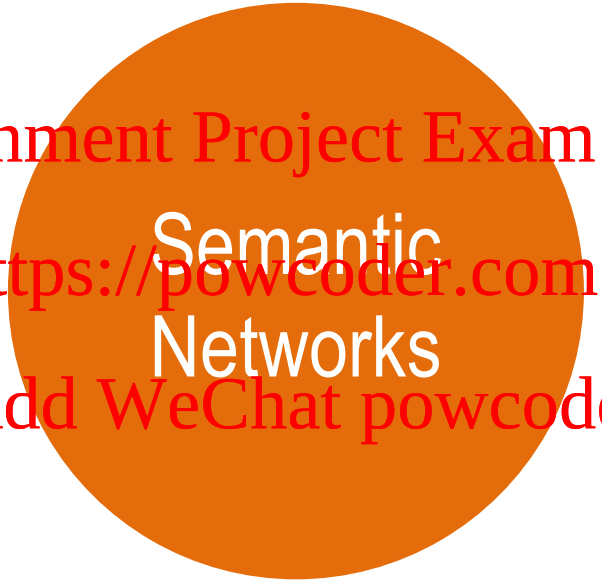
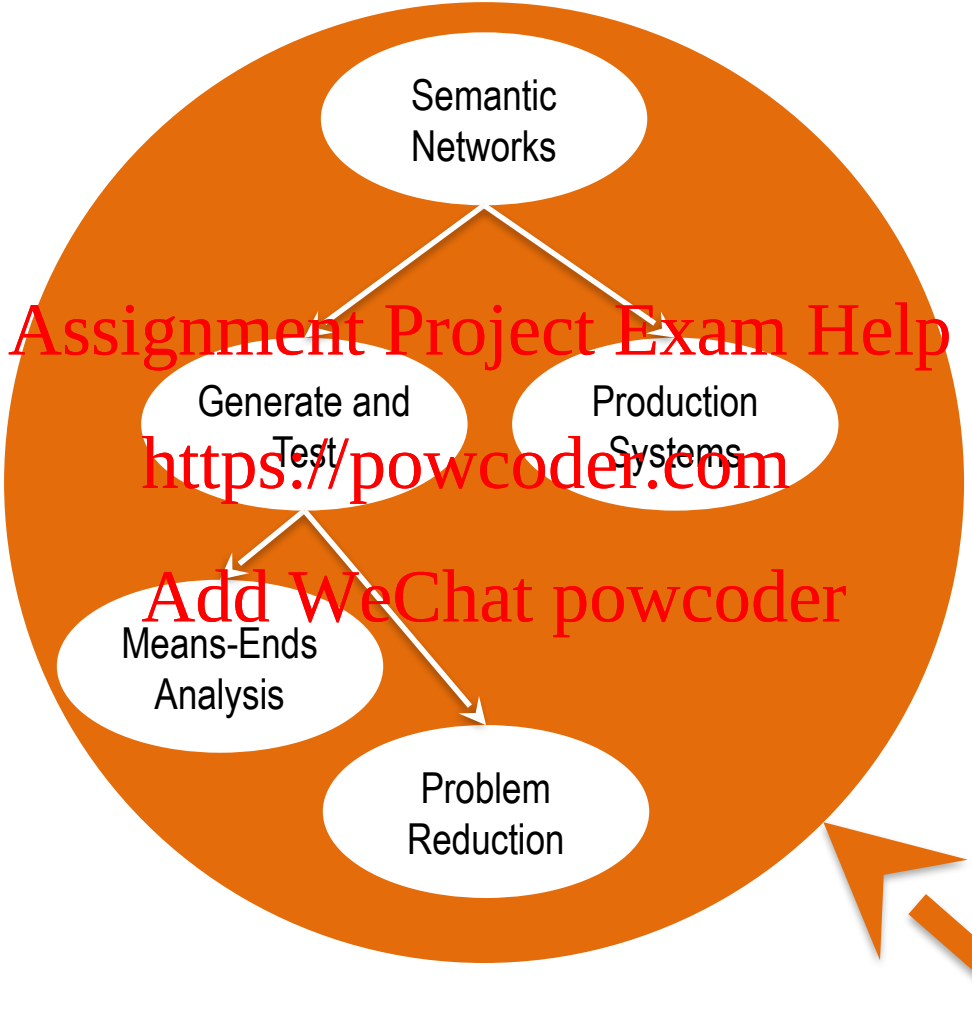
