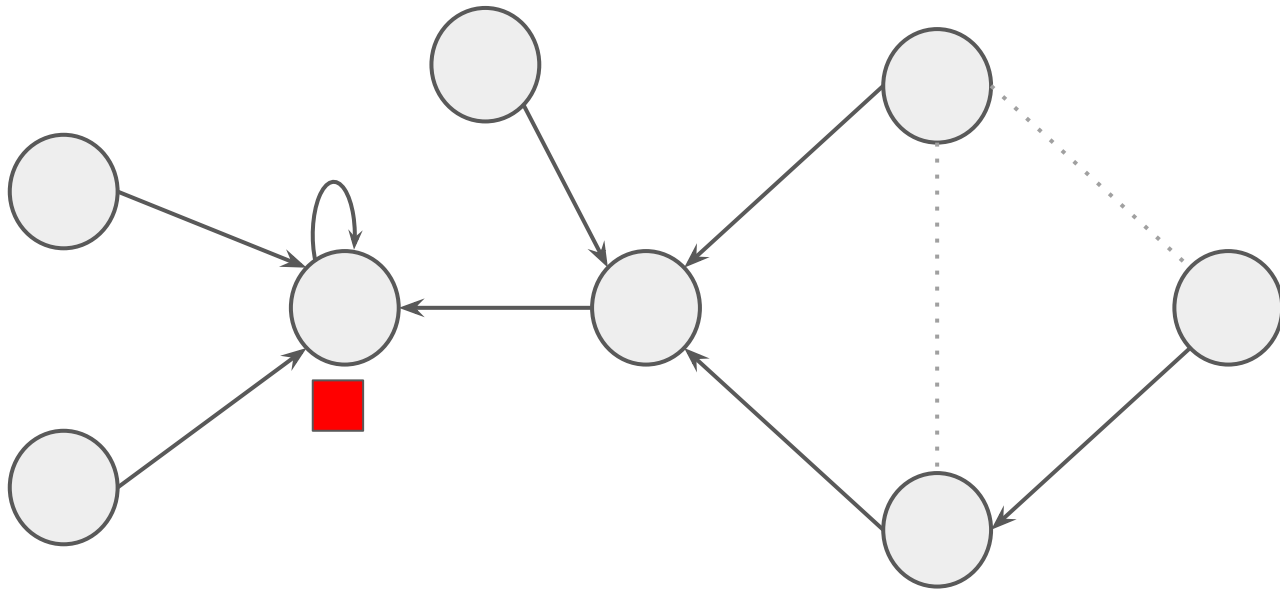


# Arvy

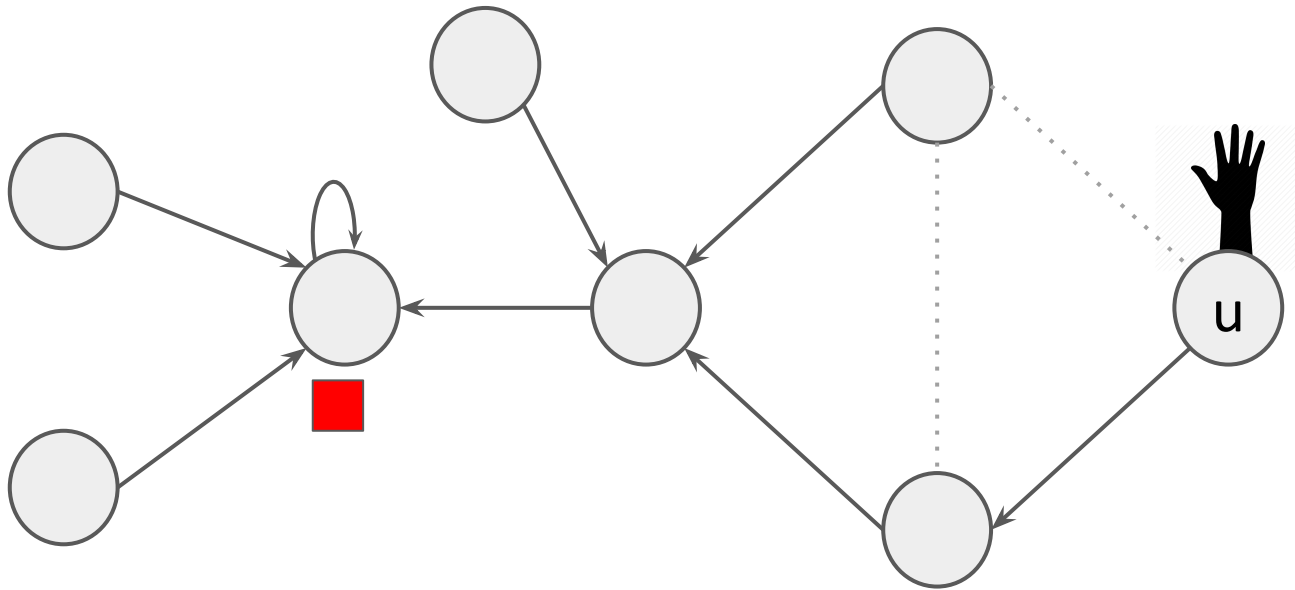
[This Work]



