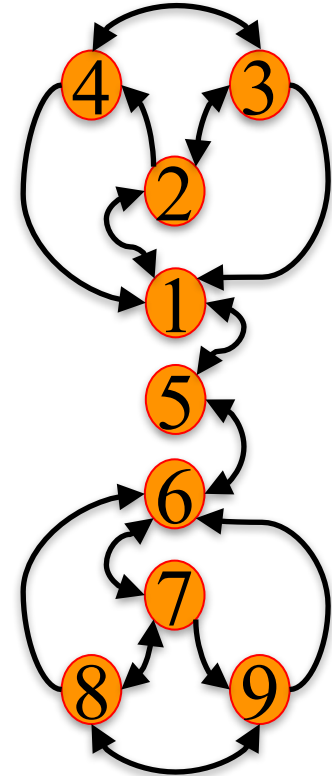
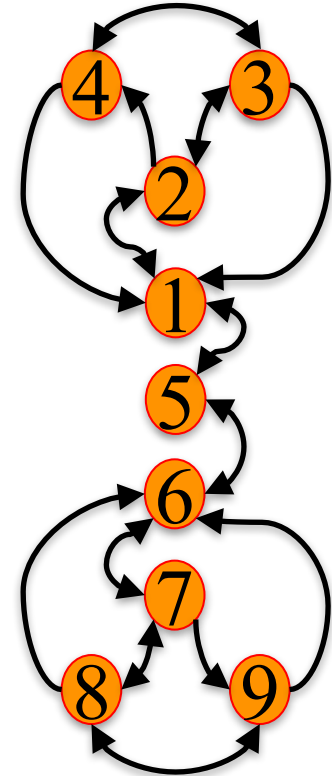