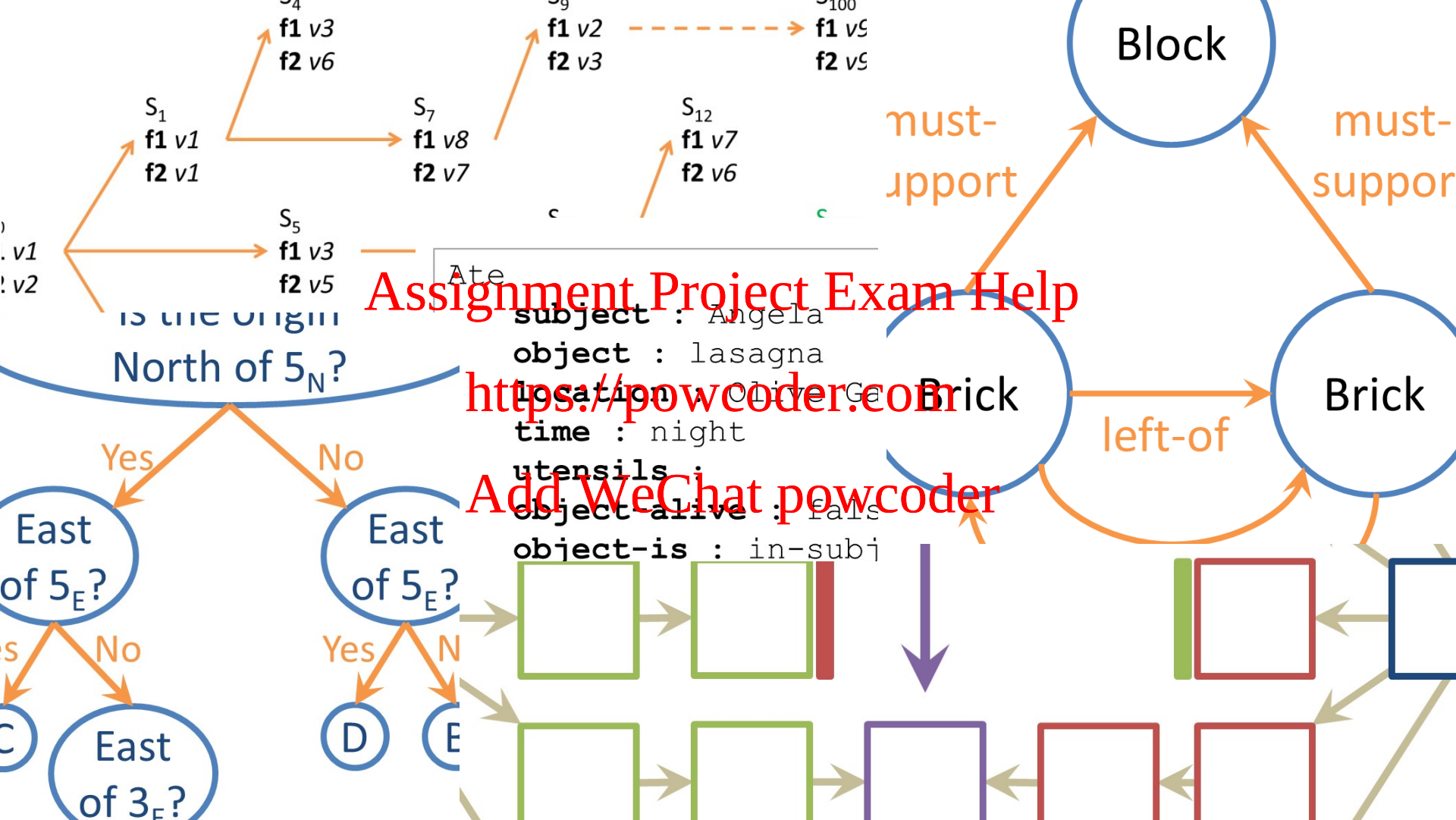