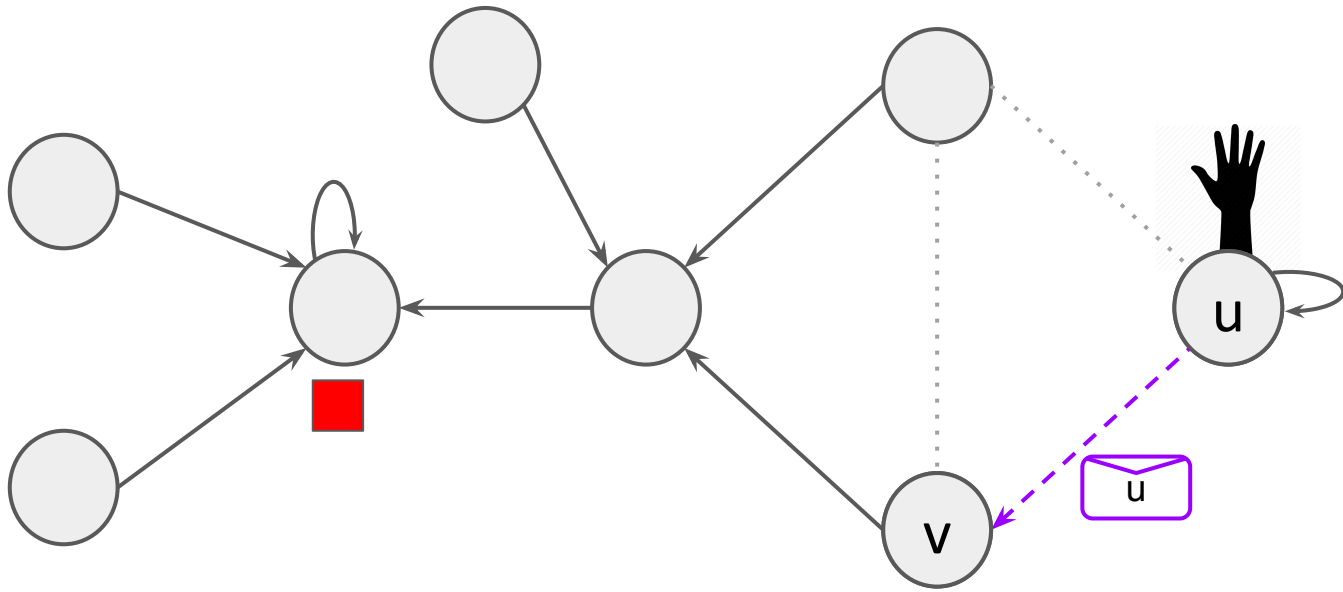
# Arvy



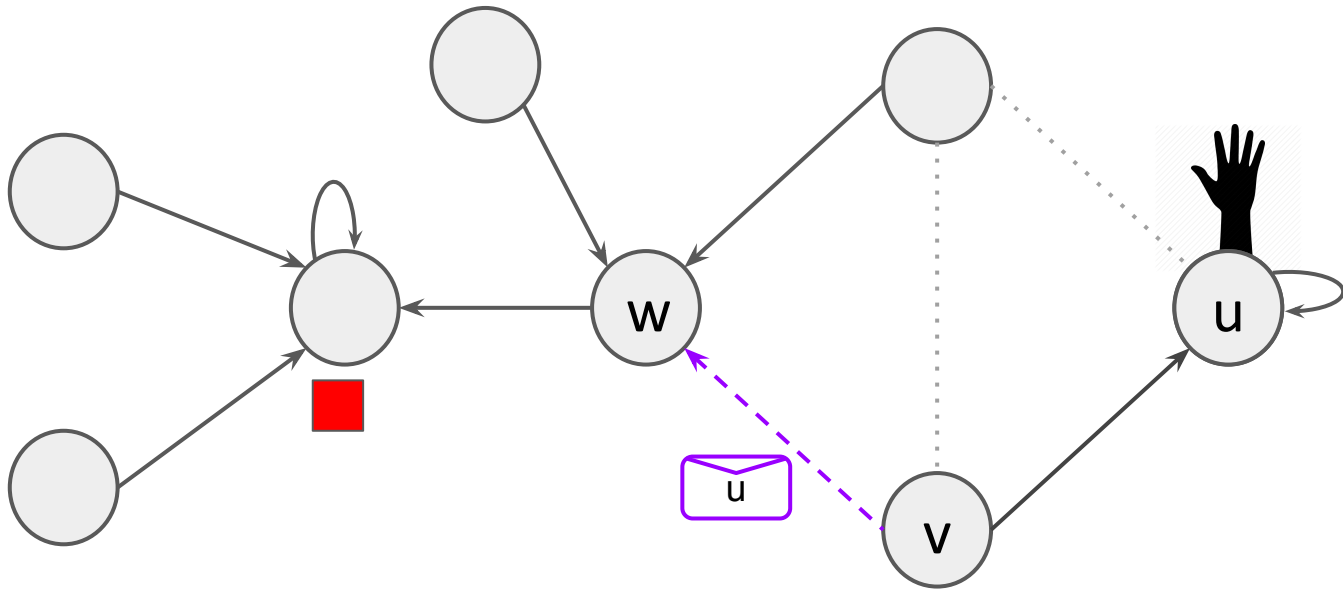
# Arvy



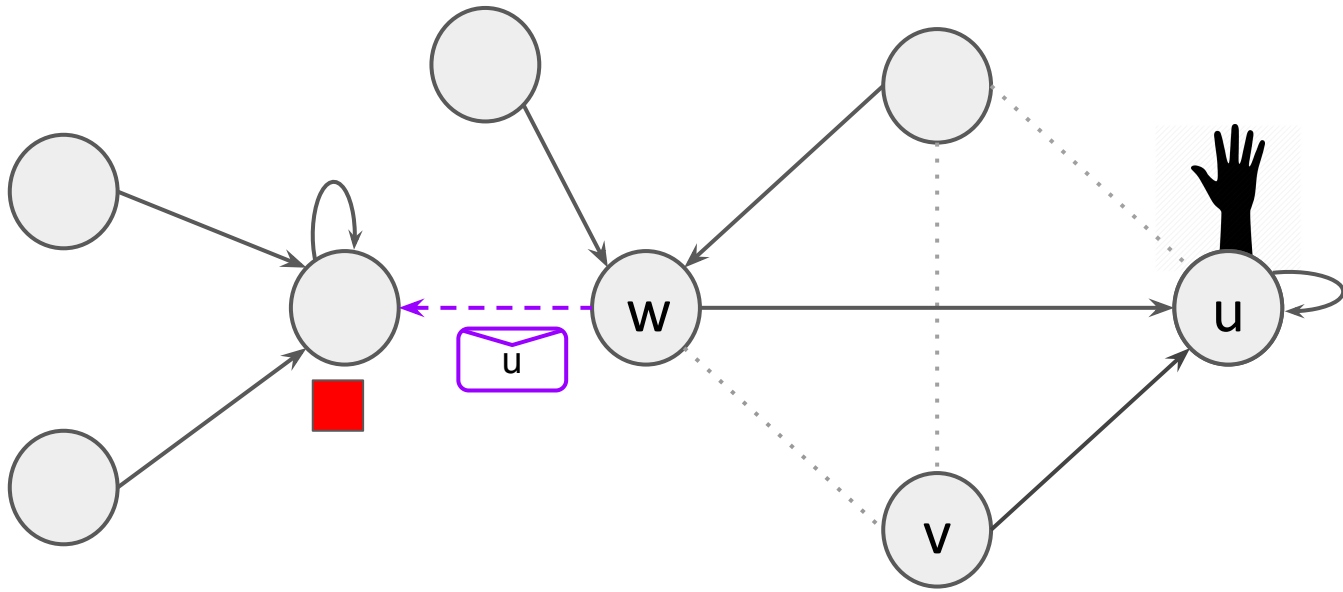
# Arvy



# Arvy

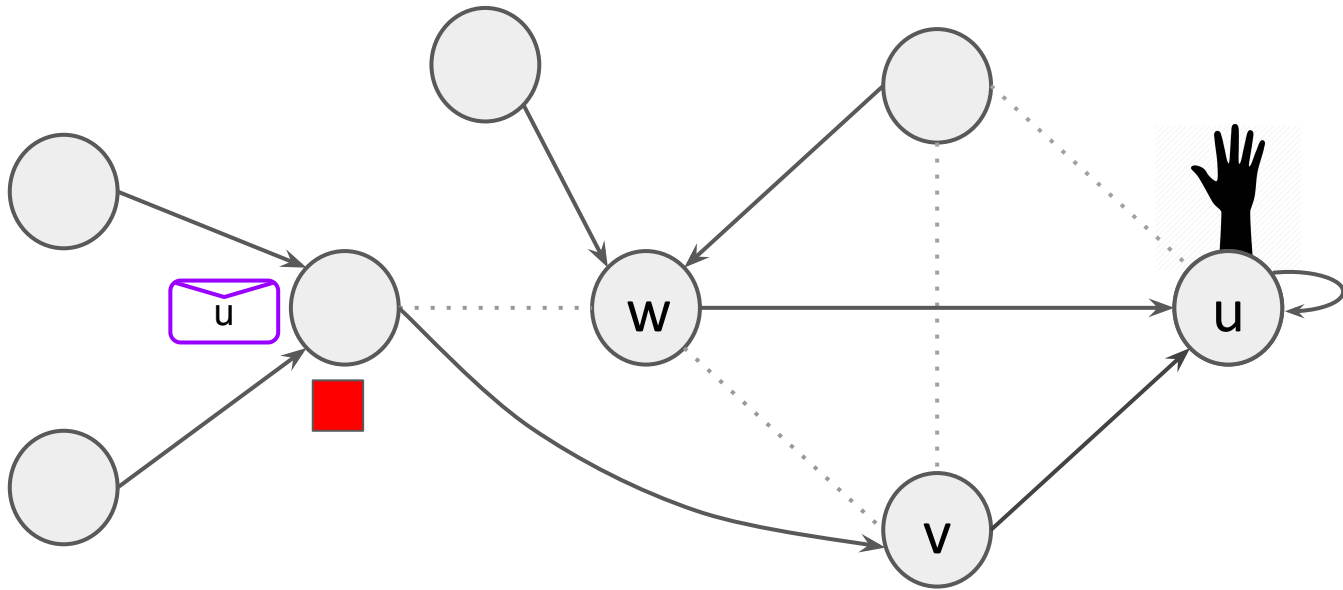


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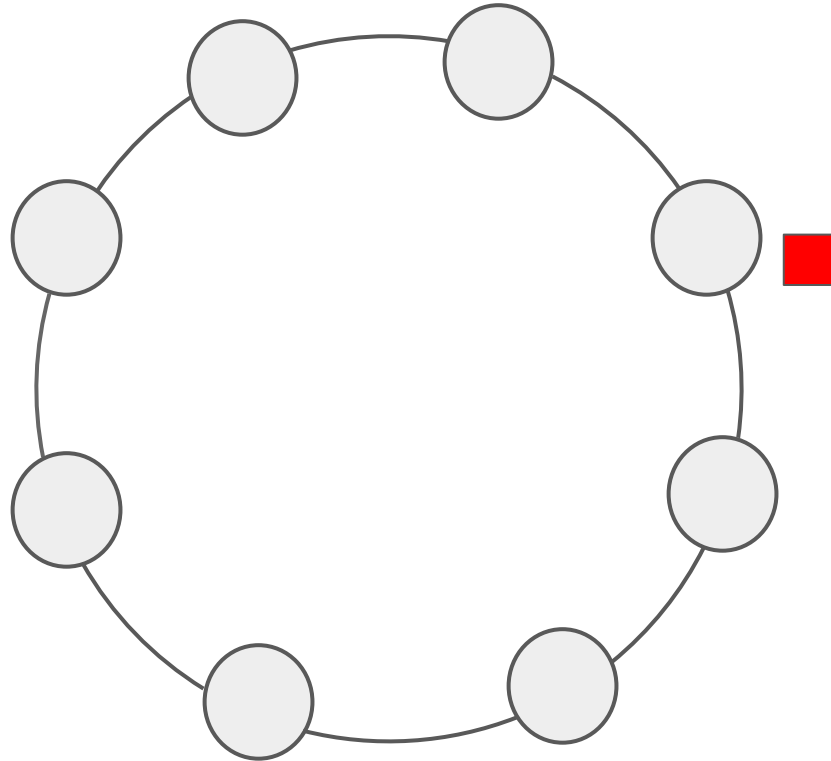




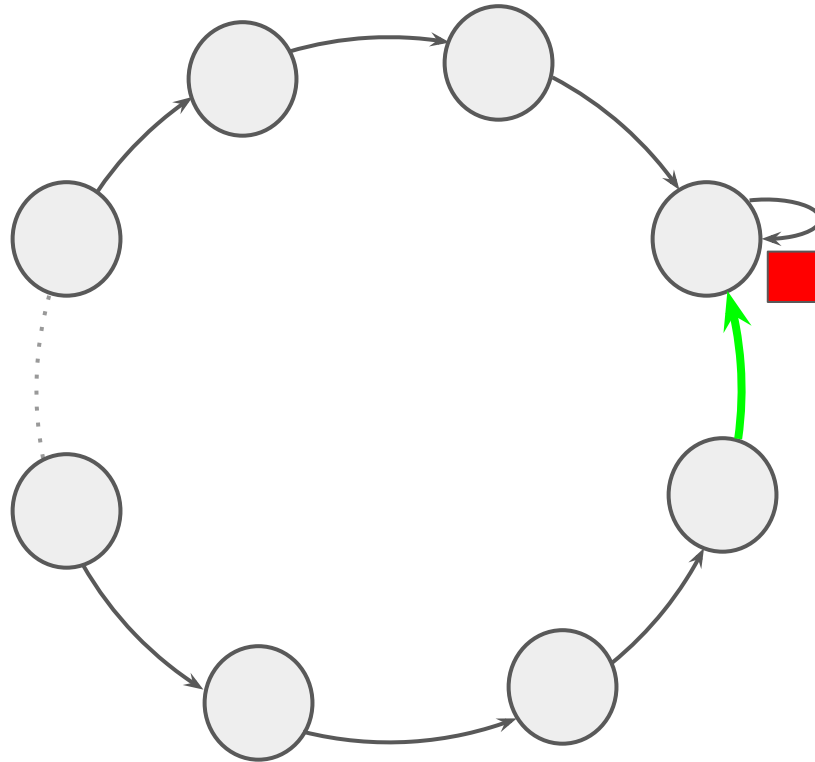
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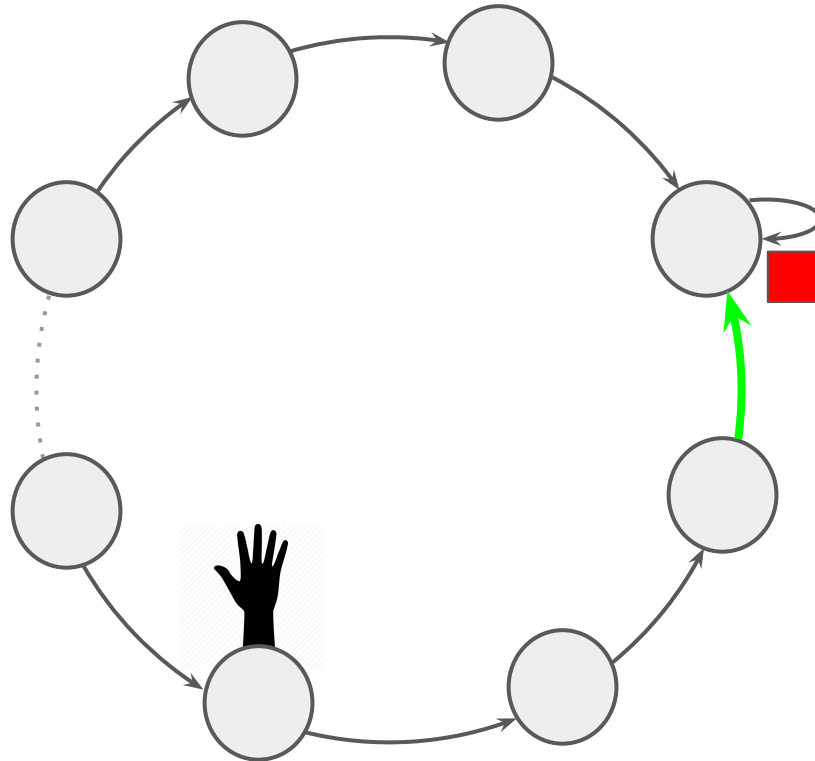
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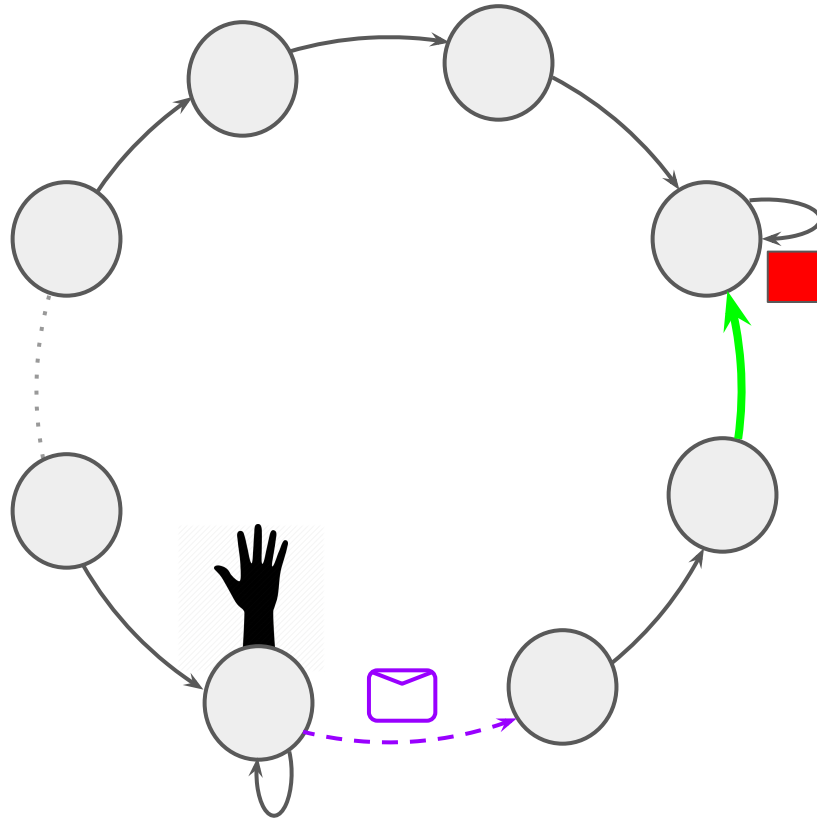
# Arvy on Rings



