



# **SNS COLLEGE OF ENGINEERING**

Kurumbapalayam (Po), Coimbatore – 641 107

**An Autonomous Institution**

Accredited by NBA – AICTE and Accredited by NAAC – UGC with ‘A’ Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING-IOT Including CS&BCT**

**COURSE NAME : 19CS307- DATA STRUCTURES**

**II YEAR / III SEMESTER**

**Unit IV- NON LINEAR DATA STRUCTURES – GRAPH**



# TOPIC: BFS

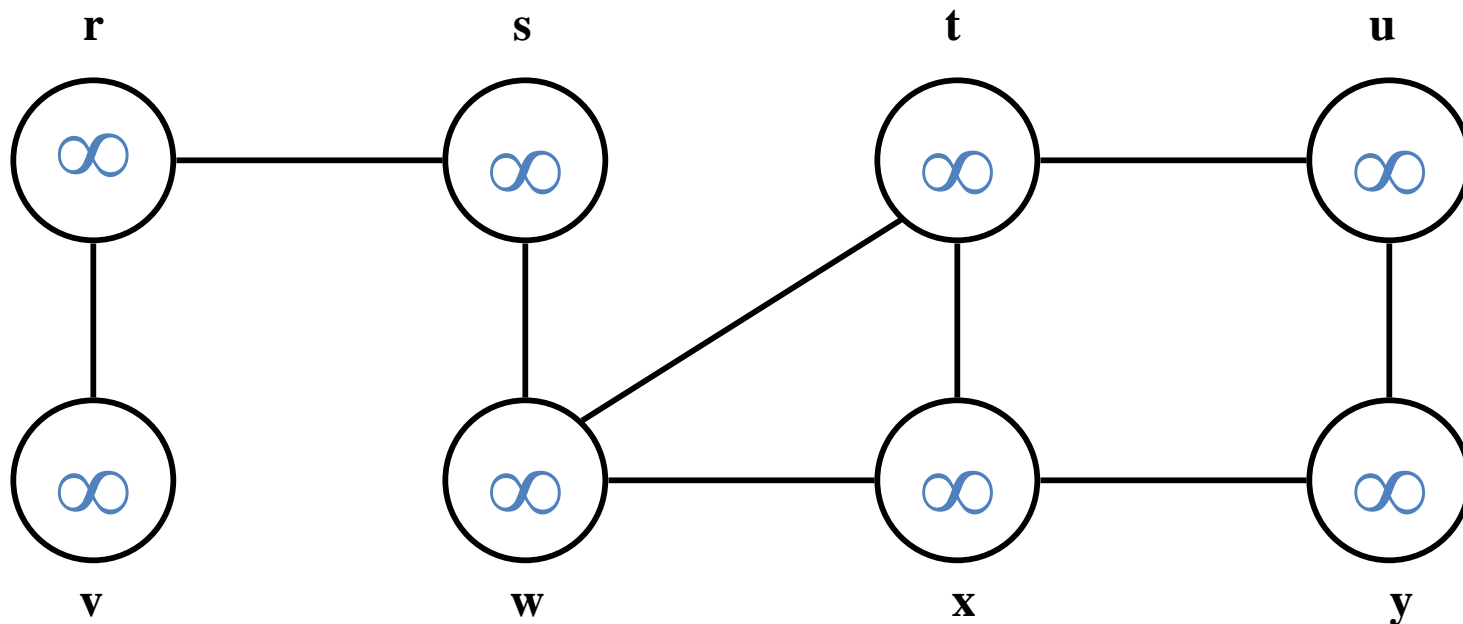


# BFS

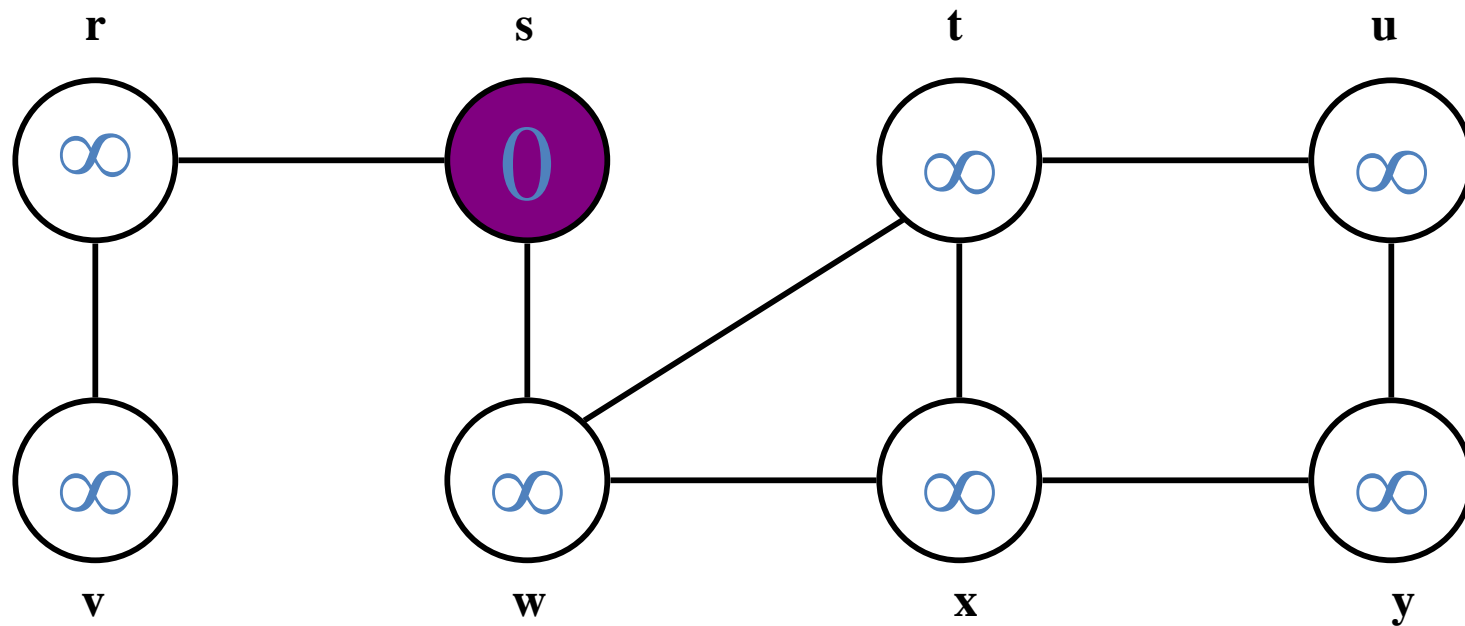
- **BFS** stands for **Breadth First Search** is a vertex based technique for finding a shortest path in graph. It uses a **Queue data structure** which follows first in first out. In BFS, one vertex is selected at a time when it is visited and marked then its adjacent are visited and stored in the queue. It is slower than DFS.