Comparing Centrality Measures



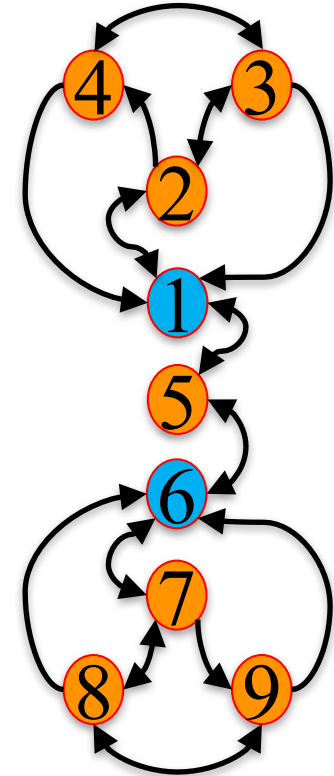
Comparing Centrality Measures

In-Deg



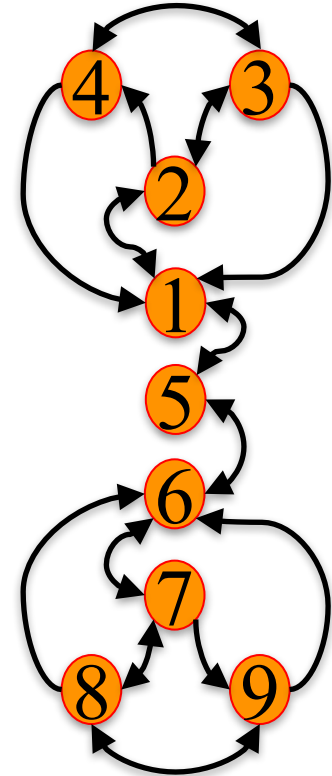
Comparing Centrality Measures

In-Deg
1
6



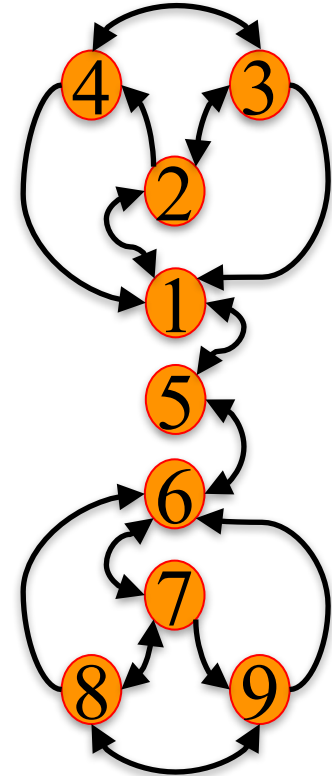
Comparing Centrality Measures

In-Deg
1
6
2
3
4
5
7
8
9



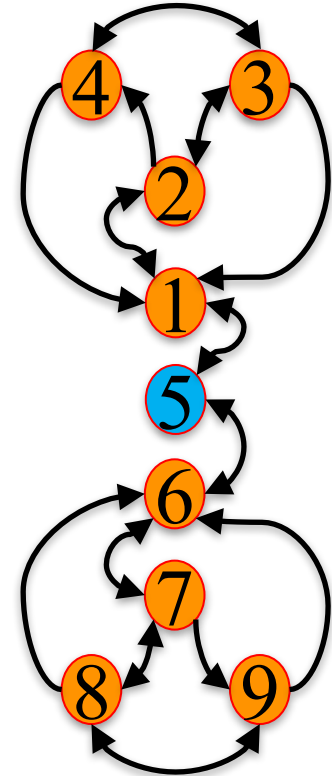
Comparing Centrality Measures

In-Deg	Closeness
1	
6	
2	
3	
4	
5	
7	
8	
9	



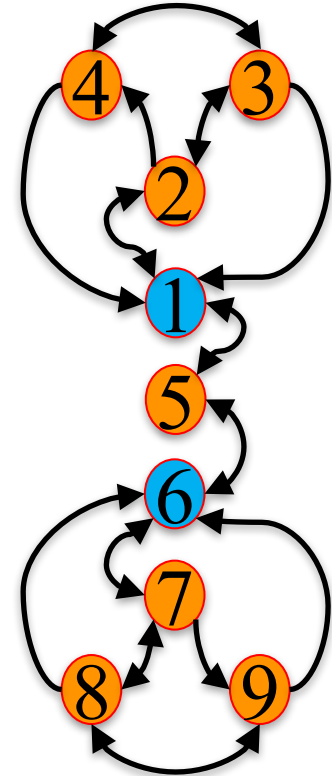
Comparing Centrality Measures

In-Deg	Closeness
1	5
6	
2	
3	
4	
5	
7	
8	
9	



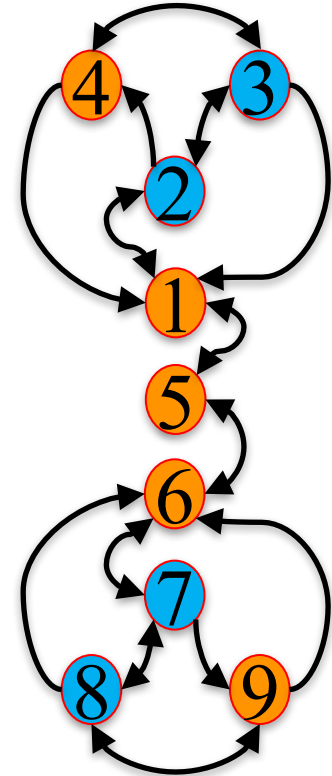
Comparing Centrality Measures

In-Deg	Closeness
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2	6
3	
4	
5	
7	
8	
9	



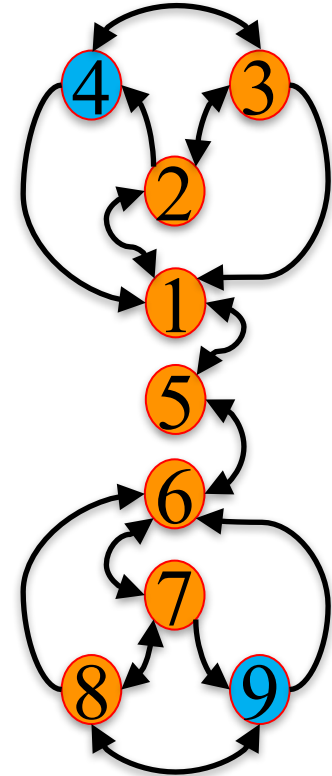
Comparing Centrality Measures

In-Deg	Closeness
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2	6
3	2
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7	8
8	
9	