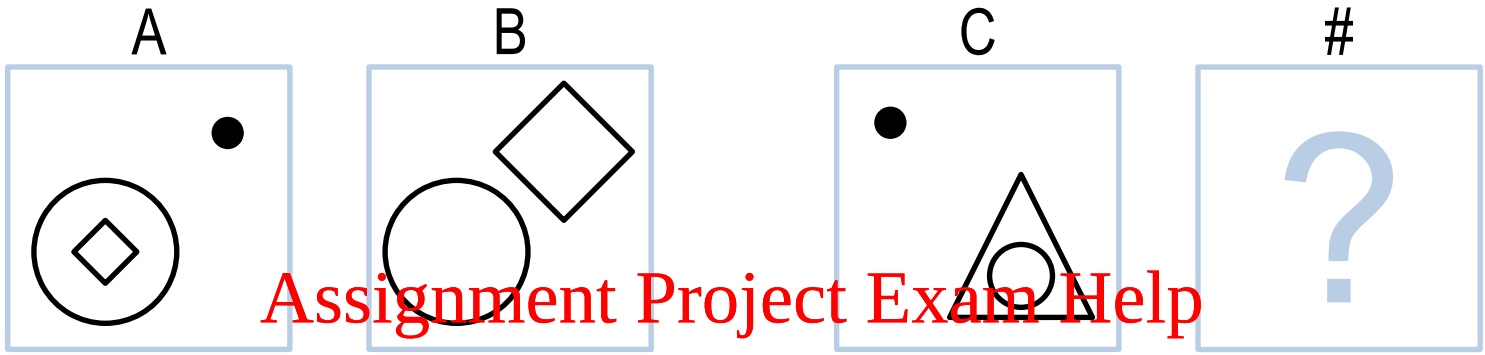
Fundamentals

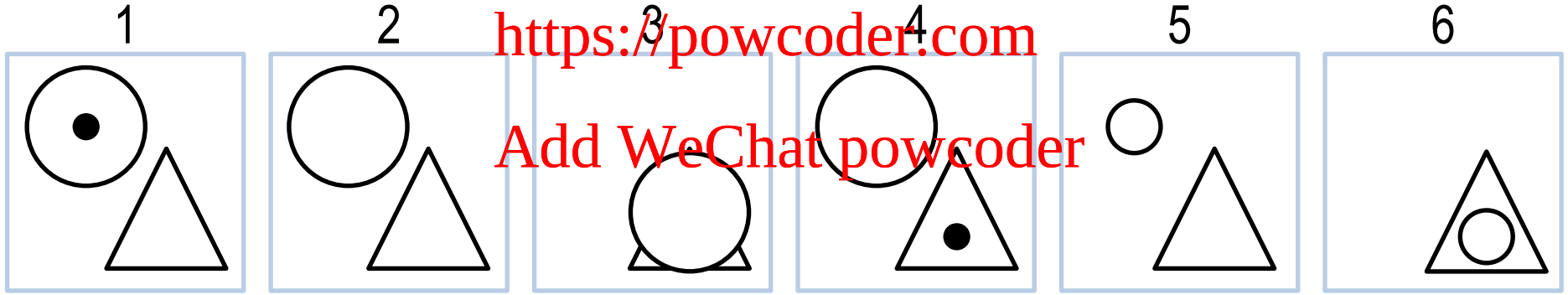


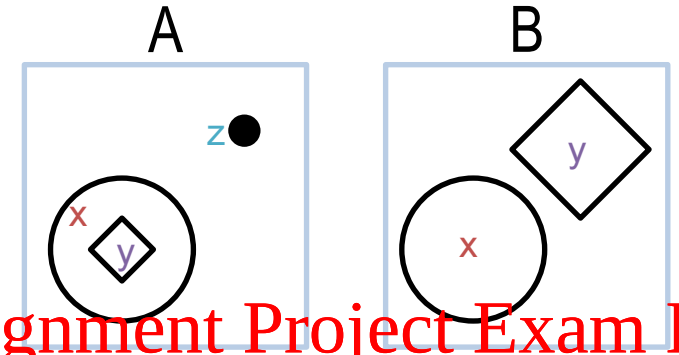
Lesson Preview

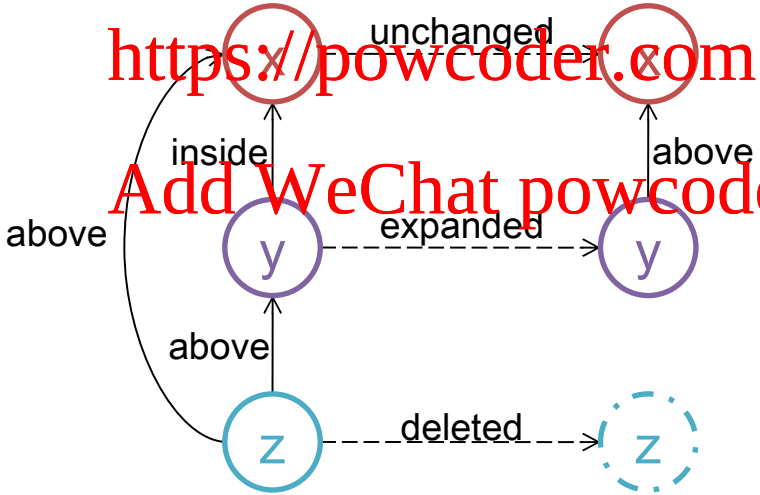
- Knowledge representations
- Semantic networks
- Problem-solving with semantic networks
- Represent & Reason

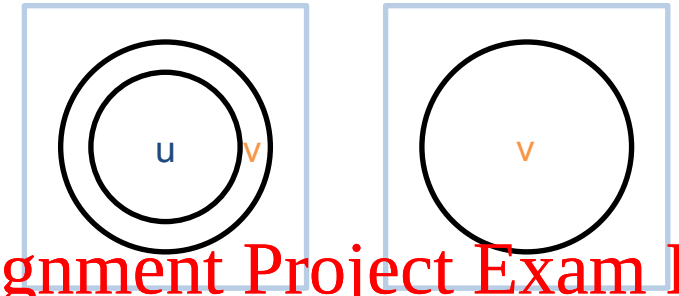

f1 v3
f2 v6
f1 v2
f2 v3
S1
f1 v1
f2 v1
S7
f1 v8
f2 v7
S12
f1 v7
f2 v6
S5
f1 v3
f2 v5
North of 5N?
Yes
No
East of 5E?
East of 3E?
must-support
Block
Brick
Brick
left-of
Ate
subject : Angela
object : lasagna
location : olive_ga
time : night
utensils :
object-alive : fals
object-is : in-subj
Assignment Project Exam Help
https://powcoder.com
Add WeChat powcoder