# Breadth-First Search: Example



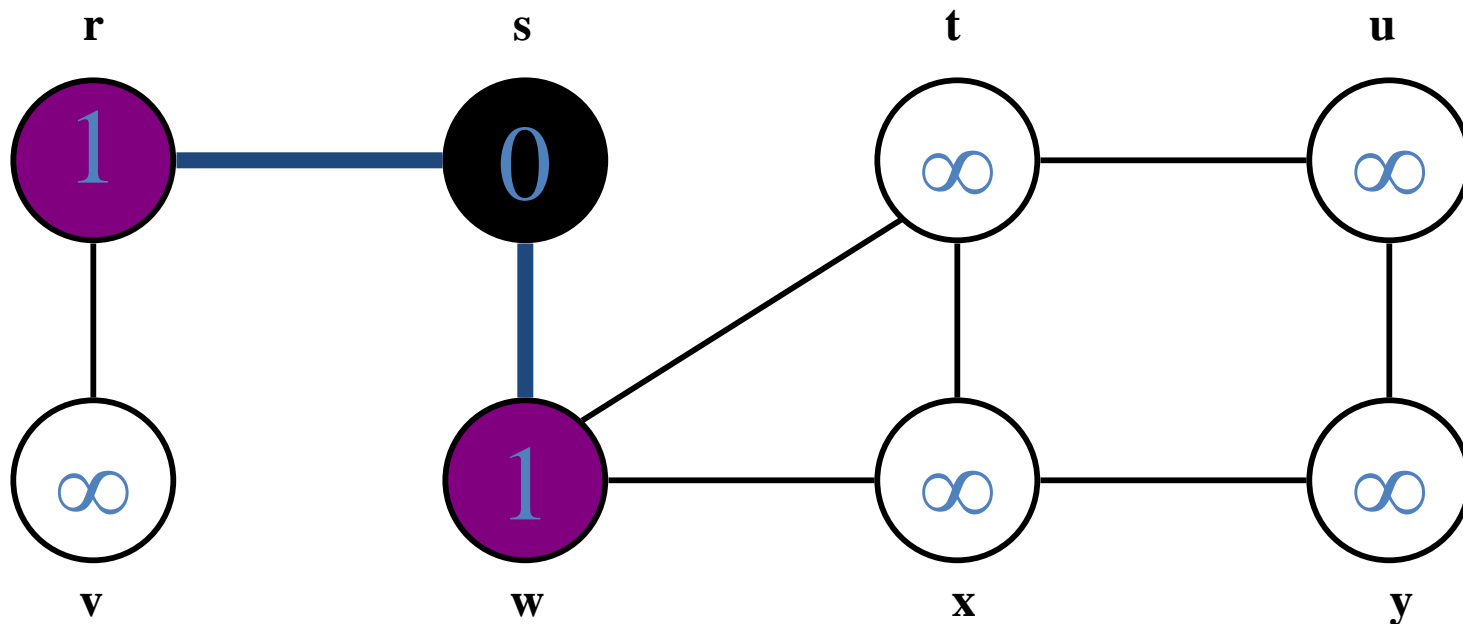
# Breadth-First Search: Example



Q: s



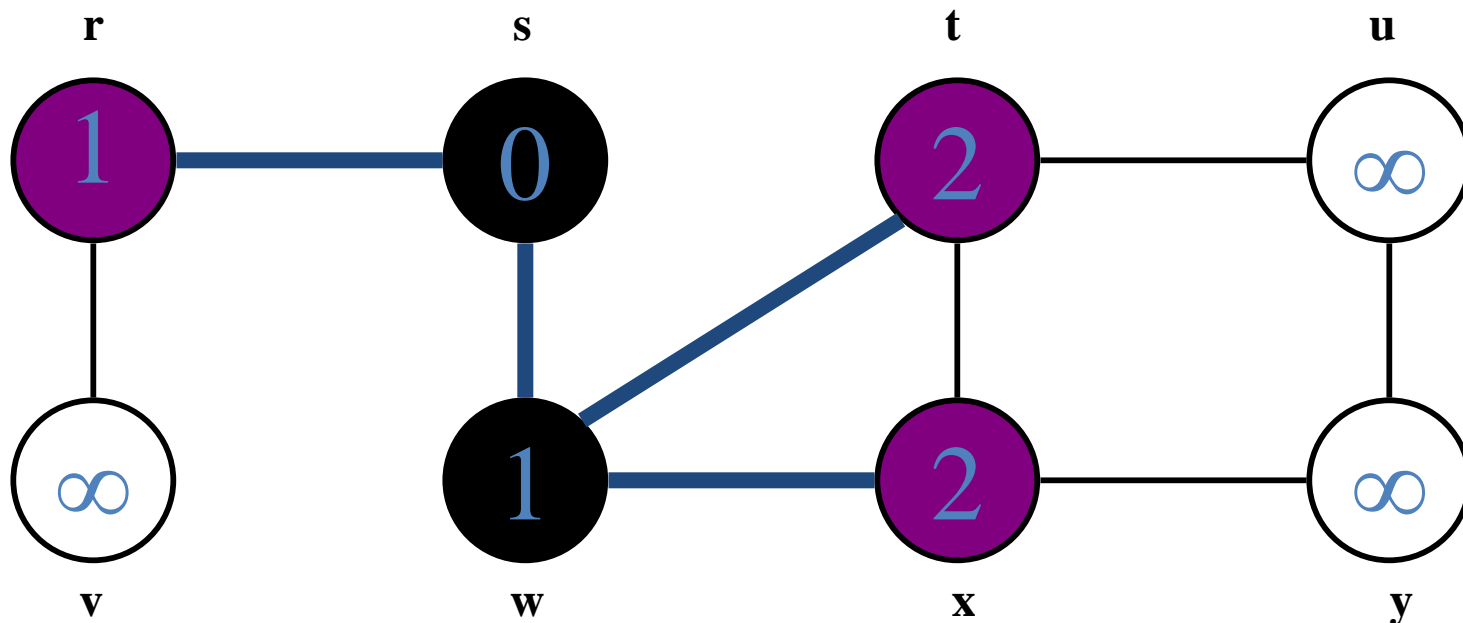
# Breadth-First Search: Example



**Q:**

<b>w</b>	<b>r</b>