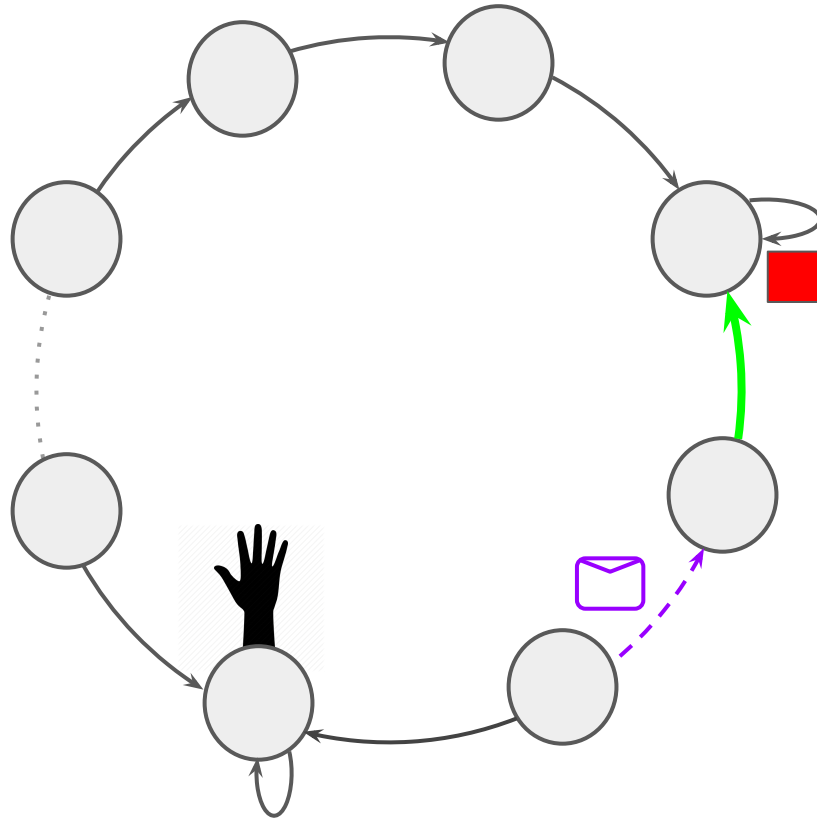
# Arvy on Rings



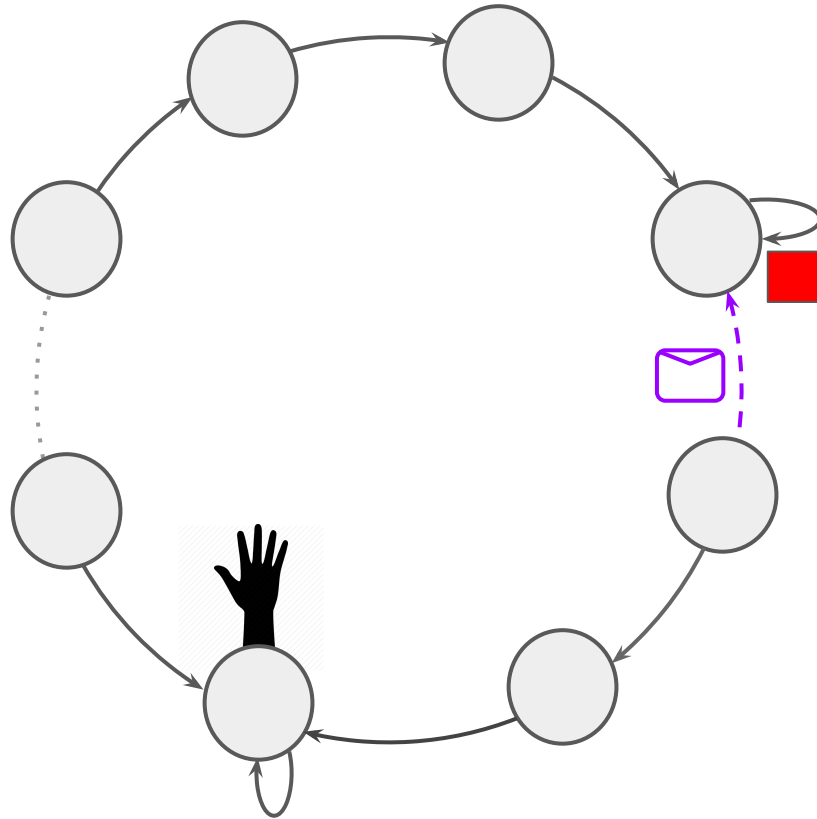
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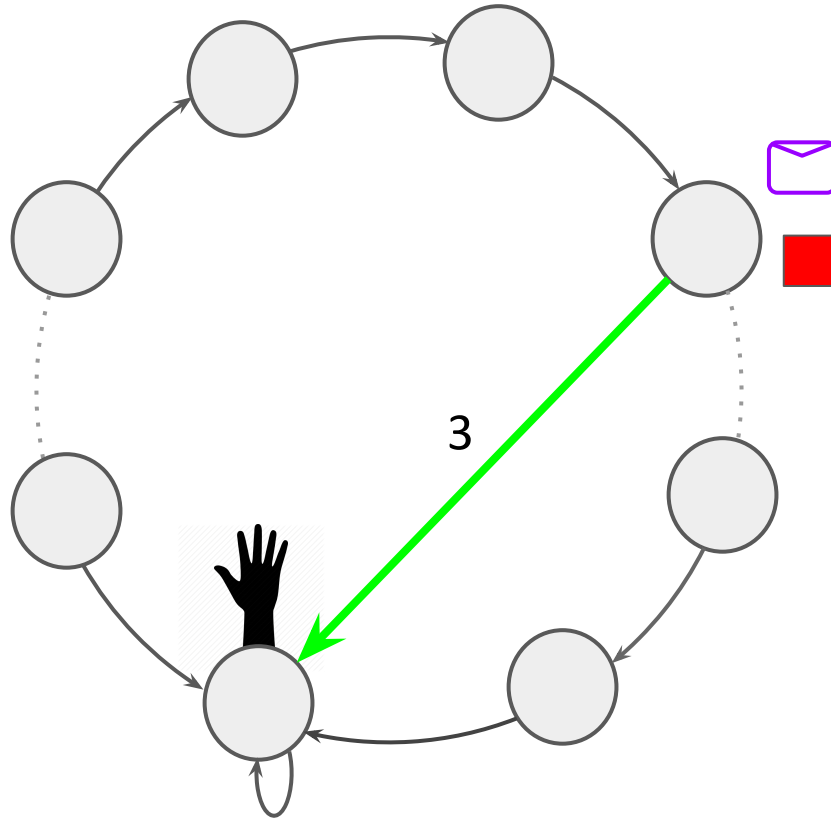
# Arvy on Rings



# Arvy on Rings

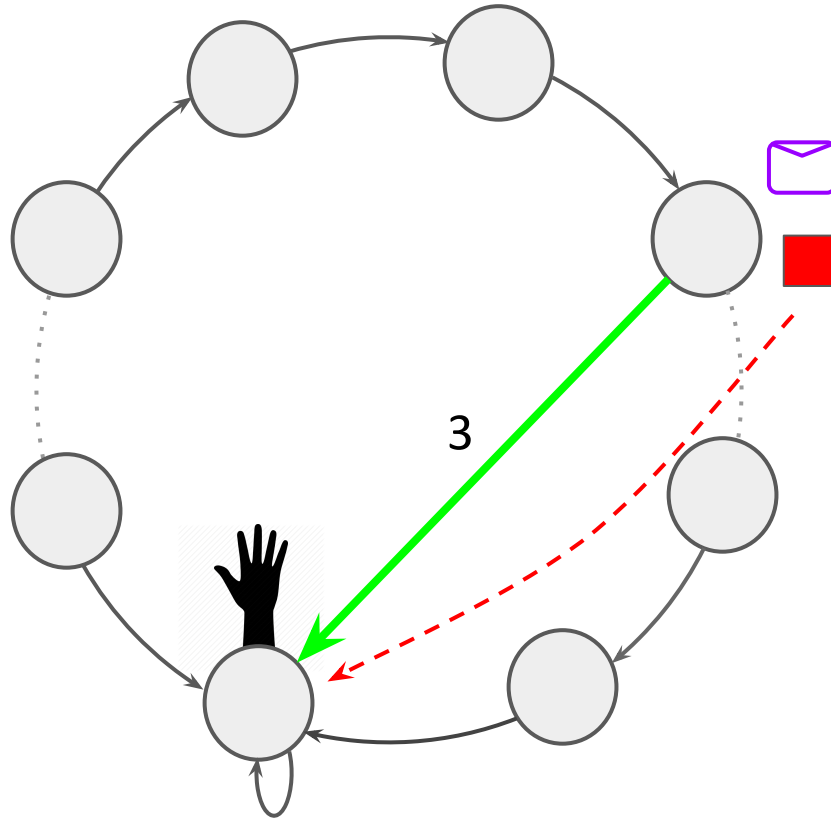


# Arvy on Rings

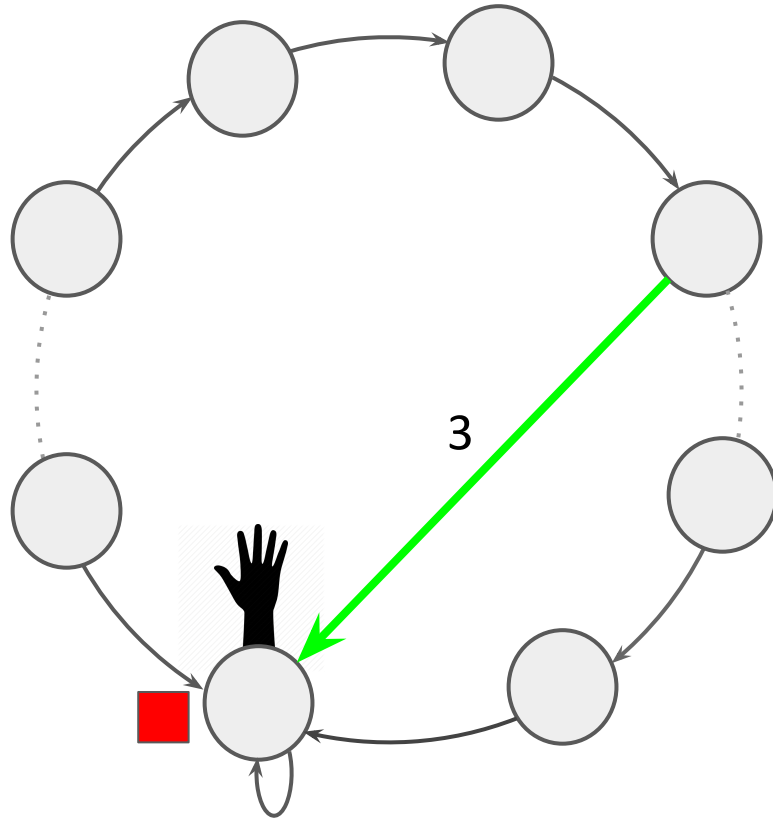




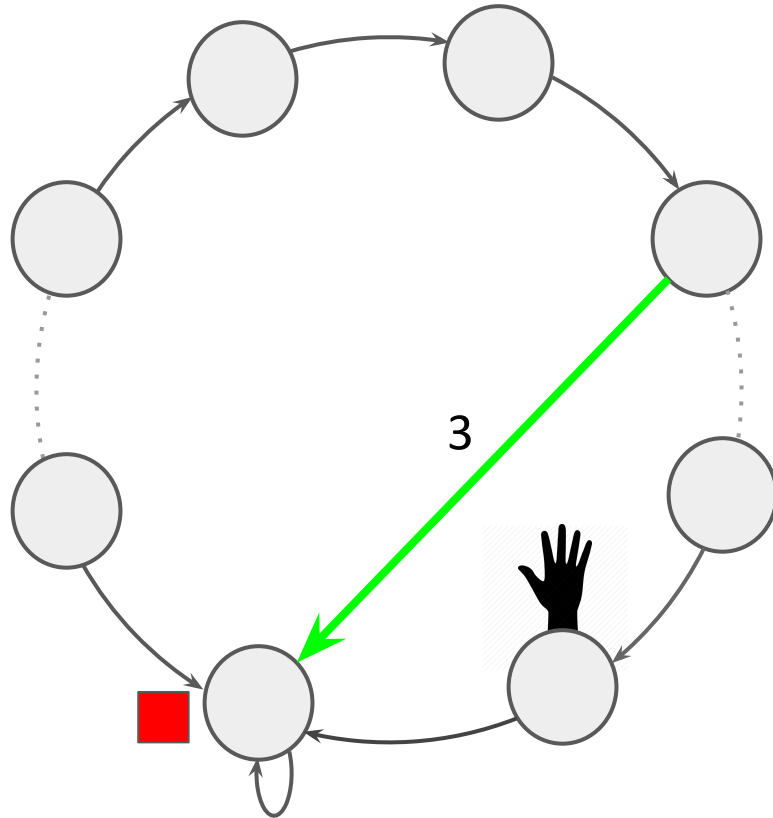
# Arvy on Rings



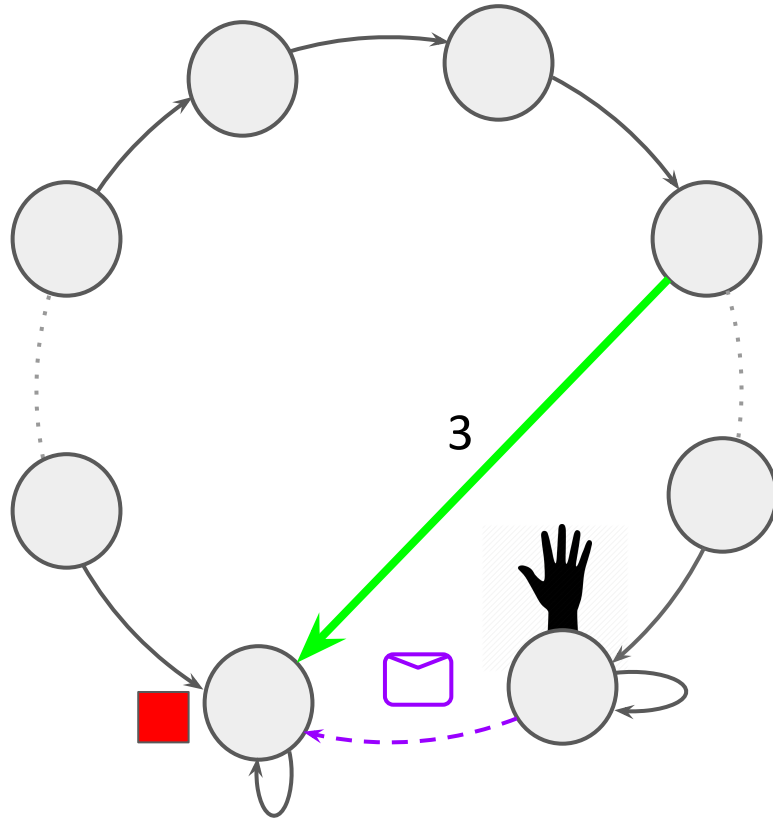
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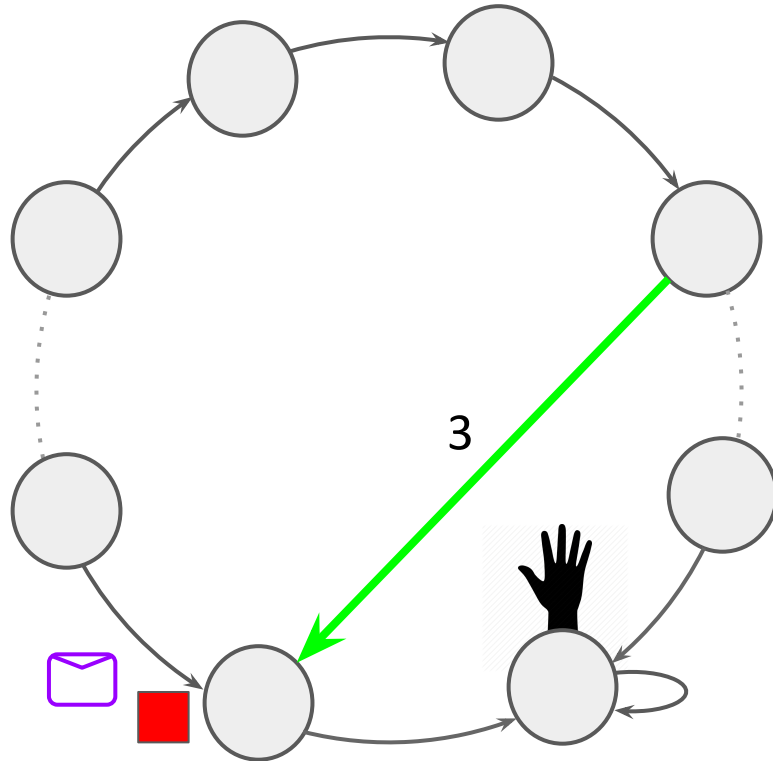
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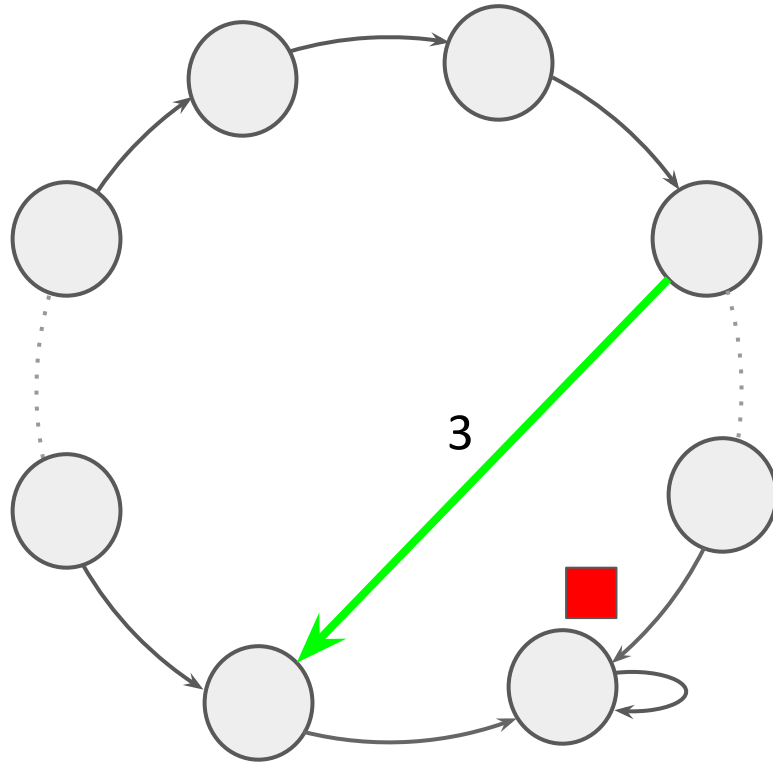
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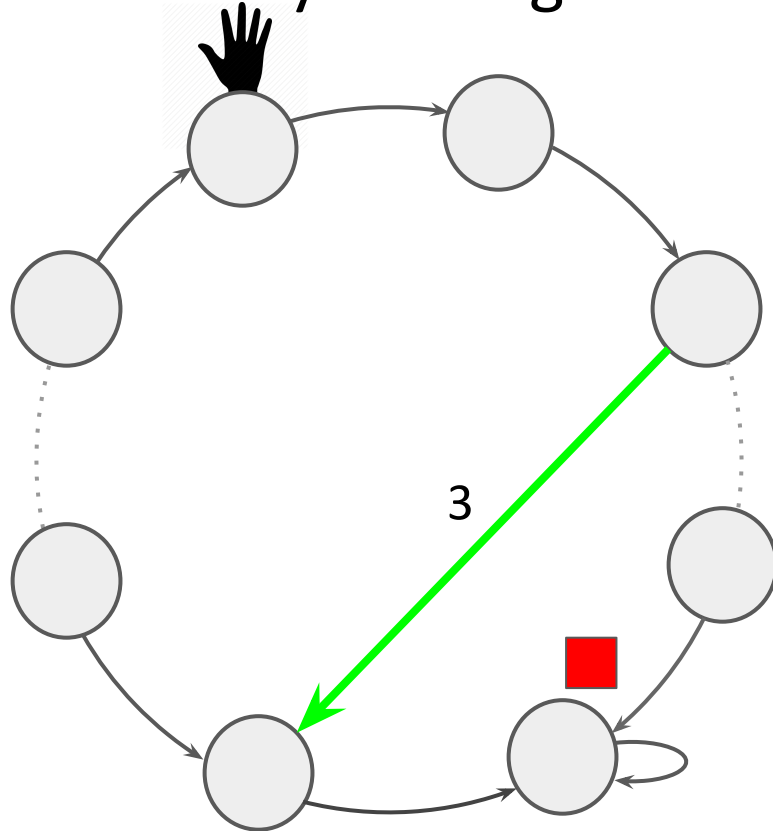
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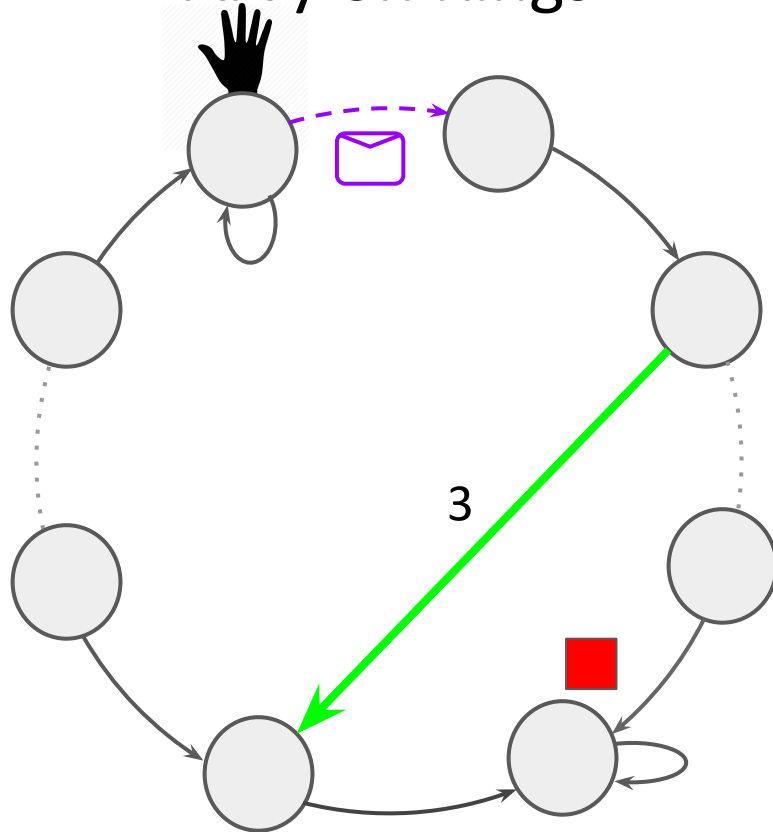
# Arvy on Rings