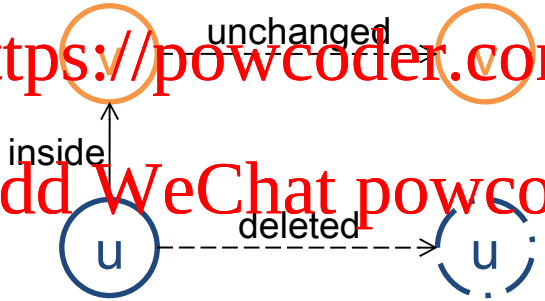




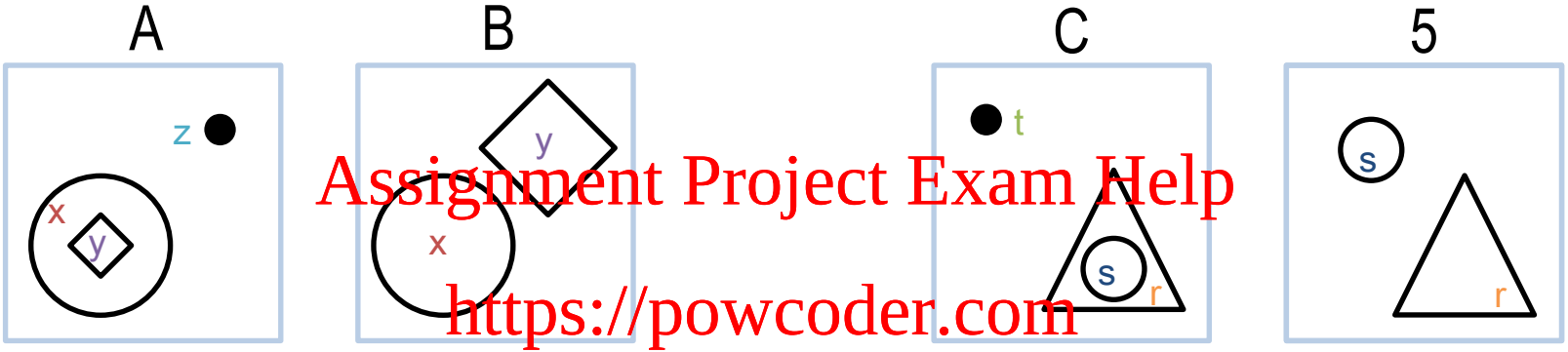


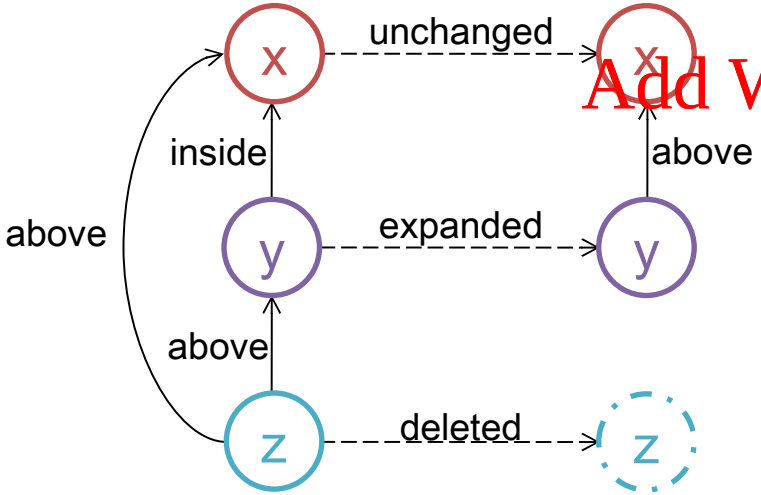


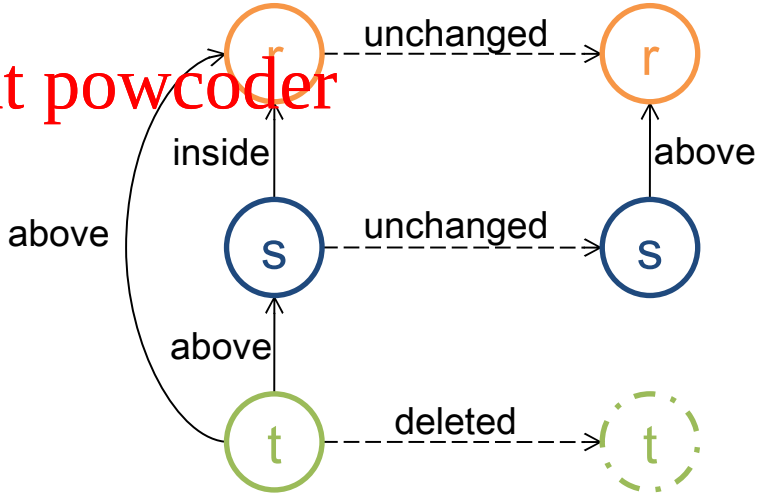




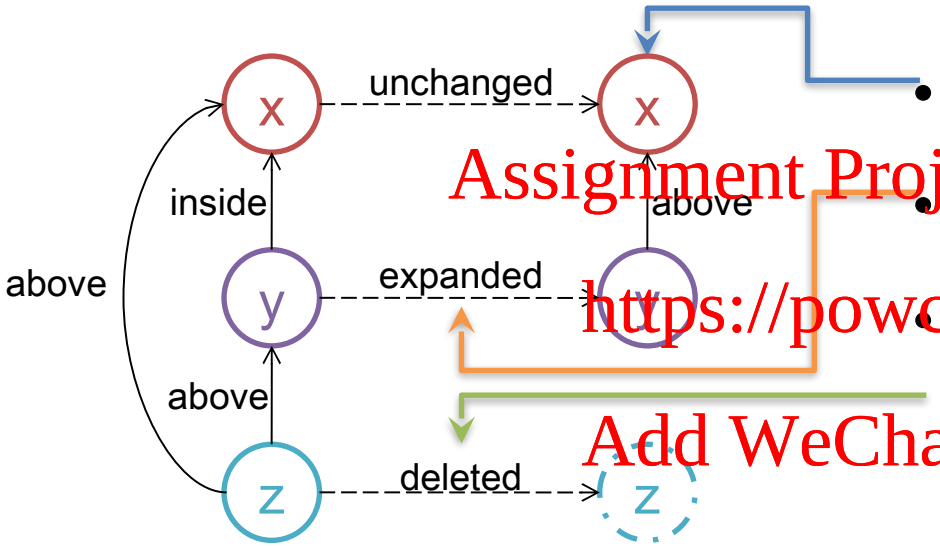
The relationships between the pieces and the transformations between the frames.