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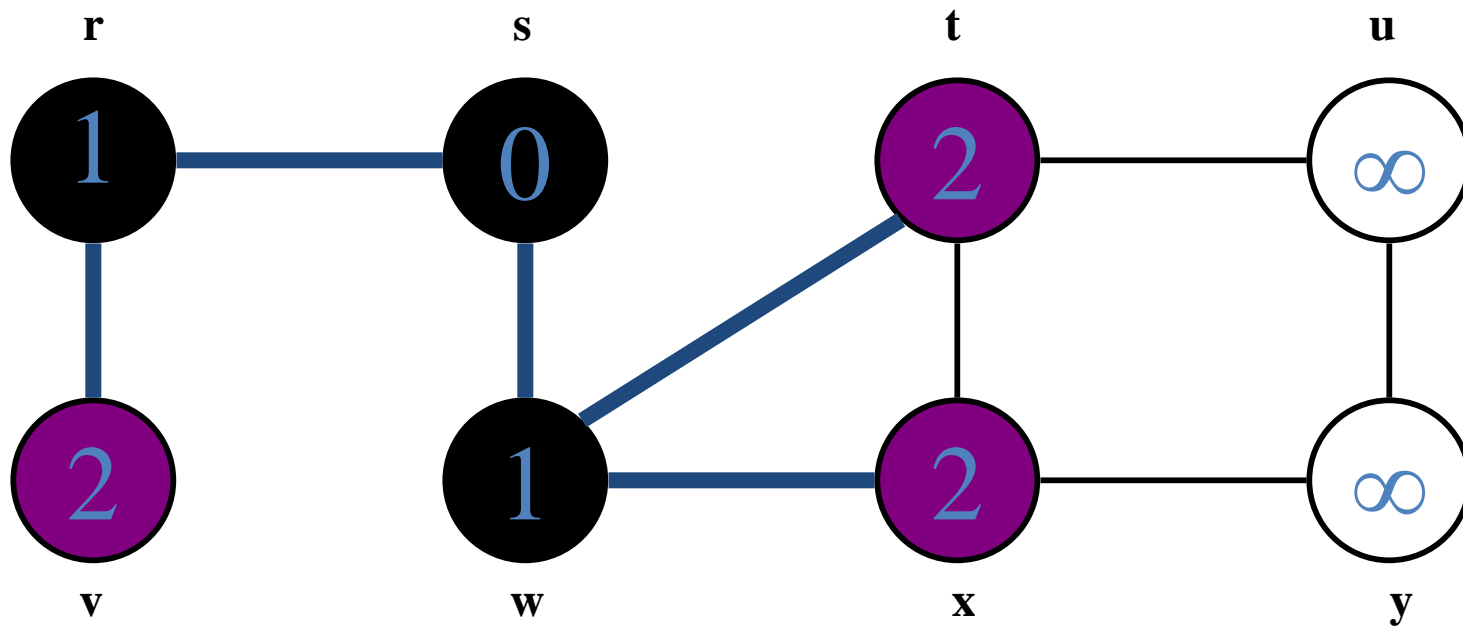
# Breadth-First Search: Example



**Q:**

<b>r</b>	<b>t</b>	<b>x</b>
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# Breadth-First Search: Example