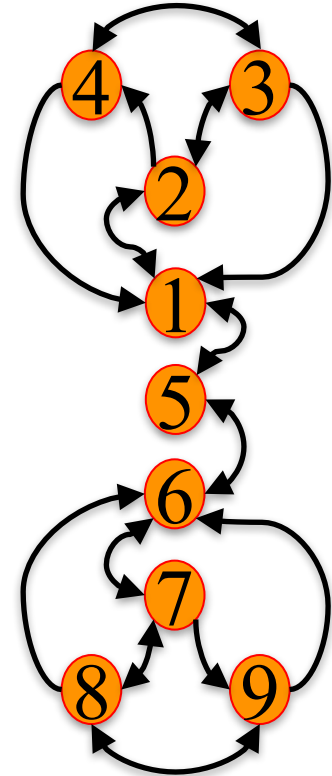
Comparing Centrality Measures

In-Deg	Closeness
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6	1
2	6
3	2
4	3
5	7
7	8
8	4
9	9



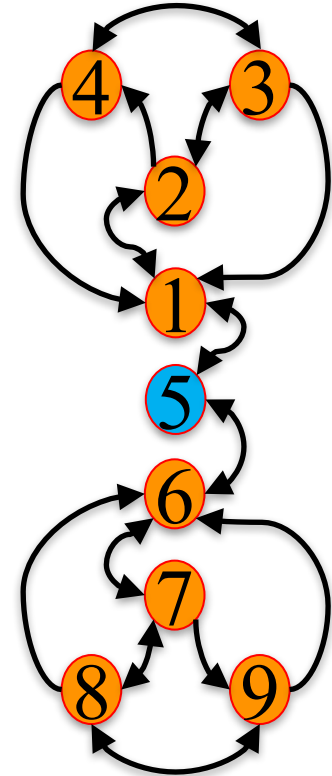
Comparing Centrality Measures

In-Deg	Closeness	Betweenness
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3	2	
4	3	
5	7	
7	8	
8	4	
9	9	



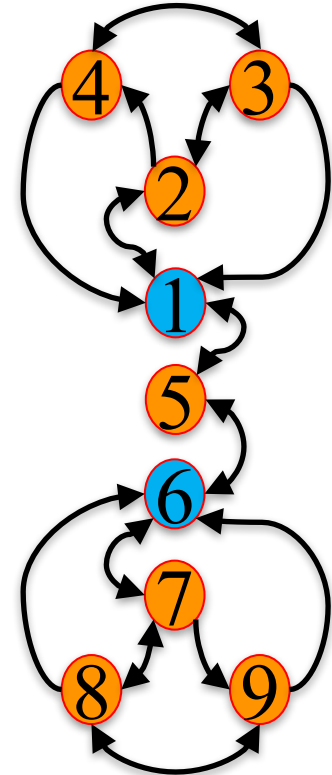
Comparing Centrality Measures

In-Deg	Closeness	Betweenness
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2	6	
3	2	
4	3	
5	7	
7	8	
8	4	
9	9	



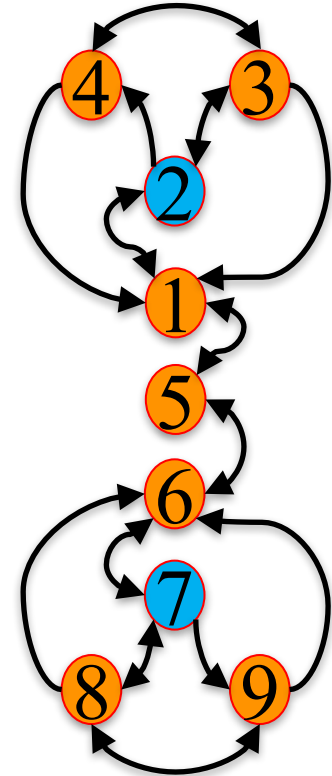
Comparing Centrality Measures

In-Deg	Closeness	Betweenness
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8	4	
9	9	