# Arvy on Rings

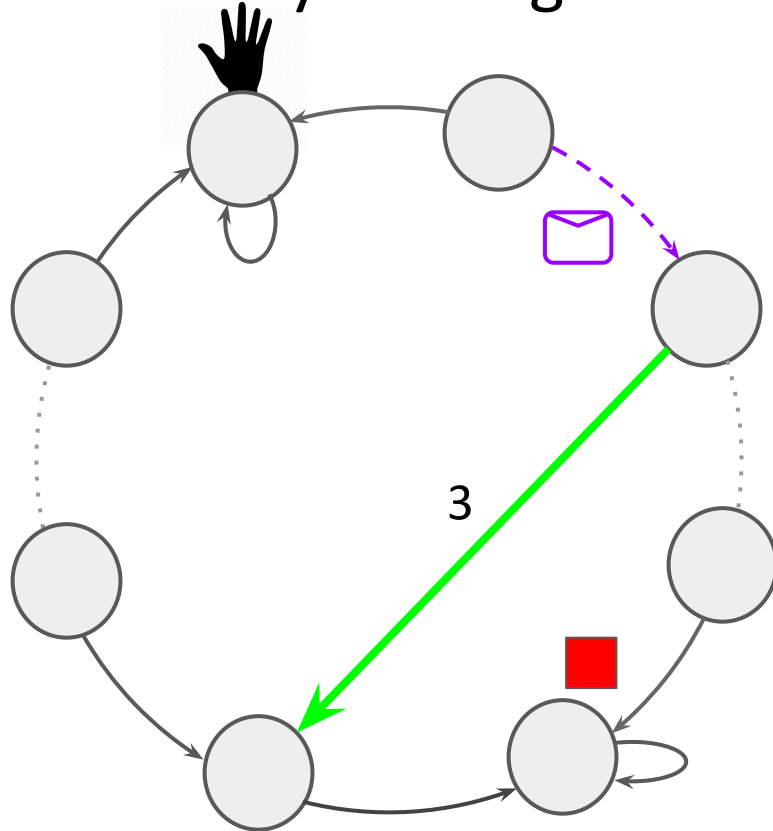


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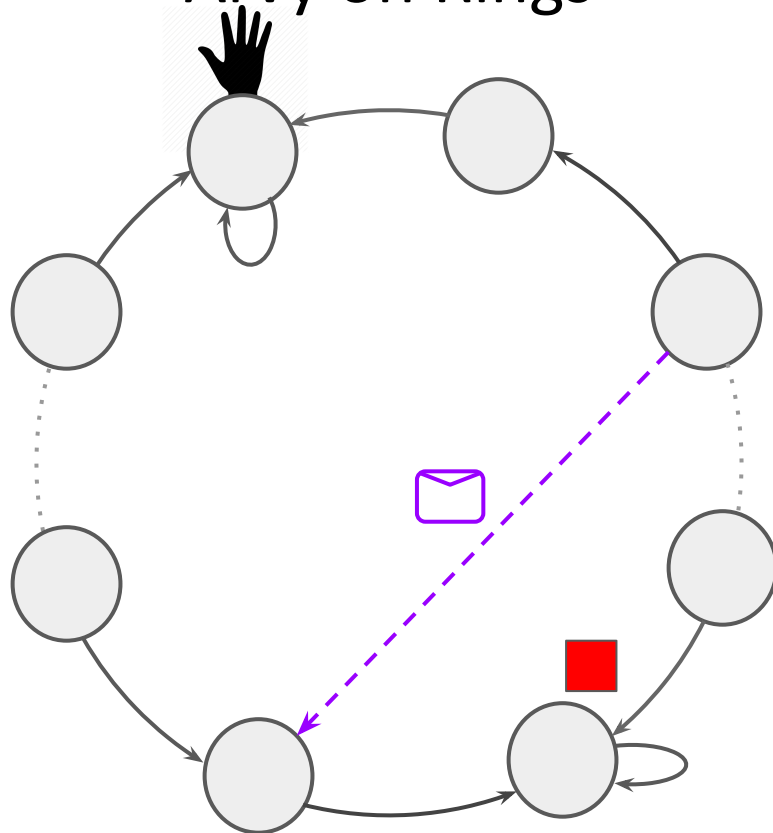




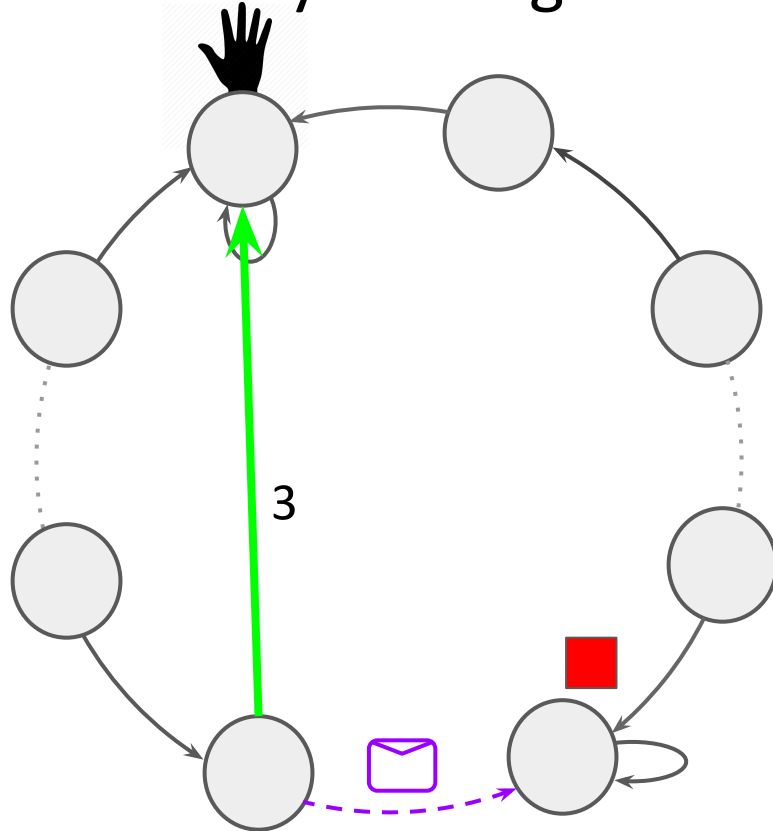
# Arvy on Rings



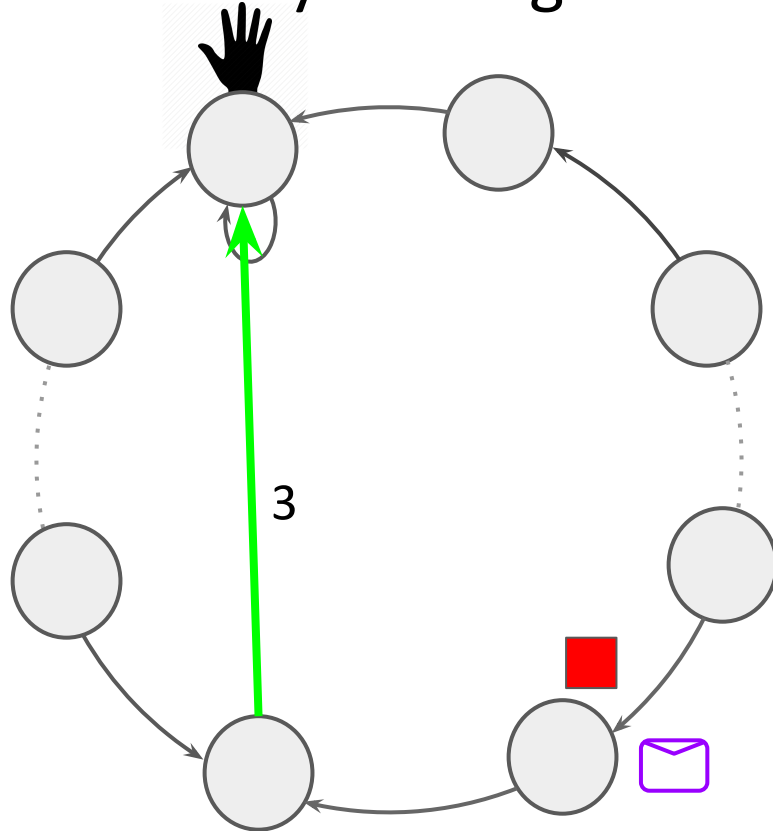
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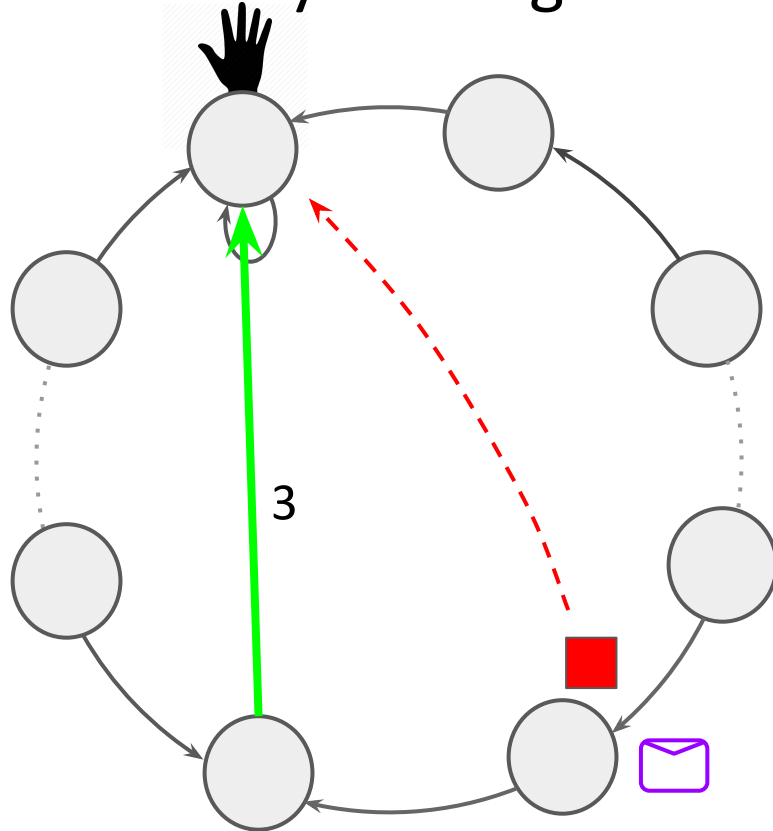
# Arvy on Rings