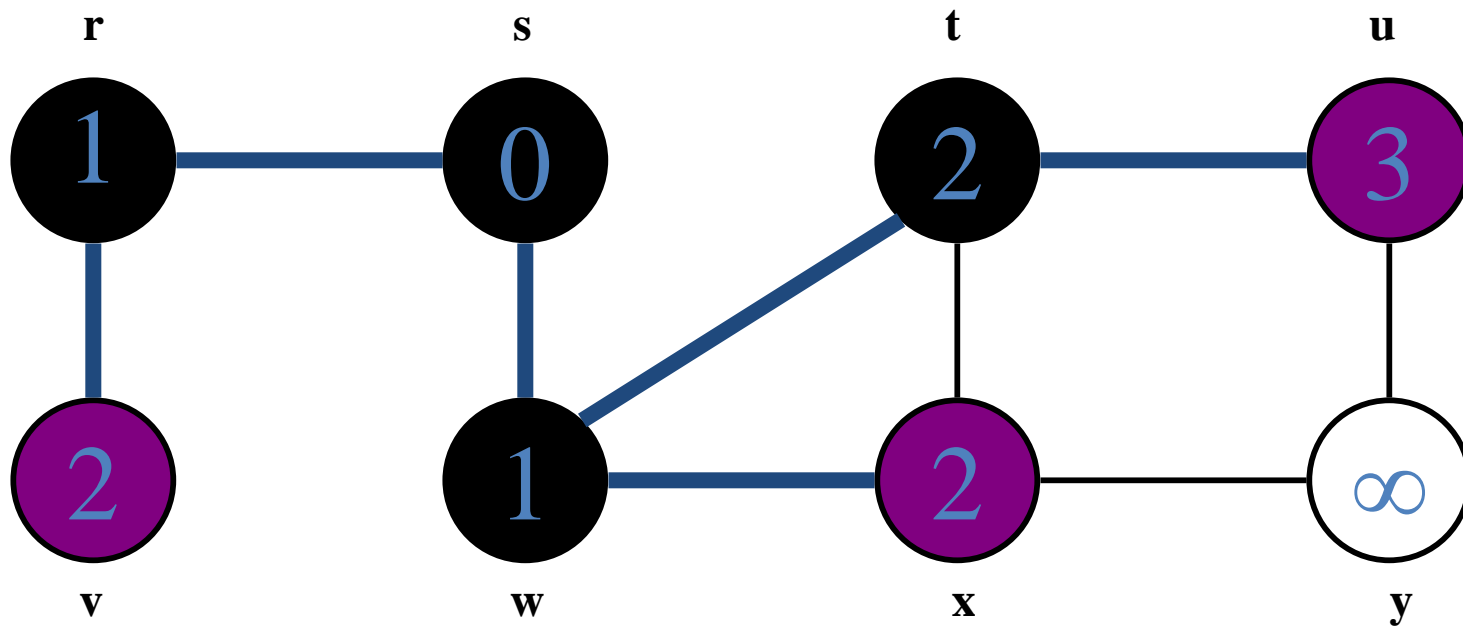


Q: 

t	x	v
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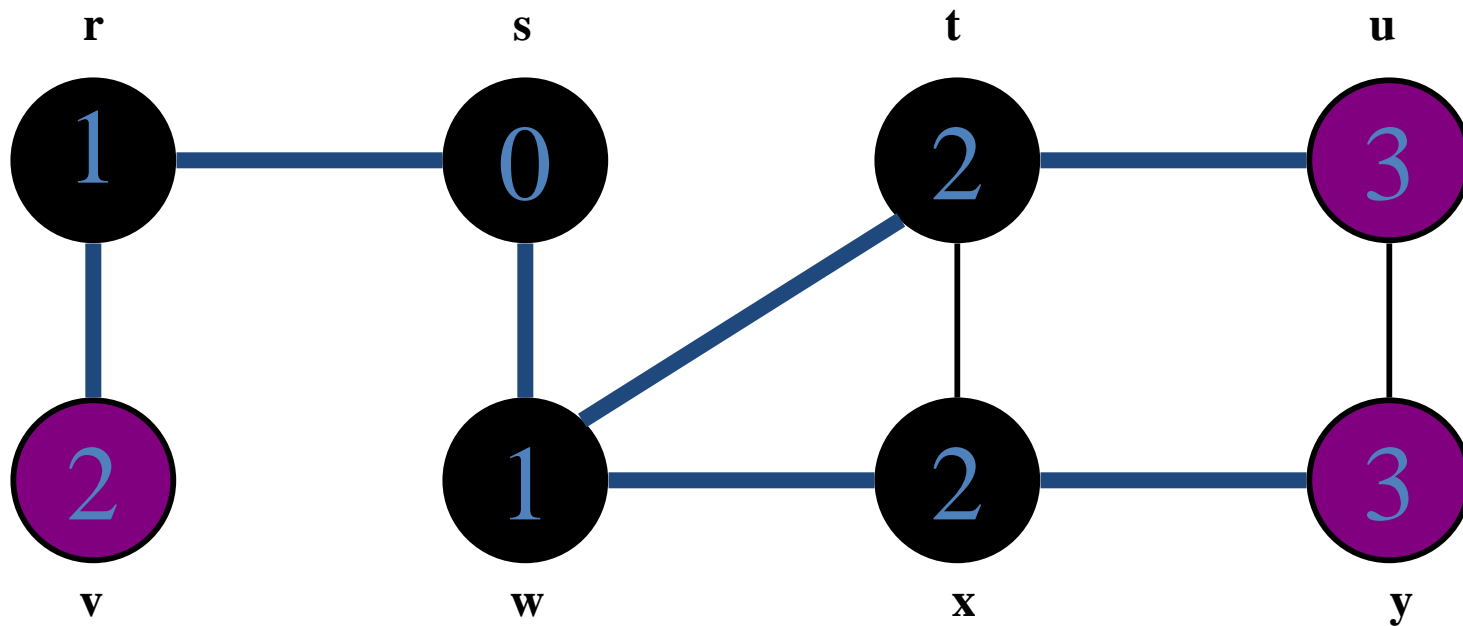
# Breadth-First Search: Example