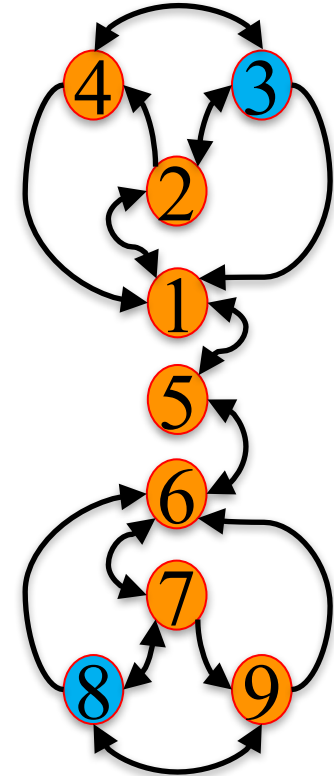
Comparing Centrality Measures

In-Deg	Closeness	Betweenness
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7	8	
8	4	
9	9	



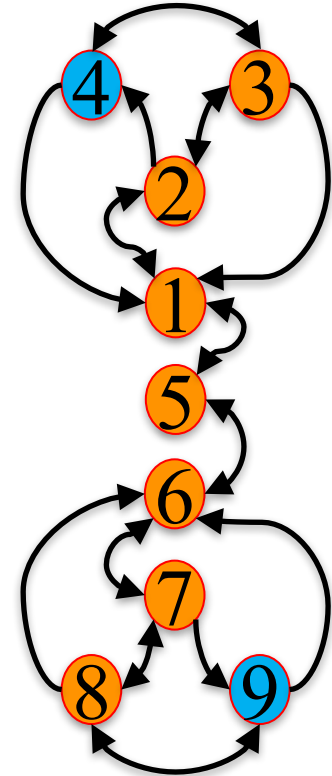
Comparing Centrality Measures

In-Deg	Closeness	Betweenness
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7	8	8
8	4	
9	9	



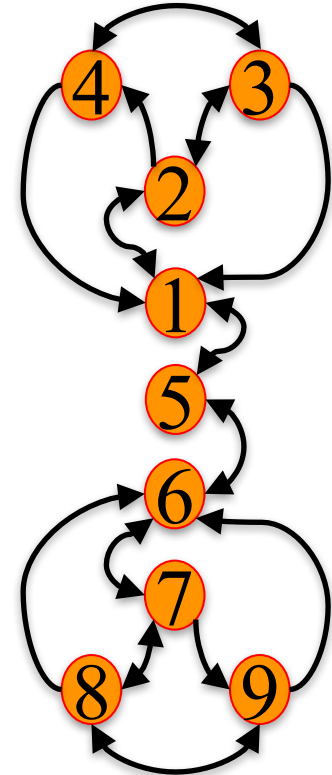
Comparing Centrality Measures

In-Deg	Closeness	Betweenness
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4	3	7
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7	8	8
8	4	4
9	9	9



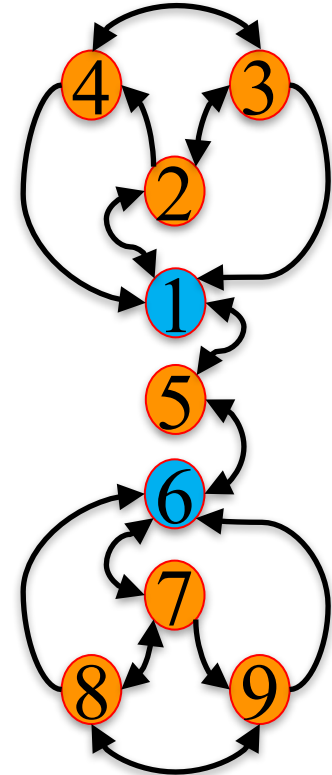
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank
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2	6	6	
3	2	2	
4	3	7	
5	7	3	
7	8	8	
8	4	4	
9	9	9	