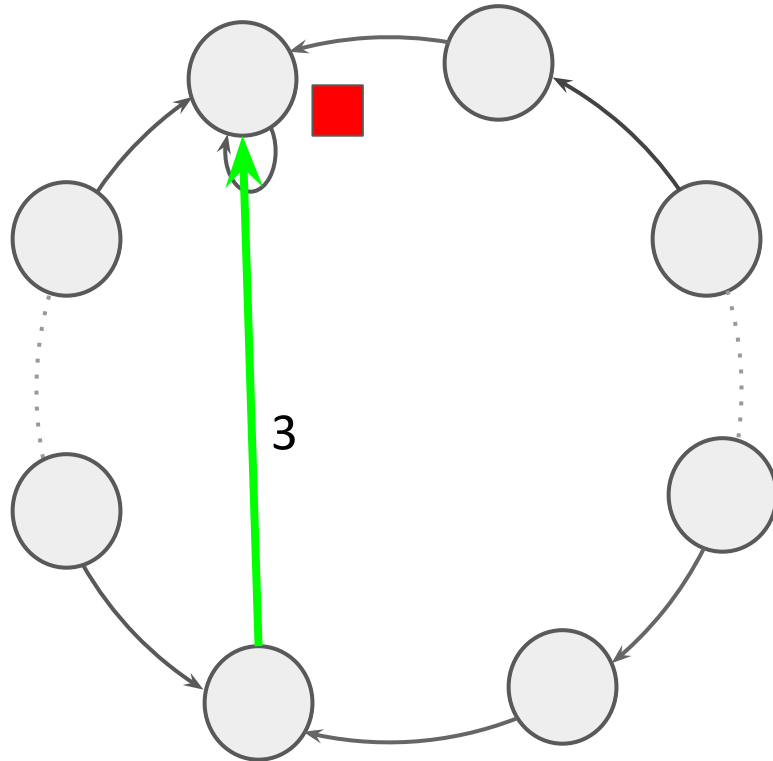
# Arvy on Rings



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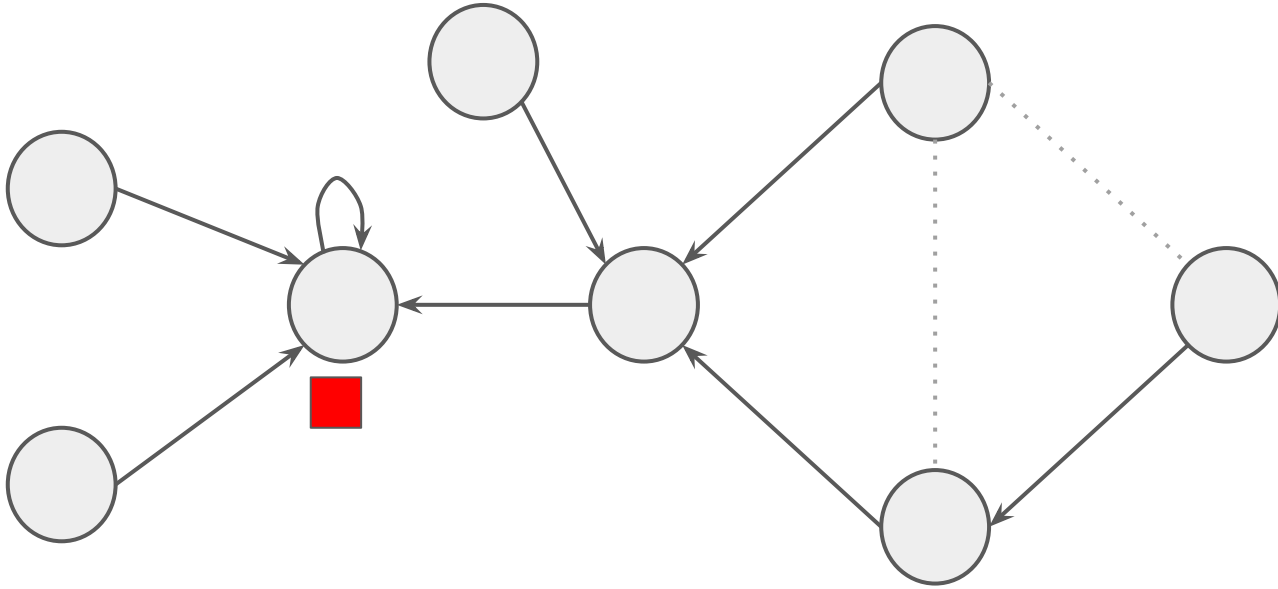
# Arvy on Rings



## Is it better?

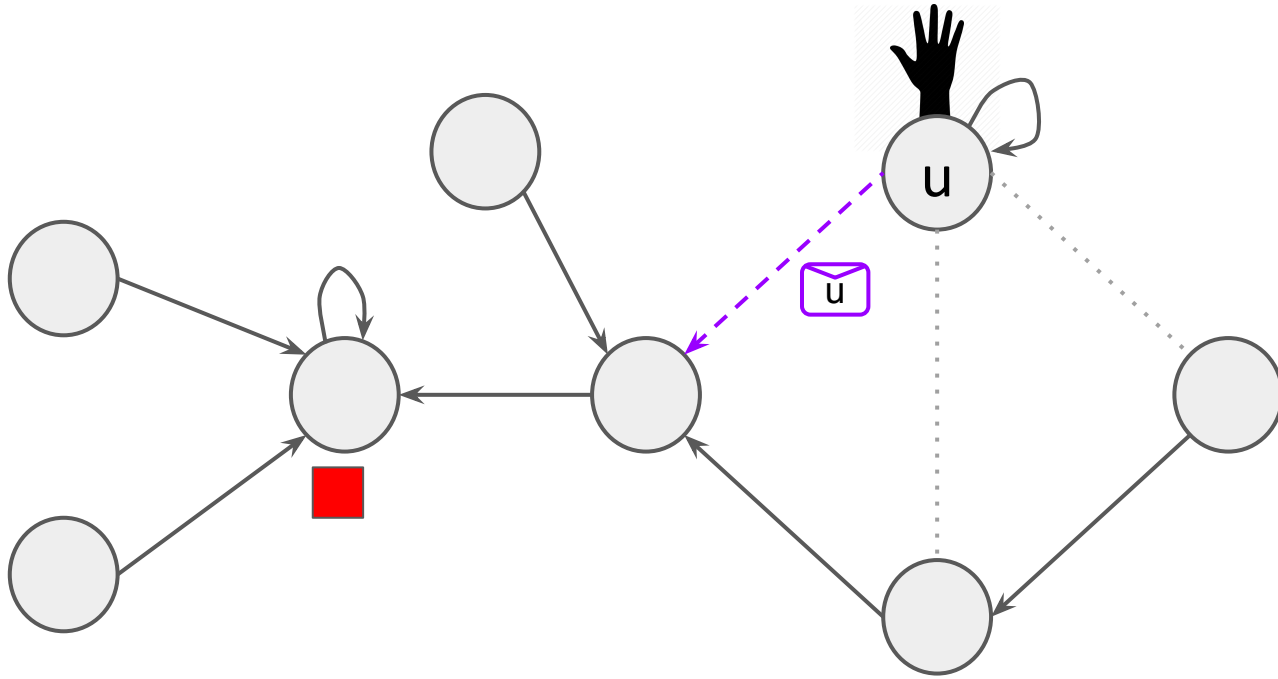
	Space Per Node	Competitive Ratio
Arrow	$O(1)$	$\Omega(n)$
Ivy	$O(1)$	$\Omega(n)$
Sparse Covers	$O(\log n)$	$O(\log n)$
Arvy	$O(1)$	$O(1)$

# Concurrent Requests (Arrow)

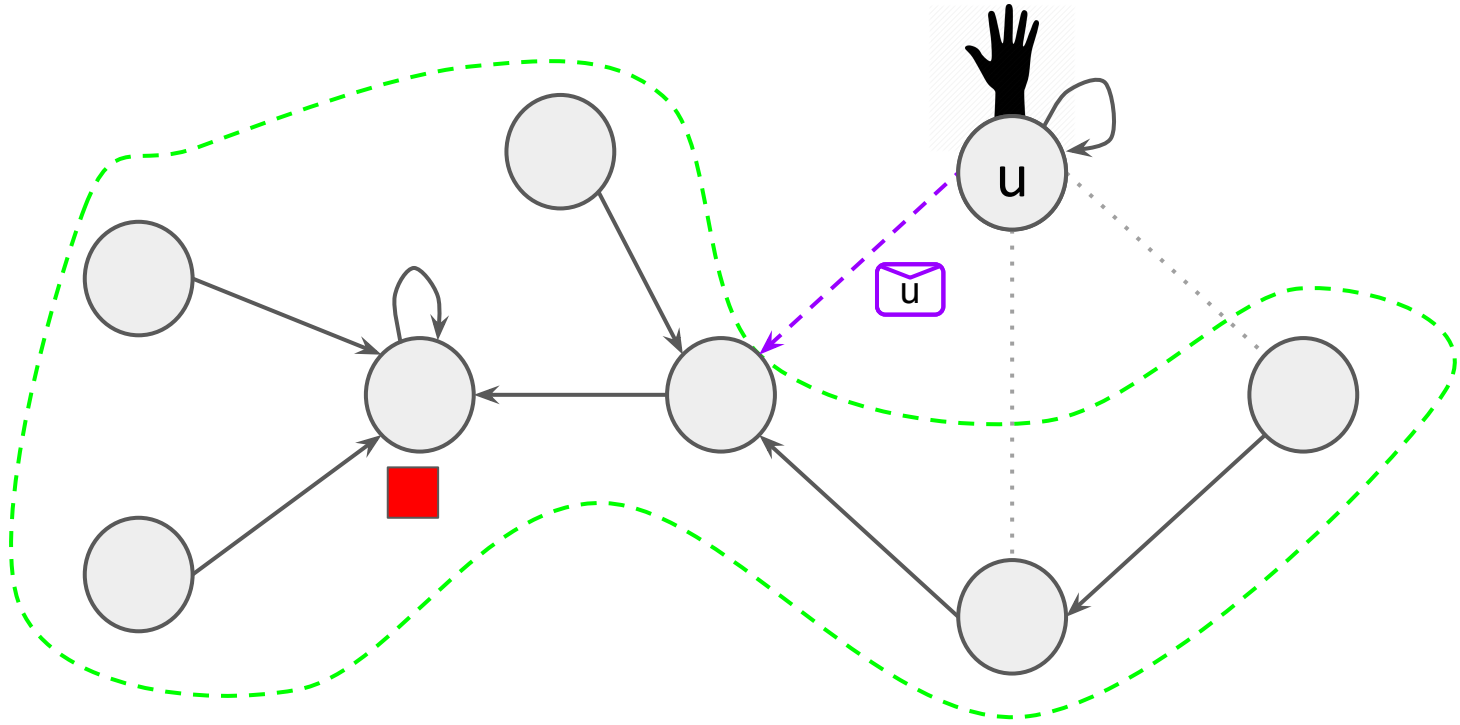




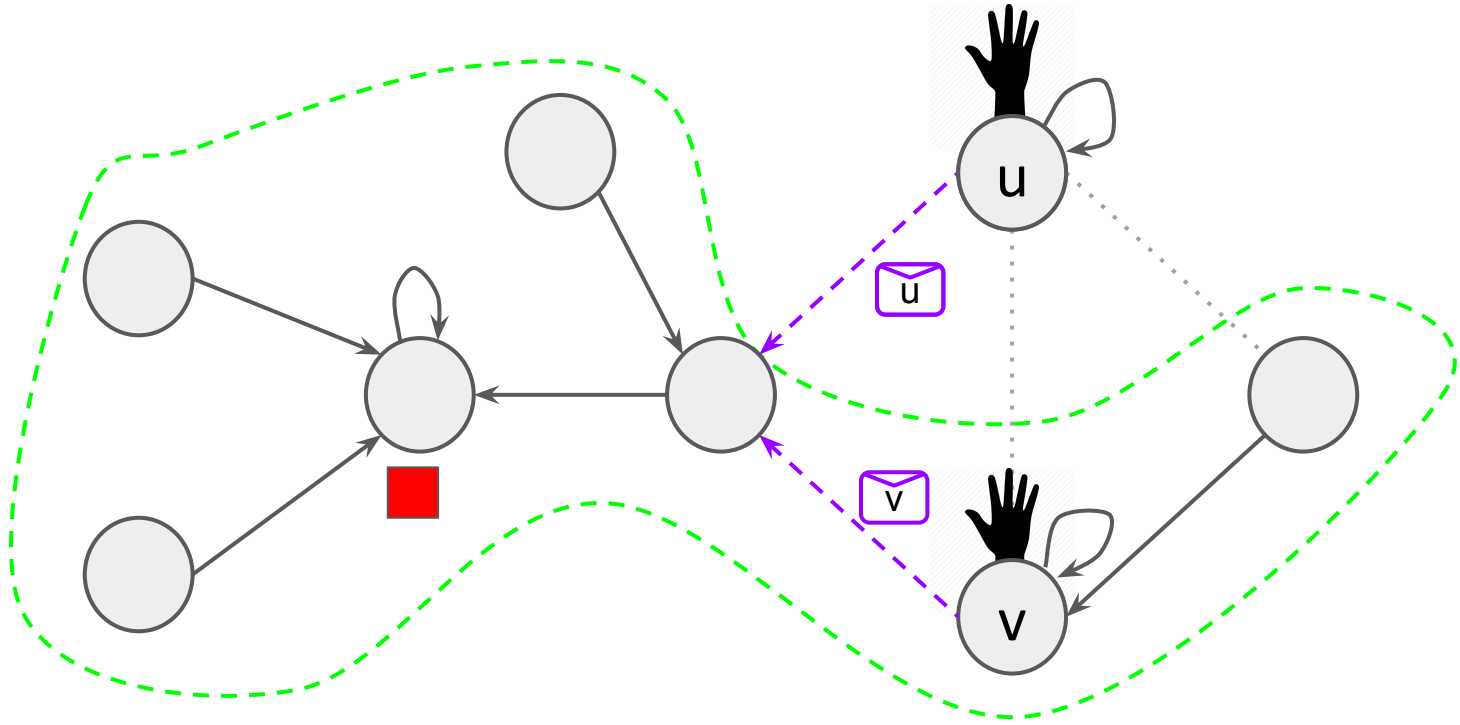
# Concurrent Requests (Arrow)



