

Discrete Structures

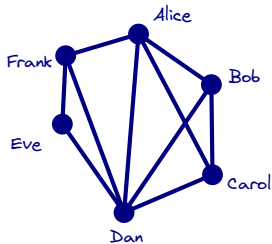
Fight for Survival

Dr. Mudassir Shabbir

August 27, 2026

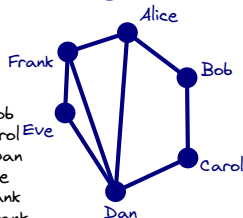


Facebook Friendships



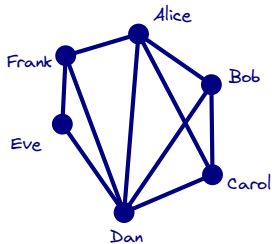
Alice is friends with Bob
 Bob i.f.w. Carol
 Carol i.f.w. Dan
 Dan i.f.w. Eve
 Eve i.f.w. Frank
 Alice i.f.w. Frank
 Alice i.f.w. Carol
 Alice i.f.w. Dan
 Bob i.f.w. Dan
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Twitter Followers



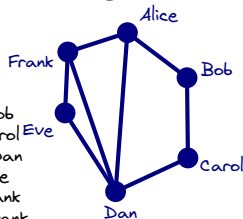
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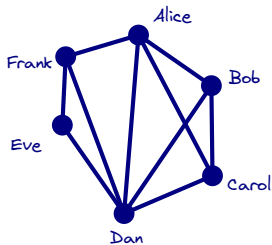
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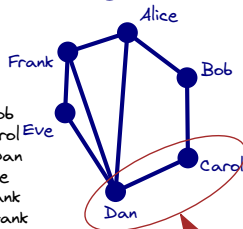
Twitter graph is fundamentally different from facebook graph!

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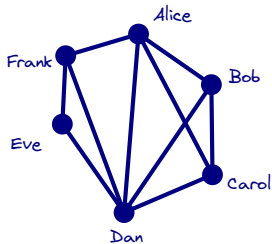


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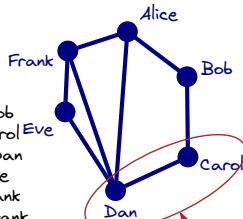
Can't tell whether
 Dan follows Carol or
 Carol follows Dan!

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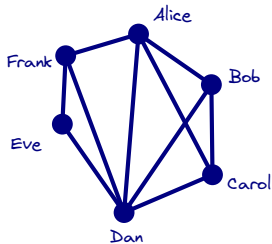
Twitter graph is fundamentally different from Facebook graph!

Can't tell whether
Dan follows Carol or
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We say that:

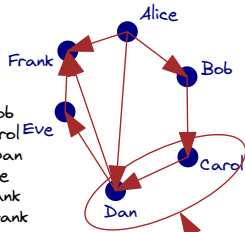
- Facebook is an undirected graph (order of edges does not matter)
- Twitter is a directed graph (order of edges does matter)

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Twitter Followers



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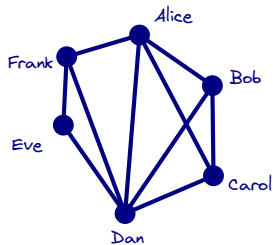
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Can't tell whether
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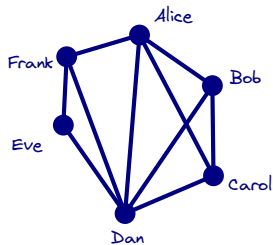
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Facebook Friendships is an Undirected Graph!



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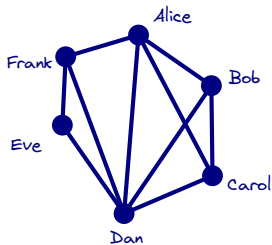
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Alice is friends with Bob
implies
Bob is friends with Alice

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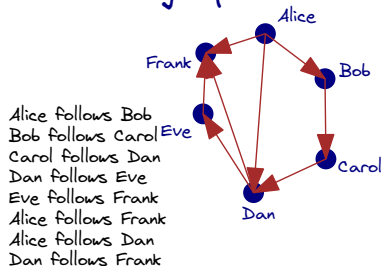


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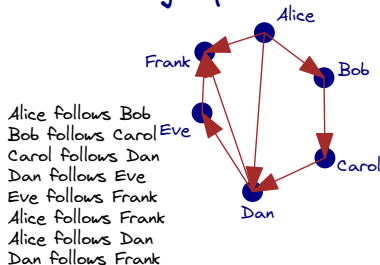
Alice is friends with Bob
implies
Bob is friends with Alice

You may write Bob is friends with Alice or you may omit this information.

Twitter Followers is a directed graph!



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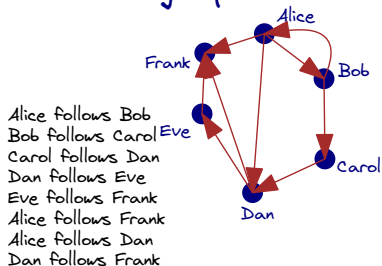


Alice follows Bob

DOES NOT imply

Bob follows Alice

Twitter Followers is a directed graph!



Alice follows Bob

DOES NOT imply

Bob follows Alice

If you also write Bob follows Alice it will create a new edge.