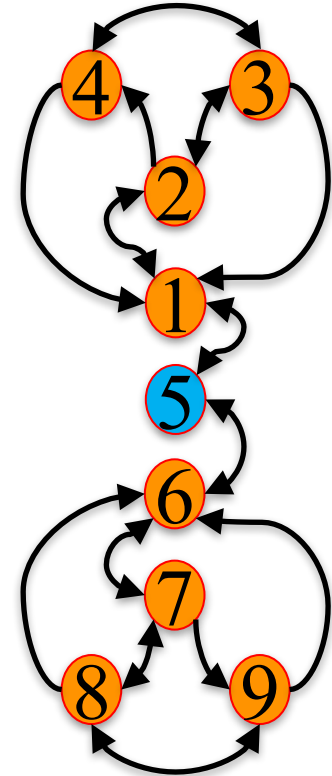
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank
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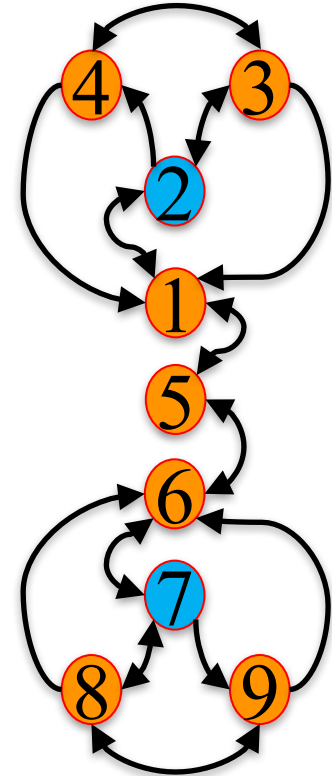
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank
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4	3	7	
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7	8	8	
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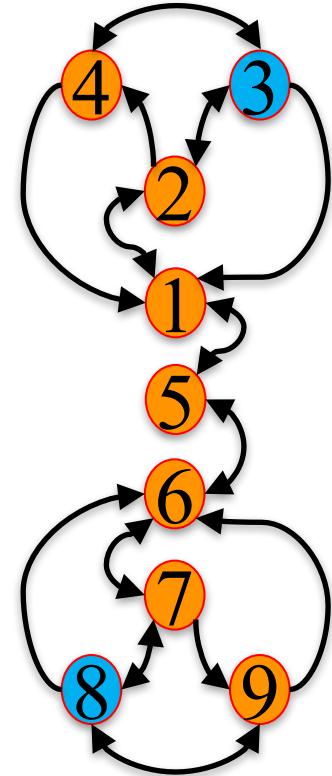
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank
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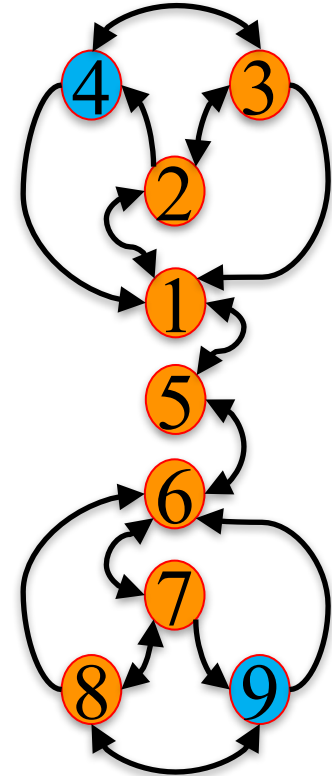
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank
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4	3	7	7
5	7	3	3
7	8	8	8
8	4	4	
9	9	9	