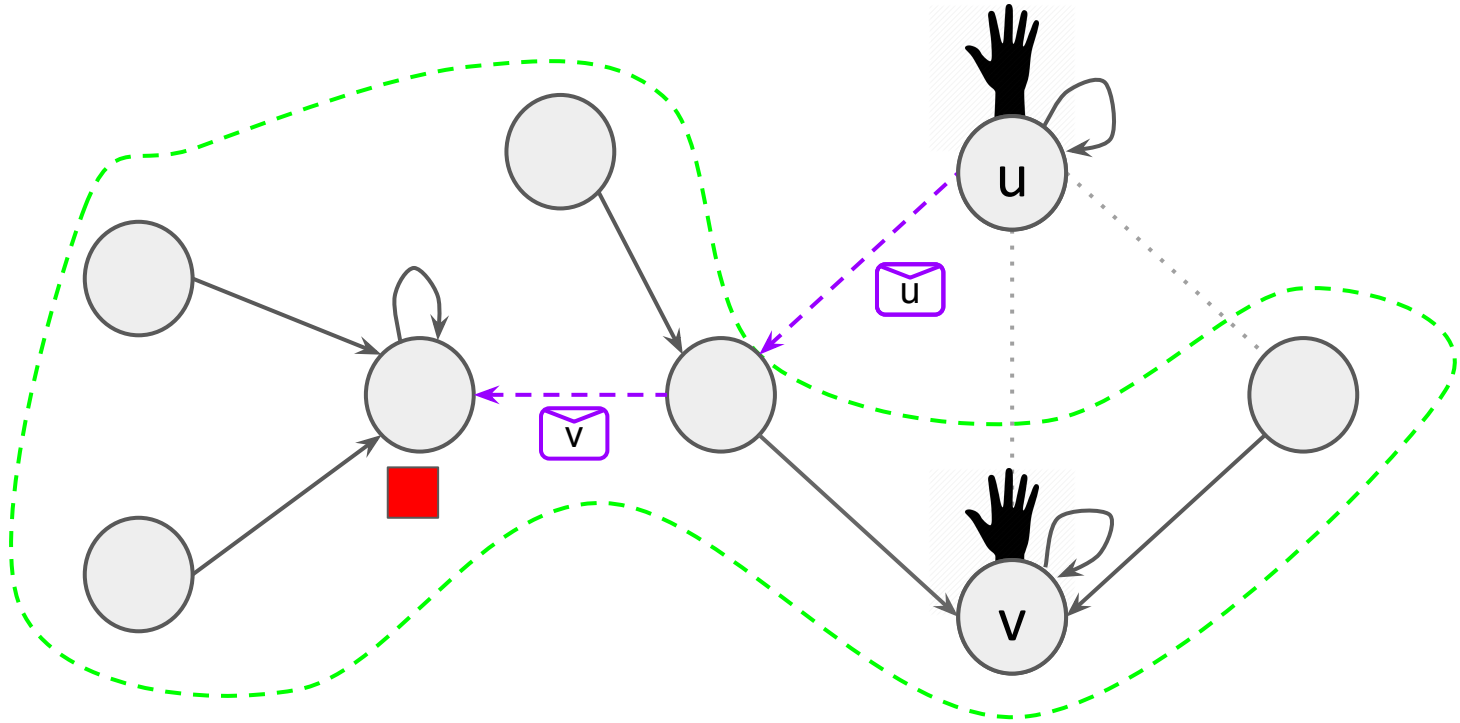
# Concurrent Requests (Arrow)



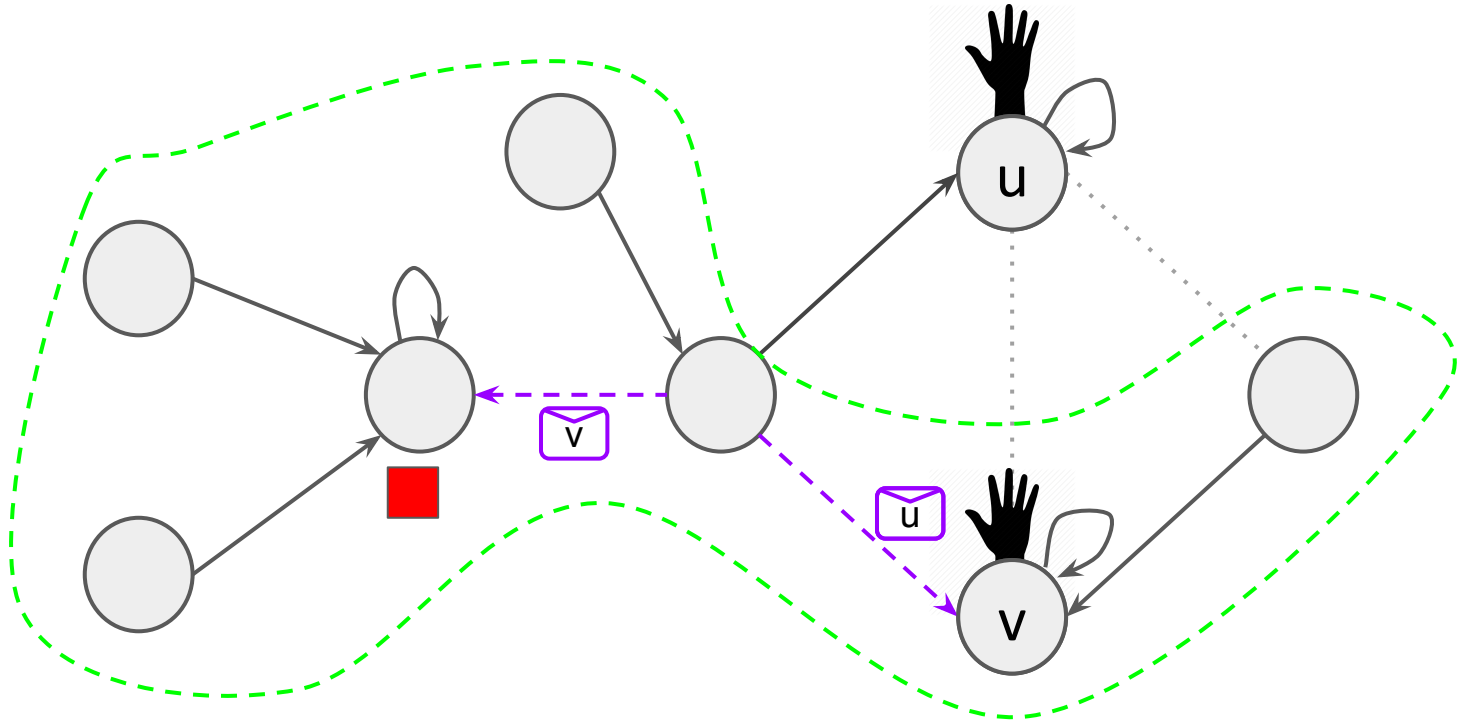
# Concurrent Requests (Arrow)



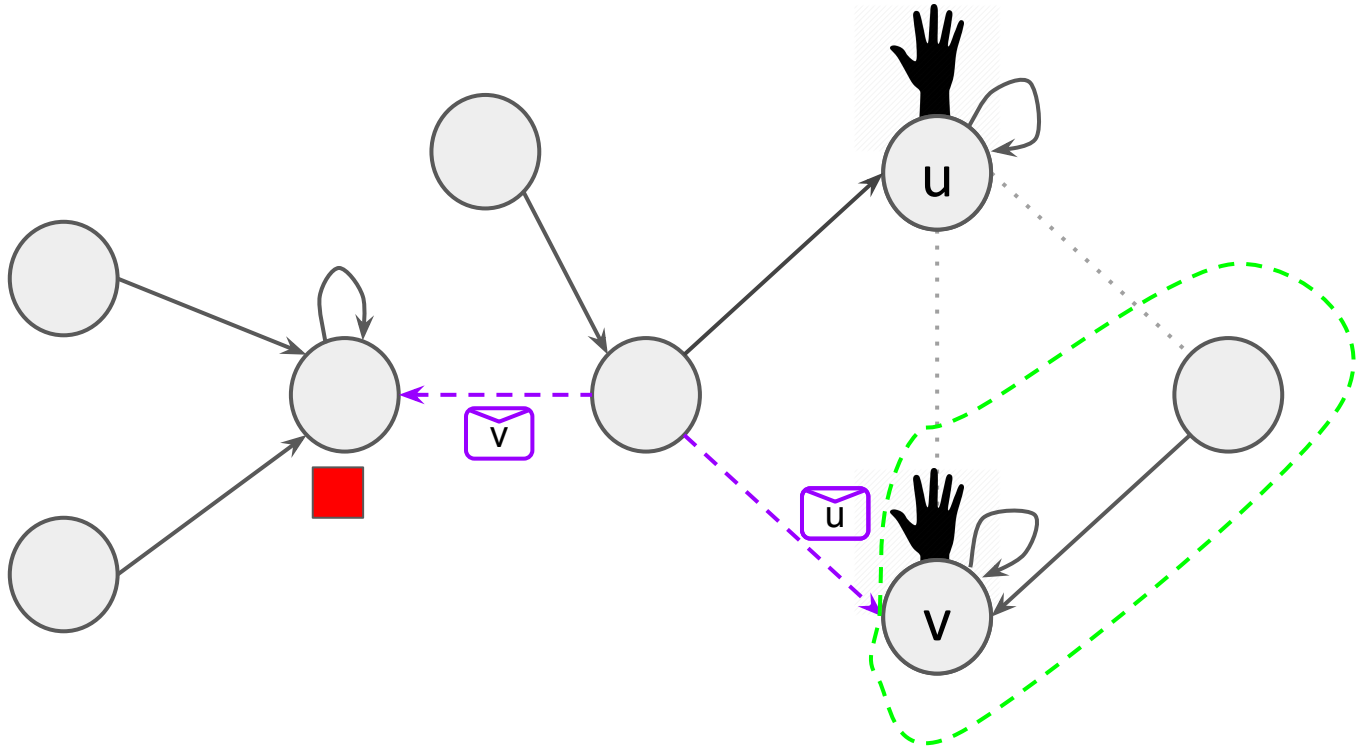
# Concurrent Requests (Arrow)



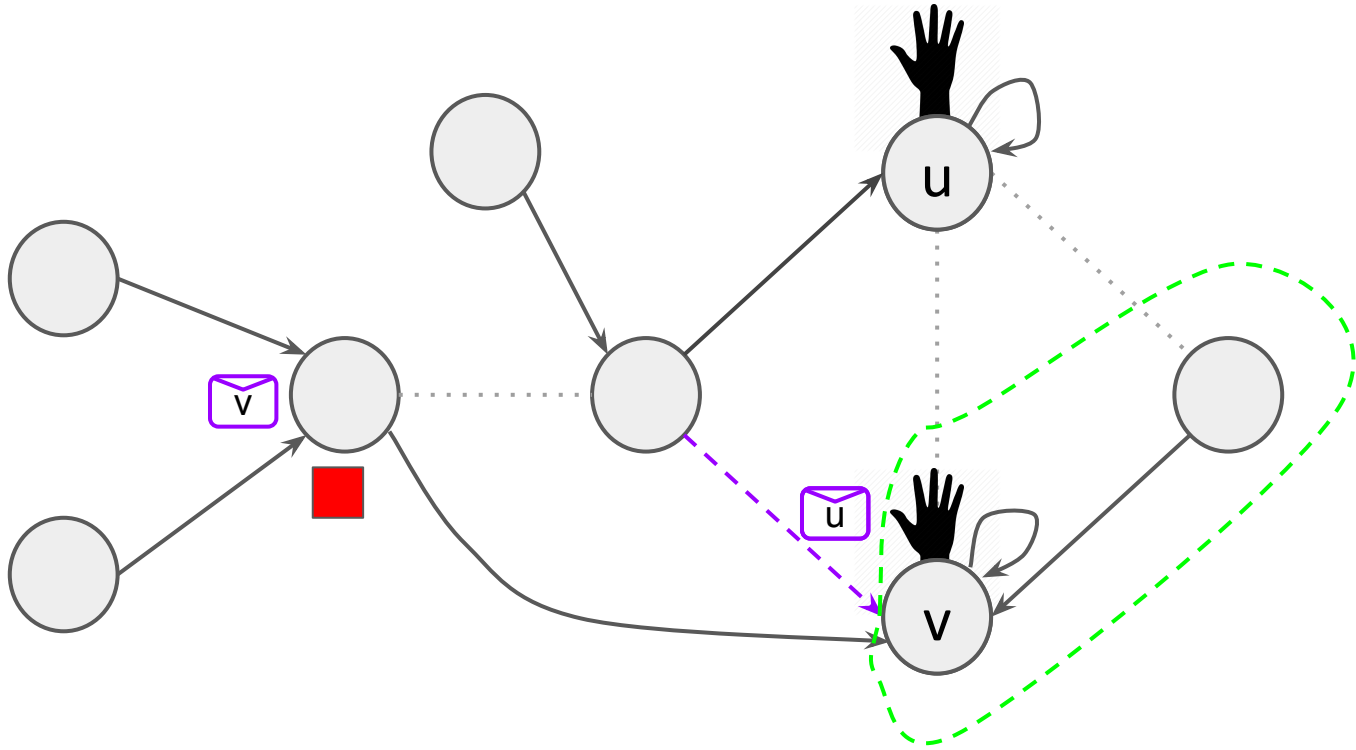
# Concurrent Requests (Arrow)