Structure of Semantic Networks



- Lexically: nodes
- Structurally: directional links
- Semantically: application-specific labels

Characteristics of Good Representations

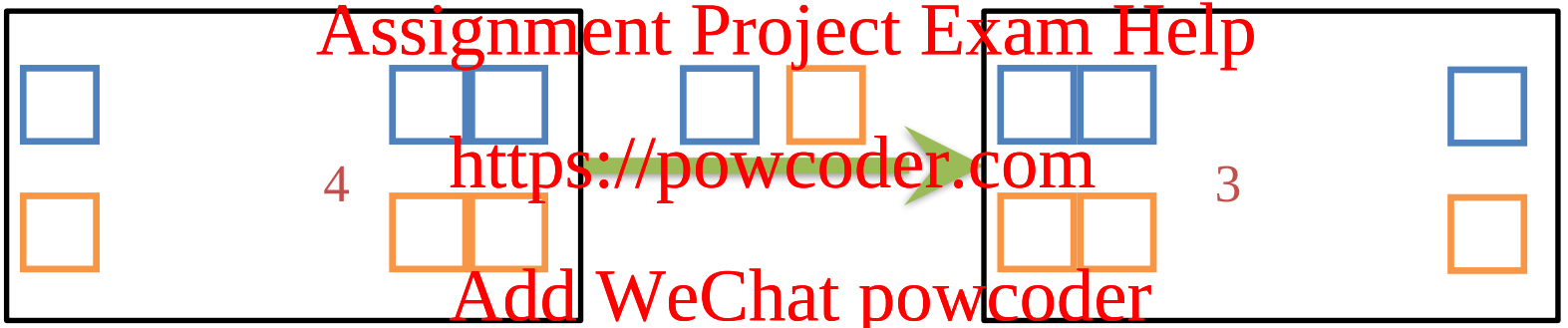
- Make relationships explicit
- Expose natural constraints
- Bring objects and relations together
- Exclude extraneous details
- Transparent, concise, complete, fast, computable