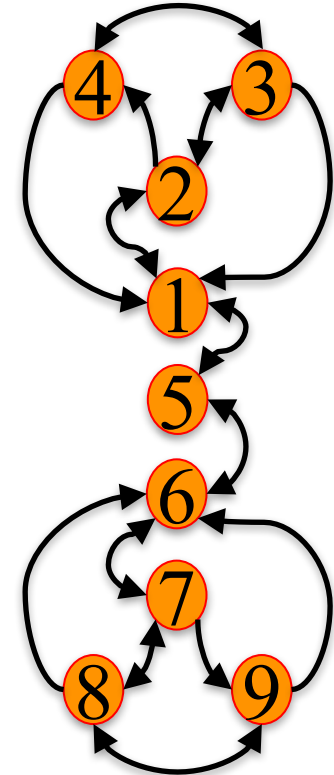
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank
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4	3	7	7
5	7	3	3
7	8	8	8
8	4	4	4
9	9	9	9



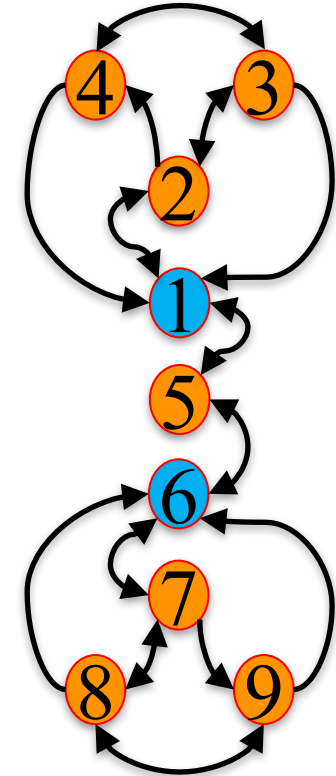
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank	Auth
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2	6	6	5	
3	2	2	2	
4	3	7	7	
5	7	3	3	
7	8	8	8	
8	4	4	4	
9	9	9	9	



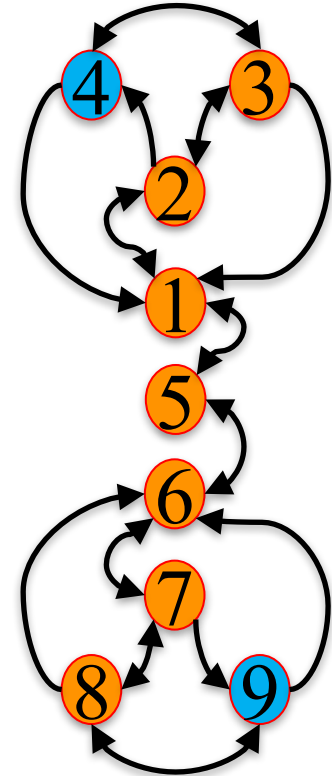
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank	Auth
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2	6	6	5	
3	2	2	2	
4	3	7	7	
5	7	3	3	
7	8	8	8	
8	4	4	4	
9	9	9	9	



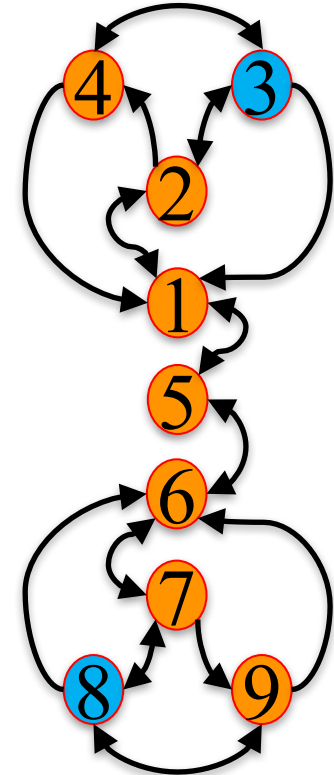
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank	Auth
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6	1	1	6	6
2	6	6	5	4
3	2	2	2	9
4	3	7	7	
5	7	3	3	
7	8	8	8	
8	4	4	4	
9	9	9	9	