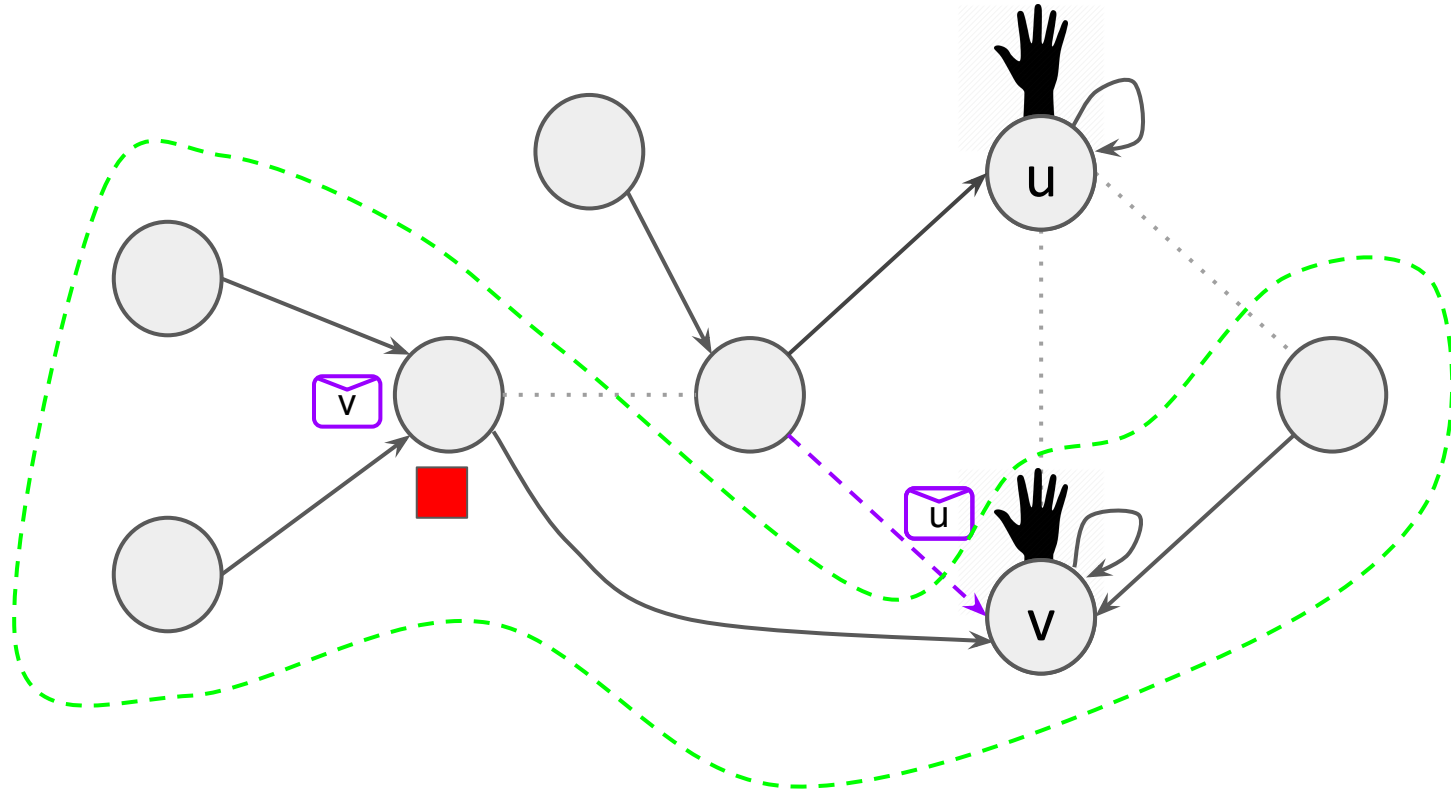
# Concurrent Requests (Arrow)



# Concurrent Requests (Arvy)

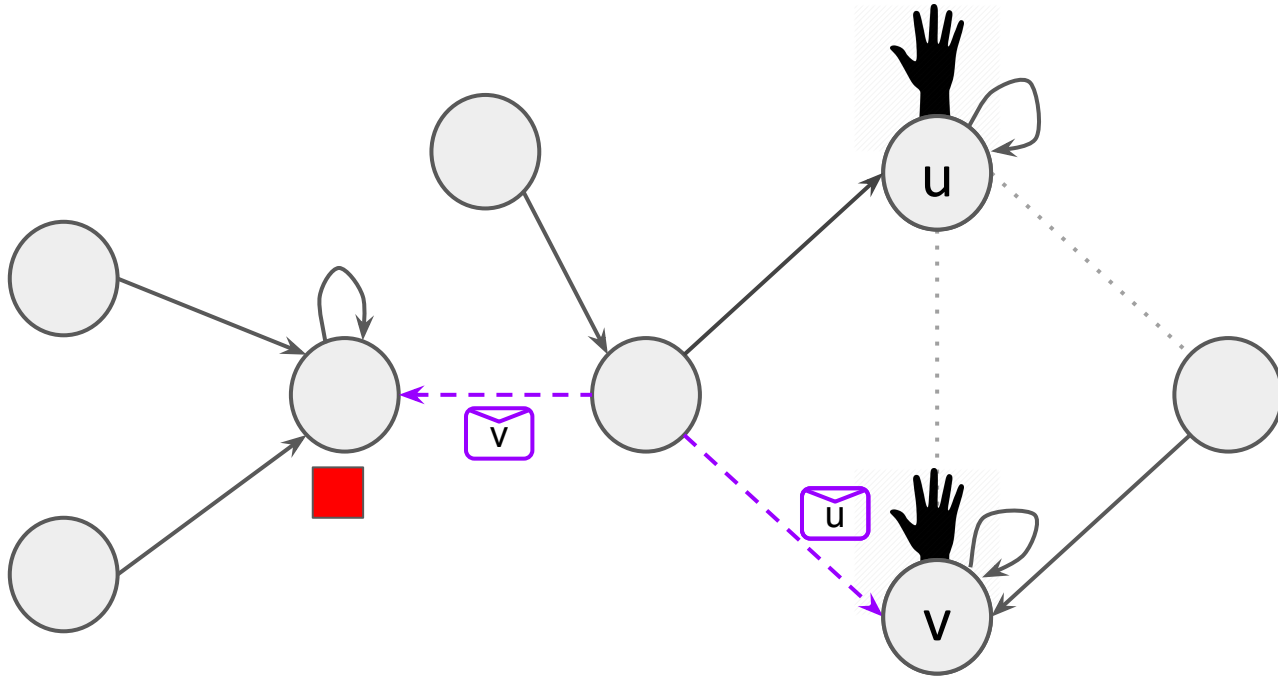


# Concurrent Requests (Arvy)

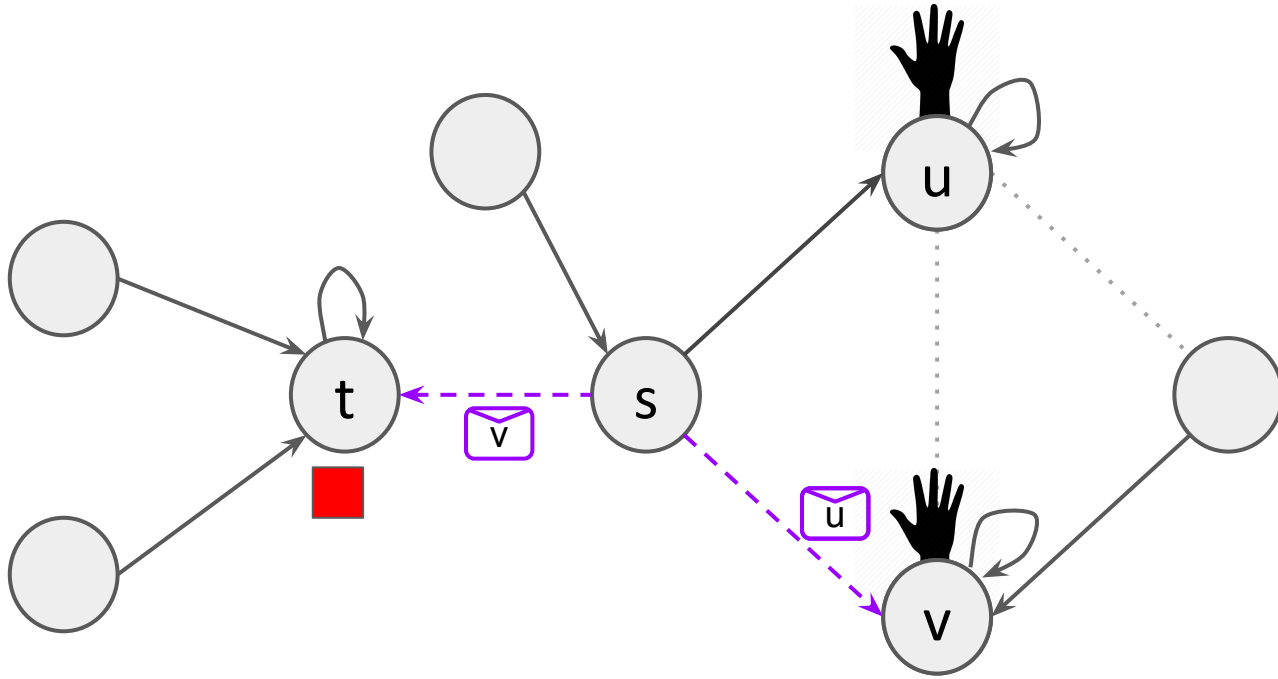




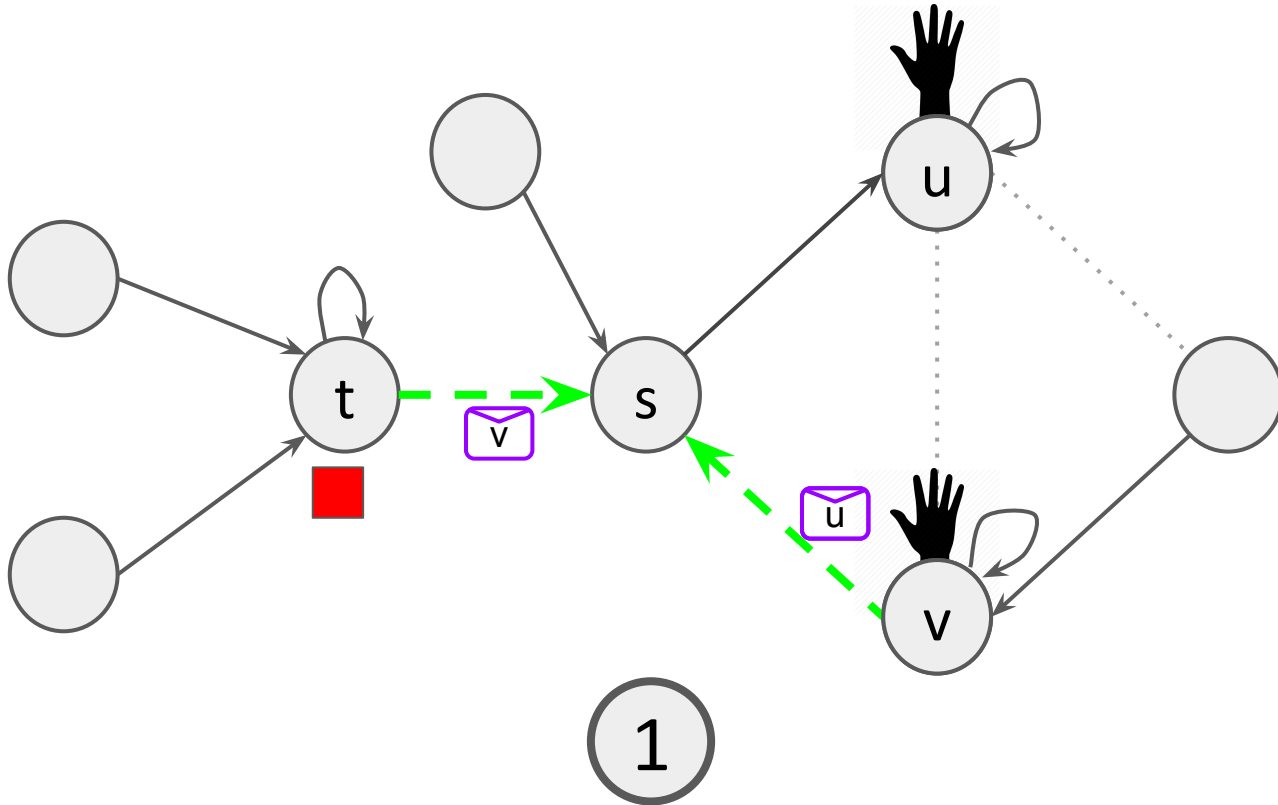
# Concurrent Requests (Arvy)