Q: 

<b>x</b>	<b>v</b>	<b>u</b>
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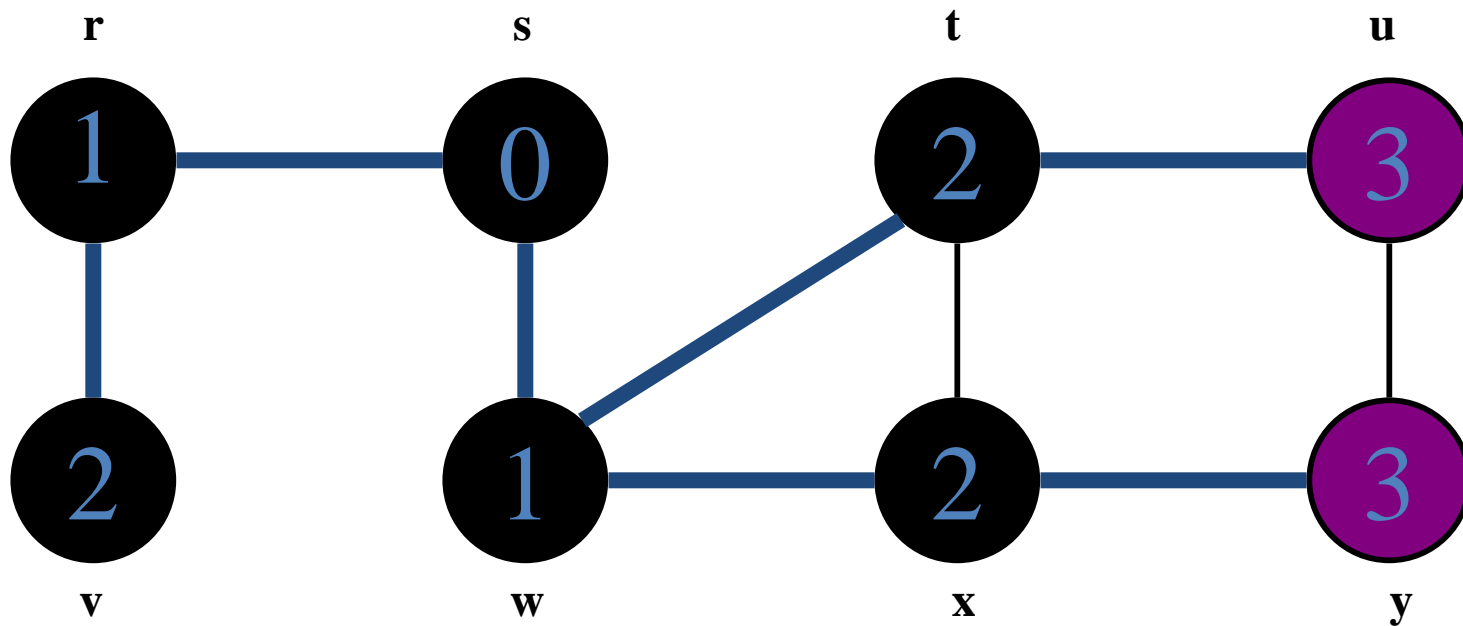
# Breadth-First Search: Example



Q: 

v	u	y
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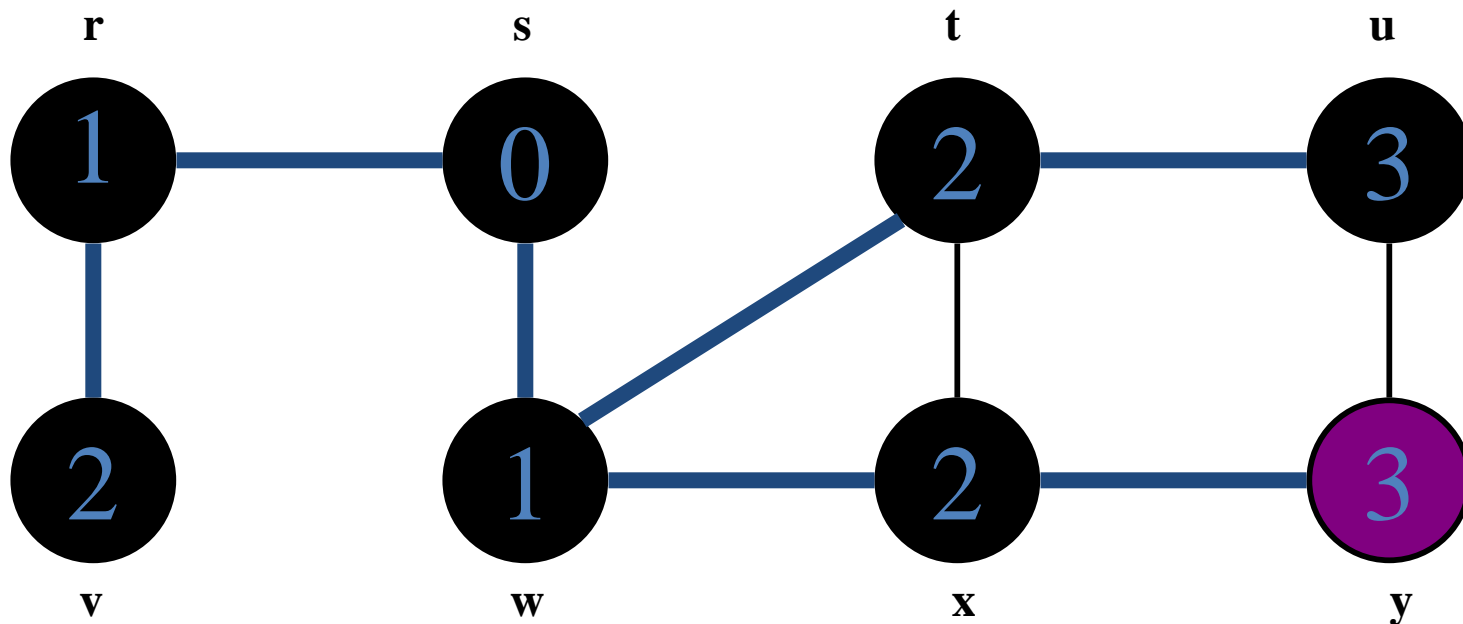
# Breadth-First Search: Example