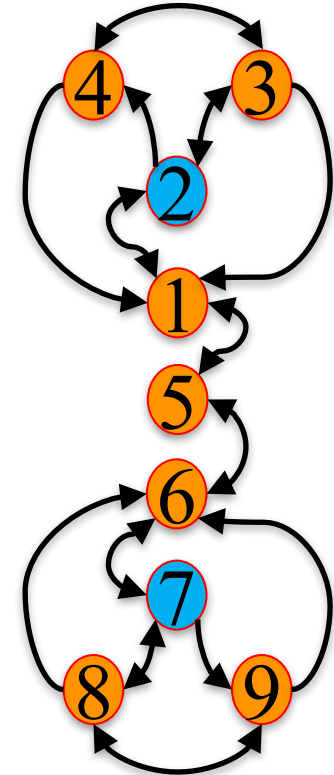
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank	Auth
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6	1	1	6	6
2	6	6	5	4
3	2	2	2	9
4	3	7	7	3
5	7	3	3	8
7	8	8	8	
8	4	4	4	
9	9	9	9	



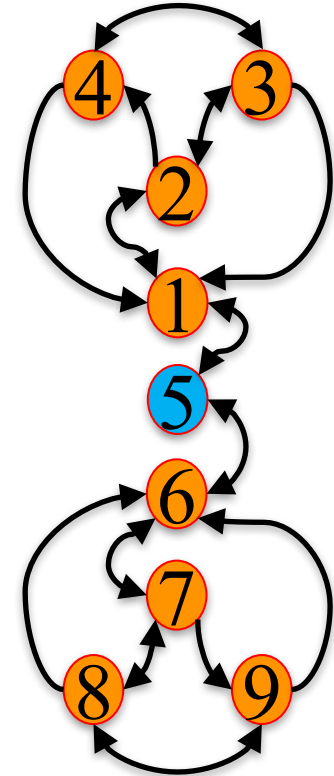
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank	Auth
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6	1	1	6	6
2	6	6	5	4
3	2	2	2	9
4	3	7	7	3
5	7	3	3	8
7	8	8	8	2
8	4	4	4	7
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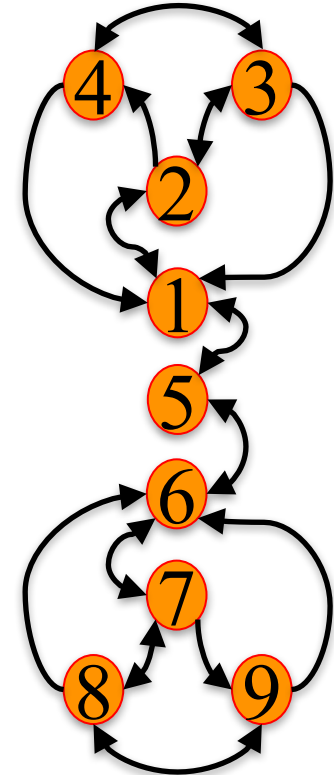
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank	Auth
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6	1	1	6	6
2	6	6	5	4
3	2	2	2	9
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5	7	3	3	8
7	8	8	8	2
8	4	4	4	7
9	9	9	9	5



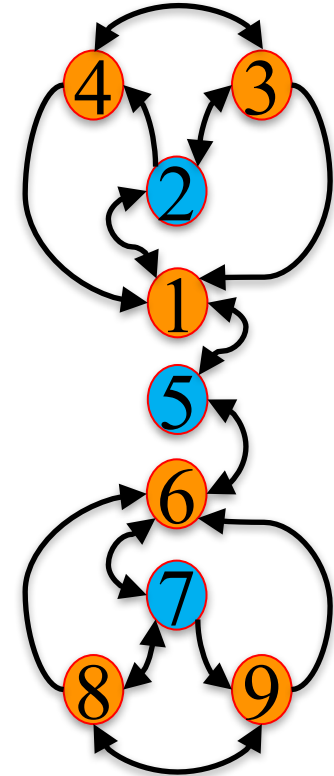
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank	Auth	Hub
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2	6	6	5	4	
3	2	2	2	9	
4	3	7	7	3	
5	7	3	3	8	
7	8	8	8	2	
8	4	4	4	7	
9	9	9	9	5	