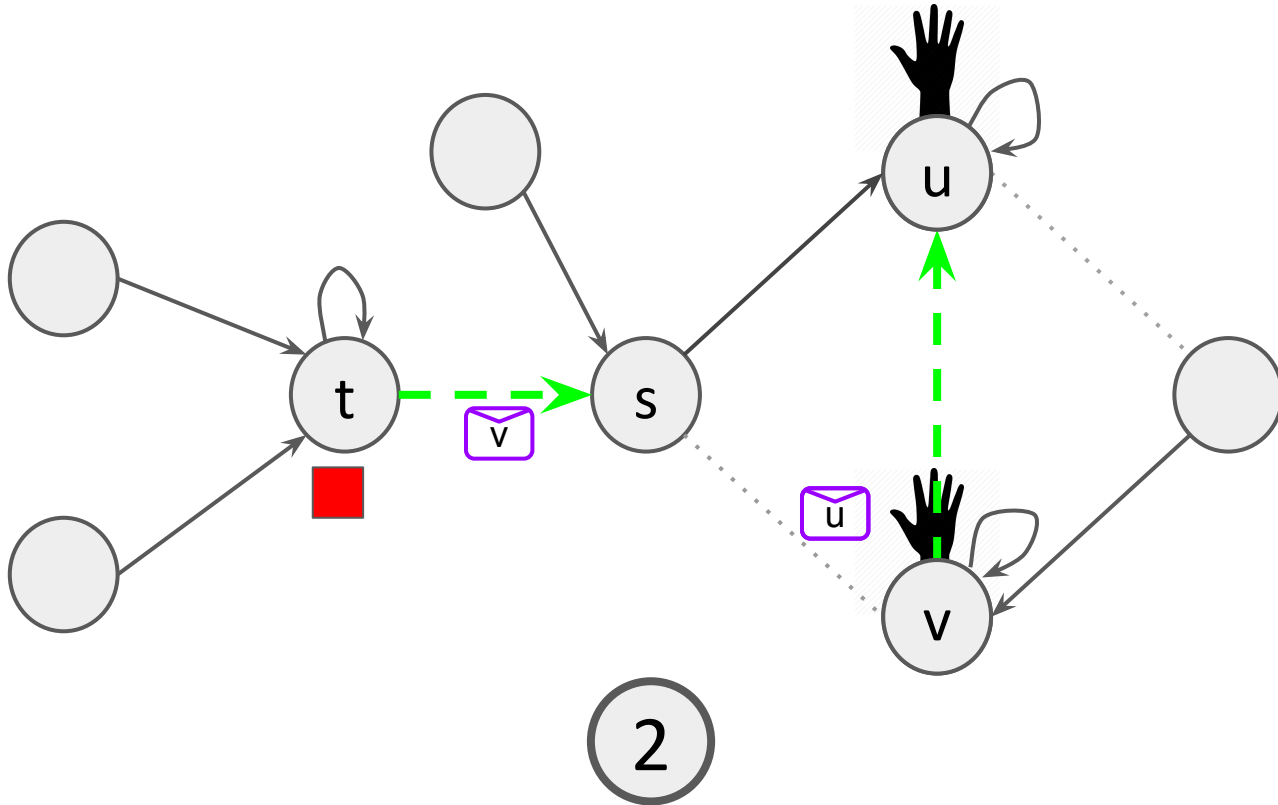
# Concurrent Requests (Arvy)



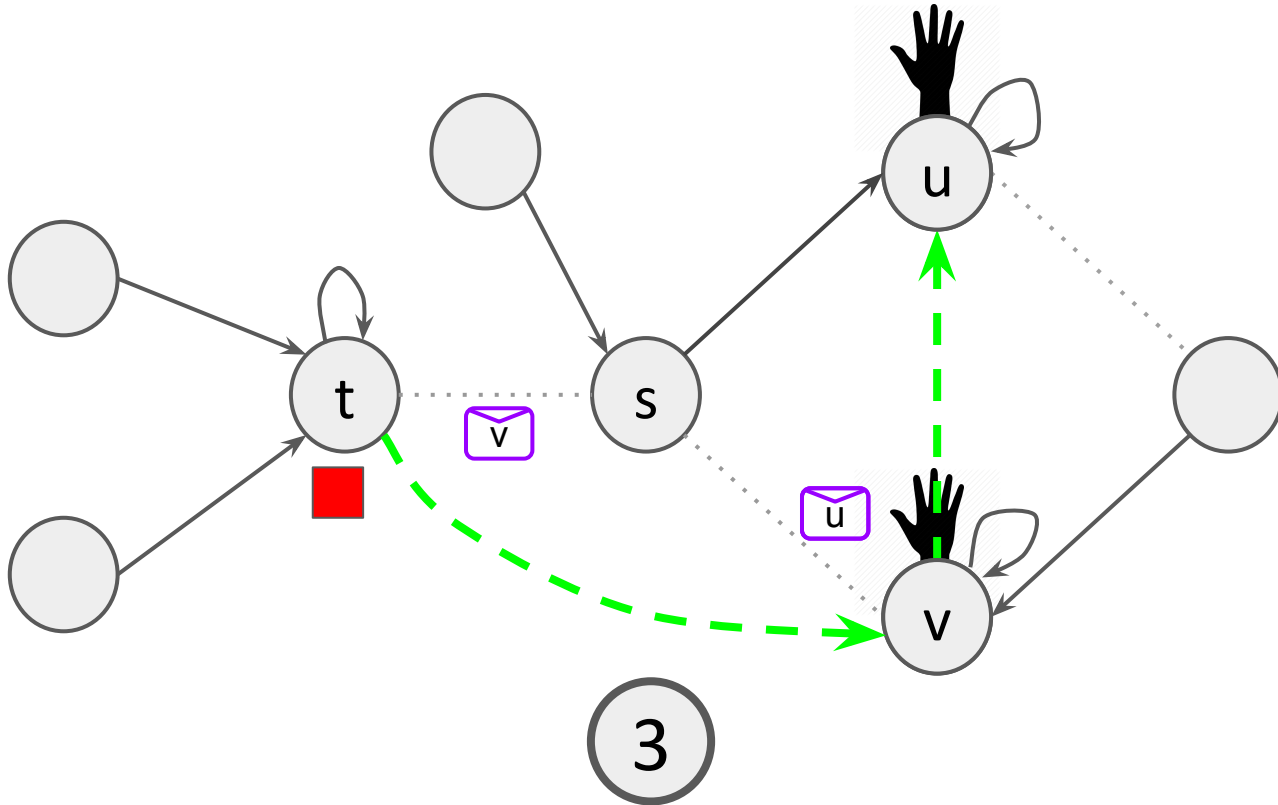
# Concurrent Requests (Arvy)



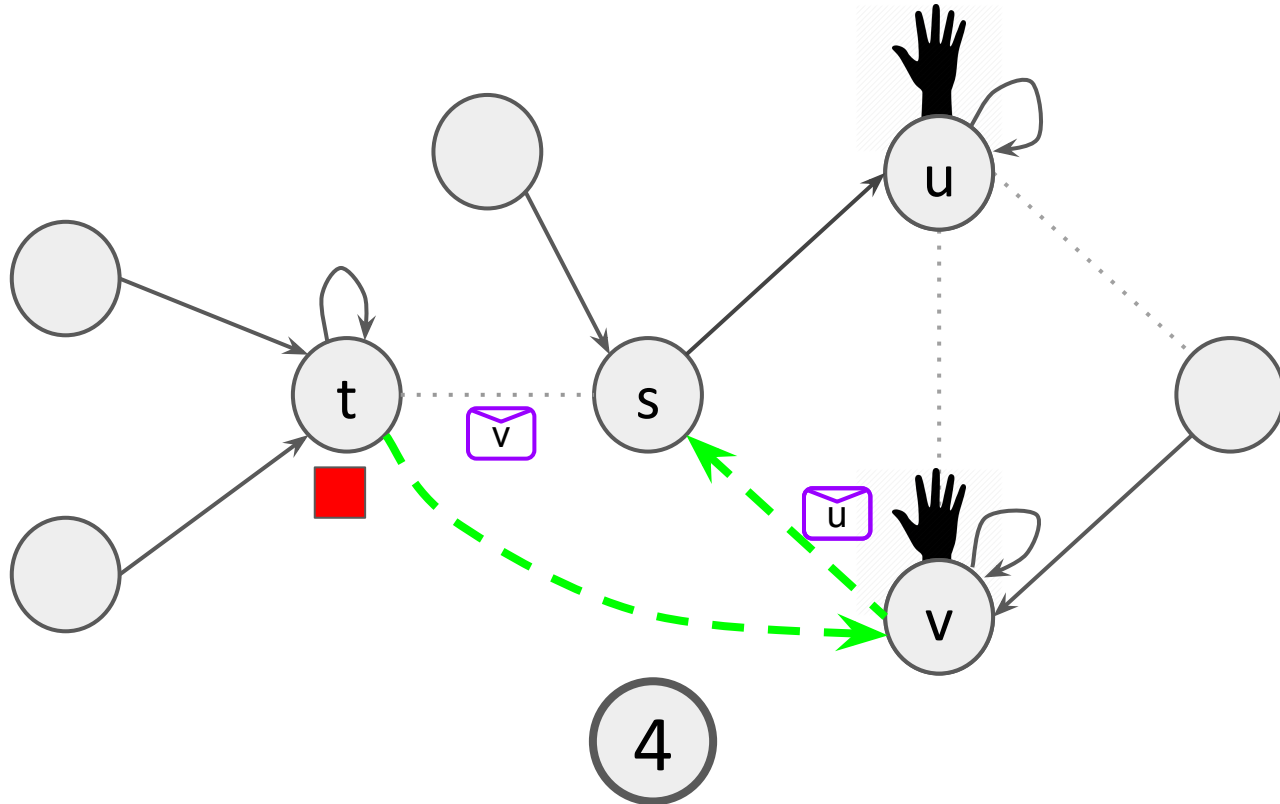
# Concurrent Requests (Arvy)



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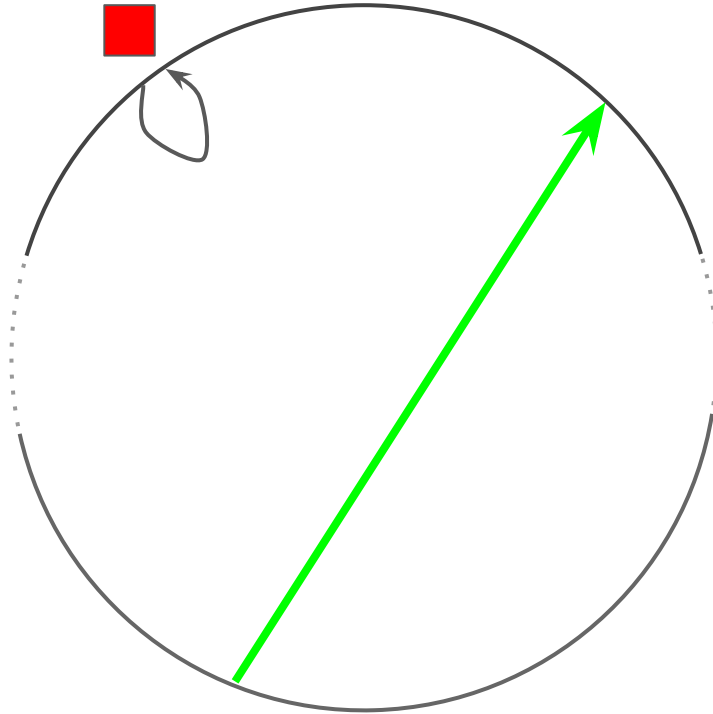
# Concurrent Requests (Arvy)





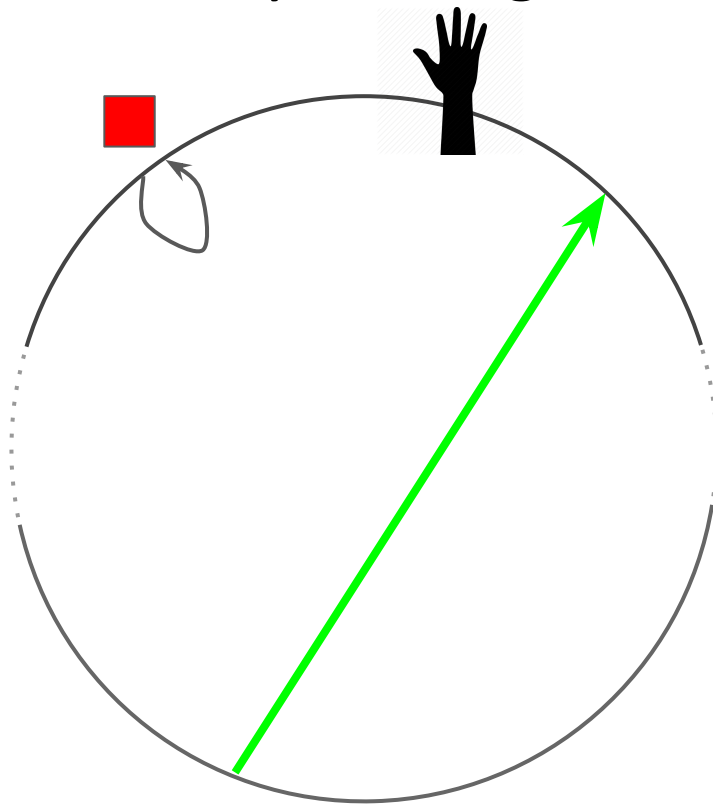
kpankaj@ethz.ch

# Arvy on Rings

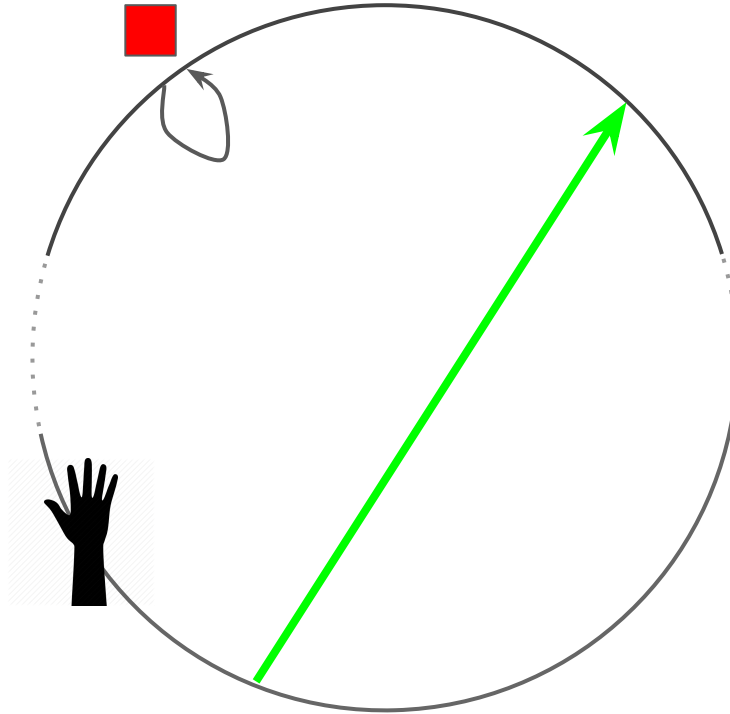




# Arvy on Rings



# Arvy on Rings



# Arvy on Rings