Q: 

u	y
---	---

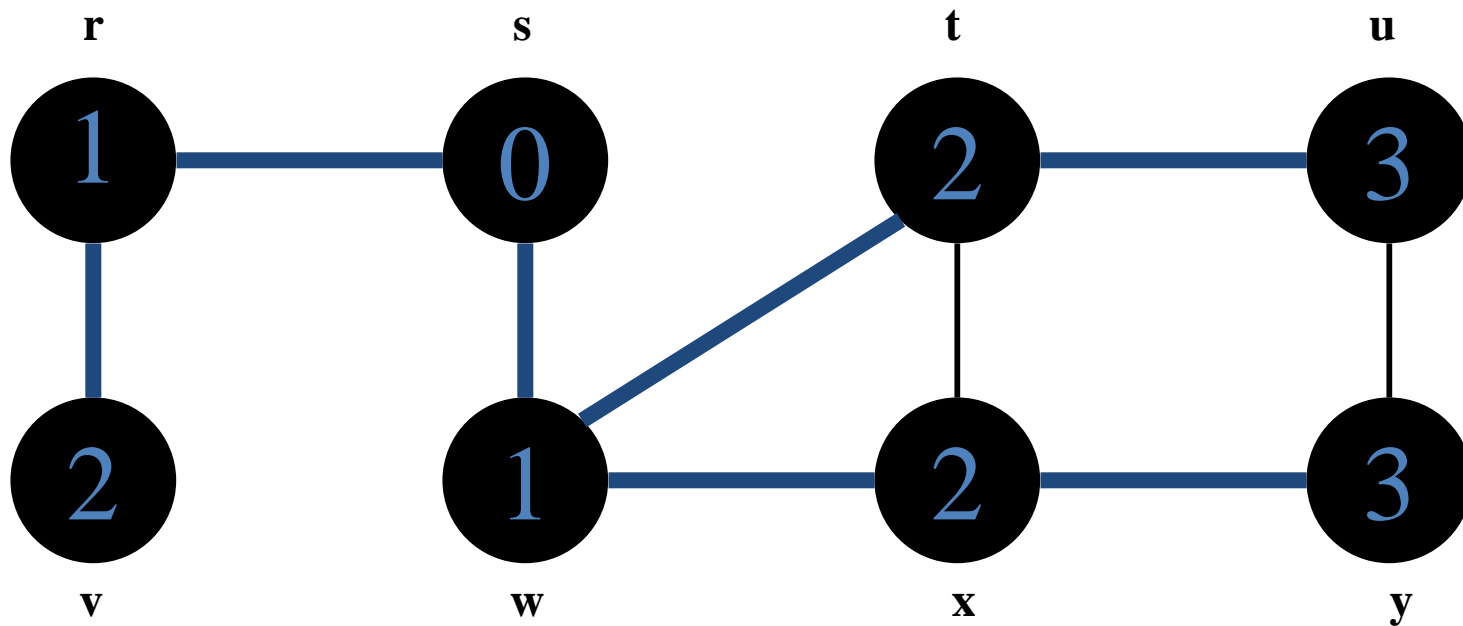
# Breadth-First Search: Example



Q: y

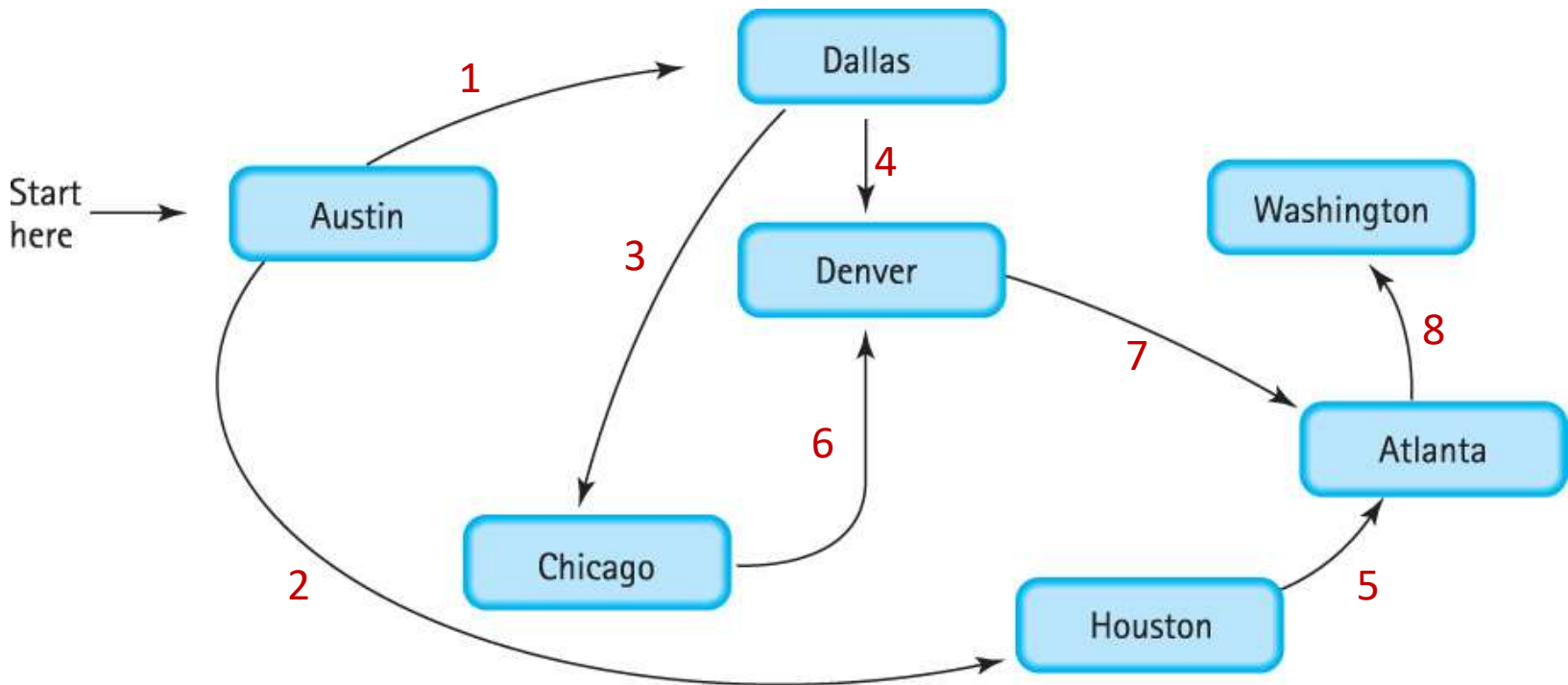


# Breadth-First Search: Example



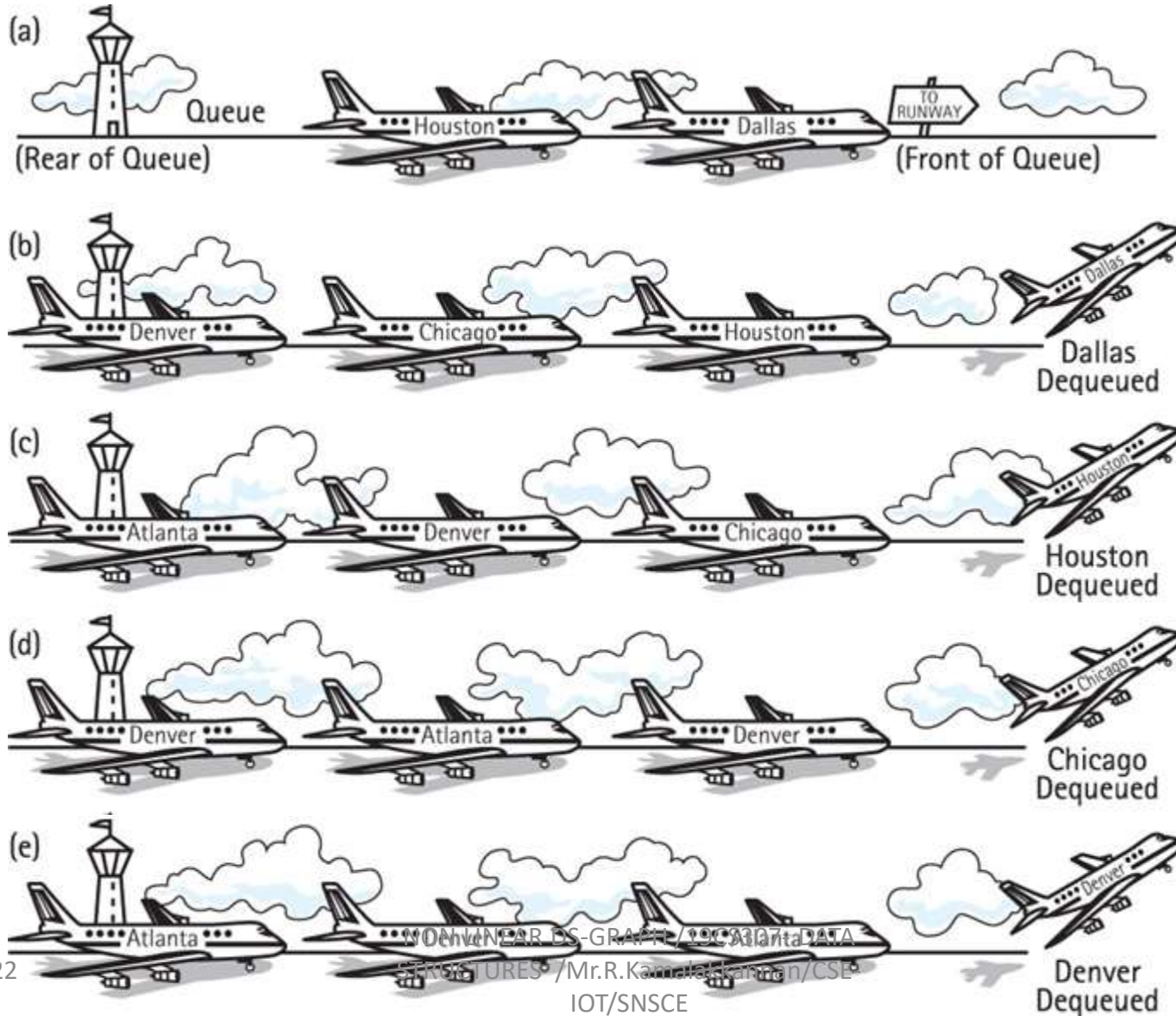
Q:  $\emptyset$

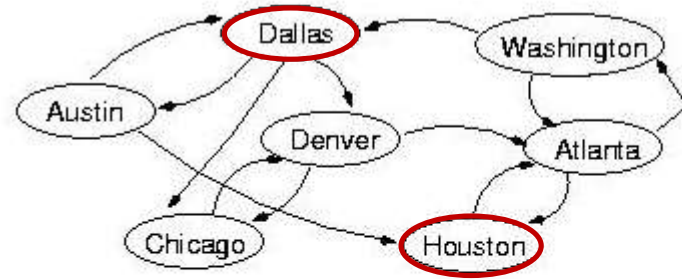
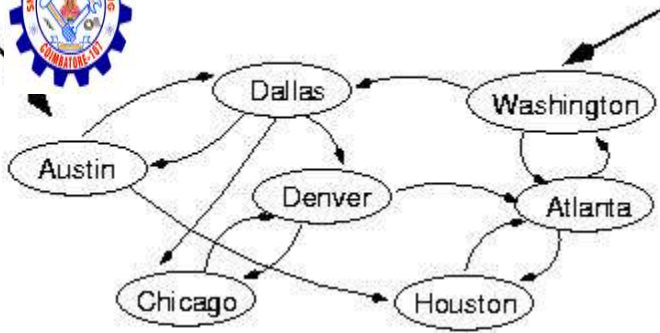
# Breadth First: Follow Across



**BFS uses Queue !**

# Breadth First Uses Queue



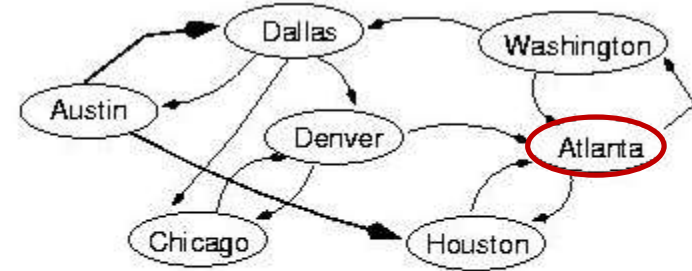