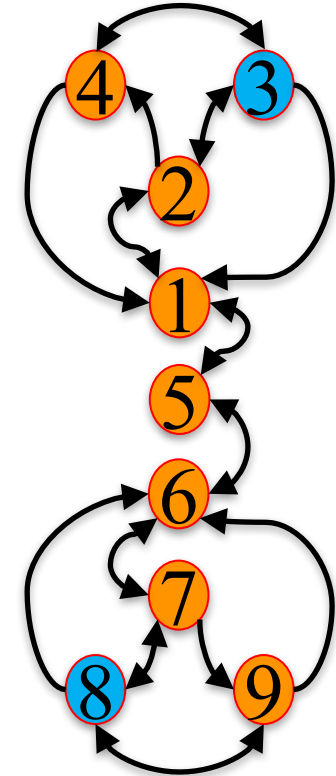
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank	Auth	Hub
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2	6	6	5	4	7
3	2	2	2	9	
4	3	7	7	3	
5	7	3	3	8	
7	8	8	8	2	
8	4	4	4	7	
9	9	9	9	5	



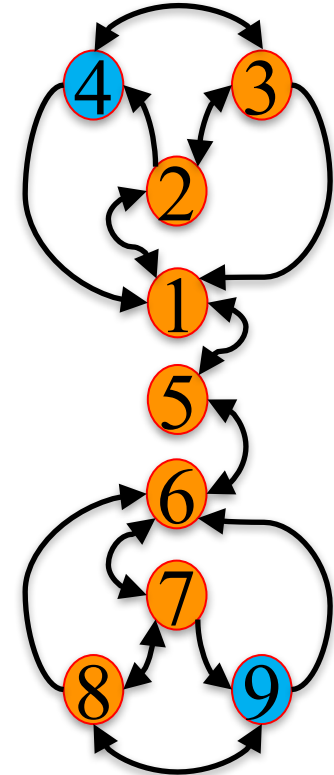
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank	Auth	Hub
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2	6	6	5	4	7
3	2	2	2	9	3
4	3	7	7	3	8
5	7	3	3	8	
7	8	8	8	2	
8	4	4	4	7	
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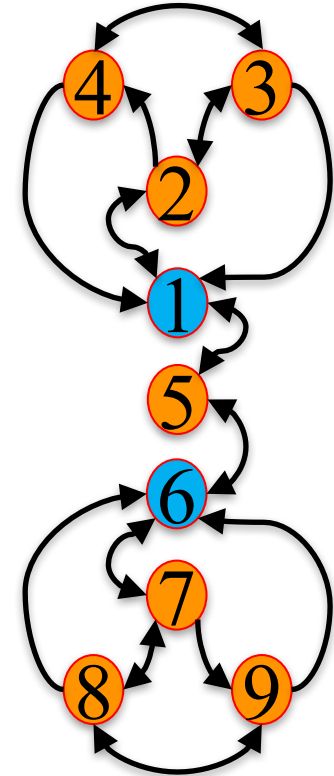
Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank	Auth	Hub
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2	6	6	5	4	7
3	2	2	2	9	3
4	3	7	7	3	8
5	7	3	3	8	4
7	8	8	8	2	9
8	4	4	4	7	
9	9	9	9	5	



Comparing Centrality Measures

In-Deg	Closeness	Betweenness	PageRank	Auth	Hub
1	5	5	1	1	2
6	1	1	6	6	5
2	6	6	5	4	7
3	2	2	2	9	3
4	3	7	7	3	8
5	7	3	3	8	4
7	8	8	8	2	9
8	4	4	4	7	1
9	9	9	9	5	6



Summary

- In this example, no pair of centrality measures produces the exact same ranking of nodes, but they have some commonalities.
- Centrality measures make different assumptions about what it means to be a “central” node. Thus, they produce different rankings.
- The best centrality measure depends on the context of the network one is analyzing.
- When identifying central nodes, it is usually best to use multiple centrality measures instead of relying on a single one.