				Austin
--	--	--	--	--------

dequeue Austin

		Dallas	Houston	
--	--	--------	---------	--

(initialization)



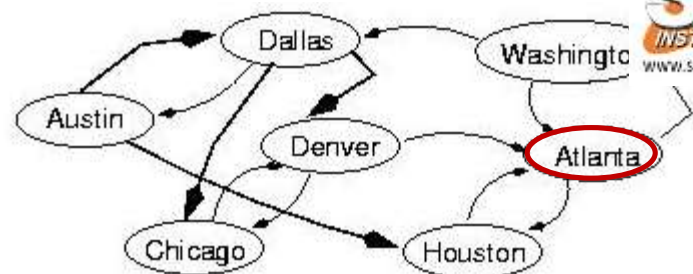
dequeue Dallas

	Houston	Chicago	Denver	
--	---------	---------	--------	--

dequeue Houston

	Chicago	Denver	Atlanta	
--	---------	--------	---------	--



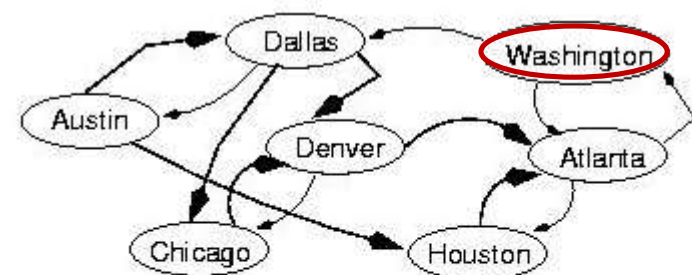
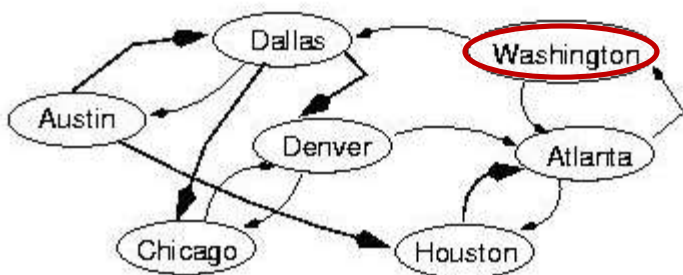


dequeue Chicago

		Denver	Atlanta	Denver	
--	--	--------	---------	--------	--

dequeue Denver

		Atlanta	Denver	Atlanta	
--	--	---------	--------	---------	--



dequeue Atlanta

		Denver	Atlanta	Washington	
--	--	--------	---------	------------	--

dequeue Denver, Atlanta

		Washington	Washington		
--	--	------------	------------	--	--