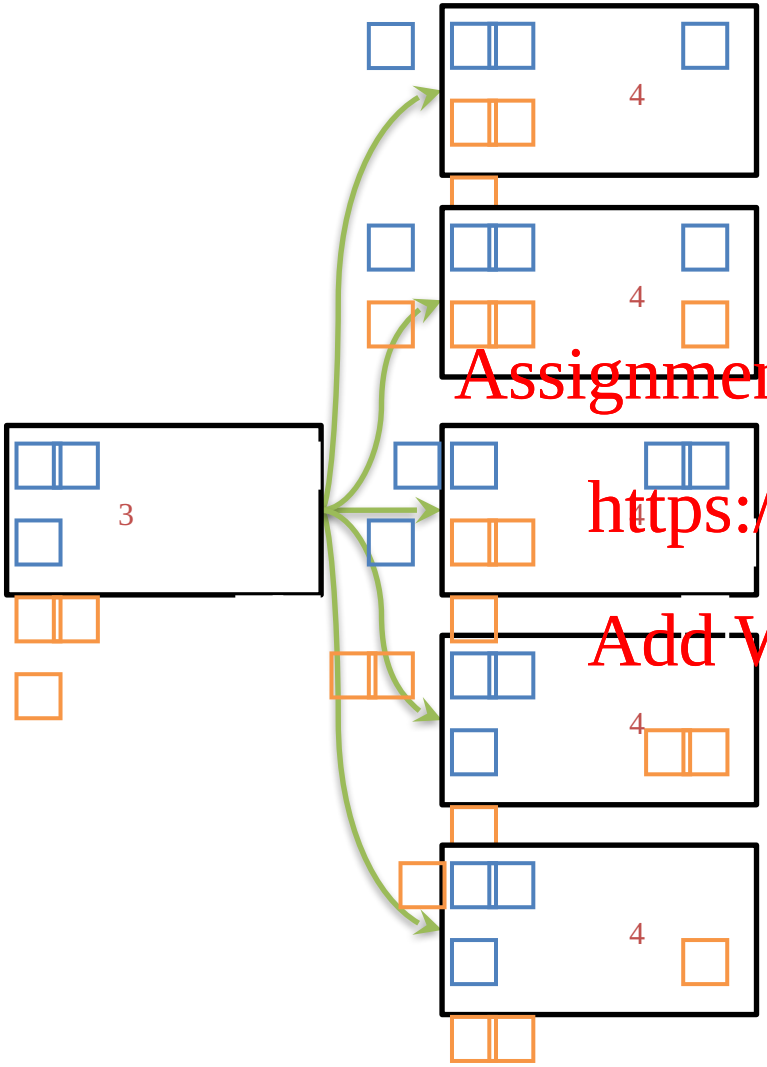
Guards & Prisoners Problem

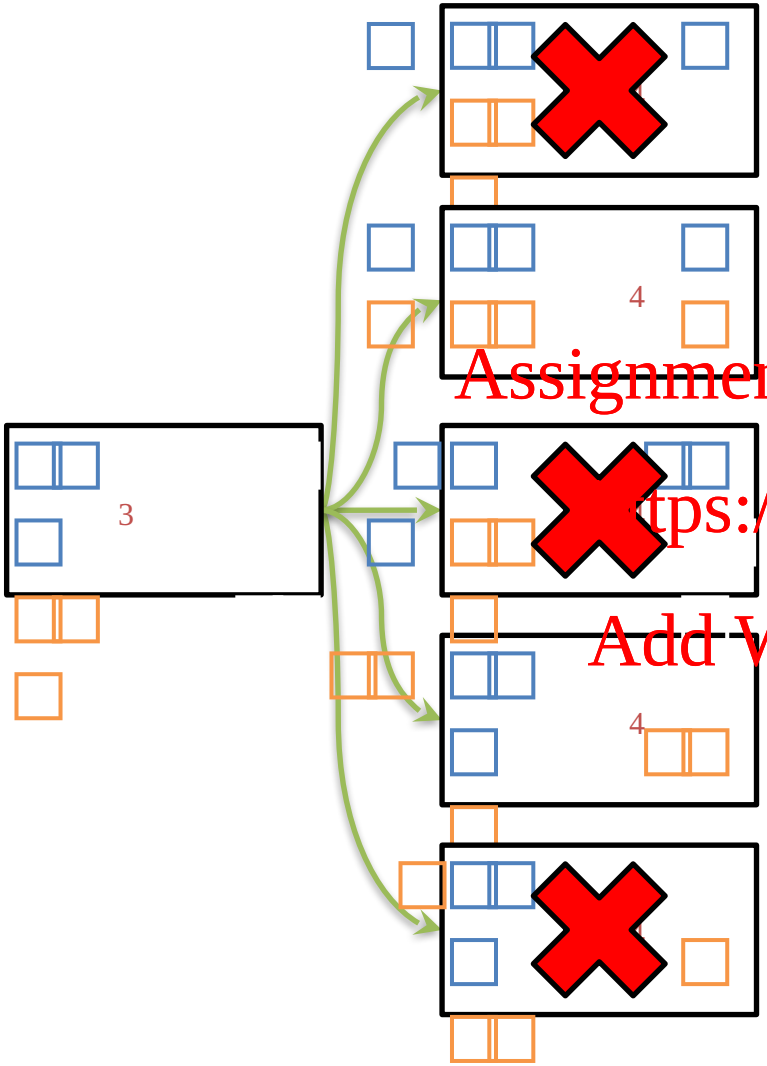
- Also known by other names (cannibals and missionaries, jealous husbands, brothers and sisters).
- Originally appeared in the 1200-year-old text Propositiones ad Acuendos Juvenes.
- Used by throughout AI for problem representation.

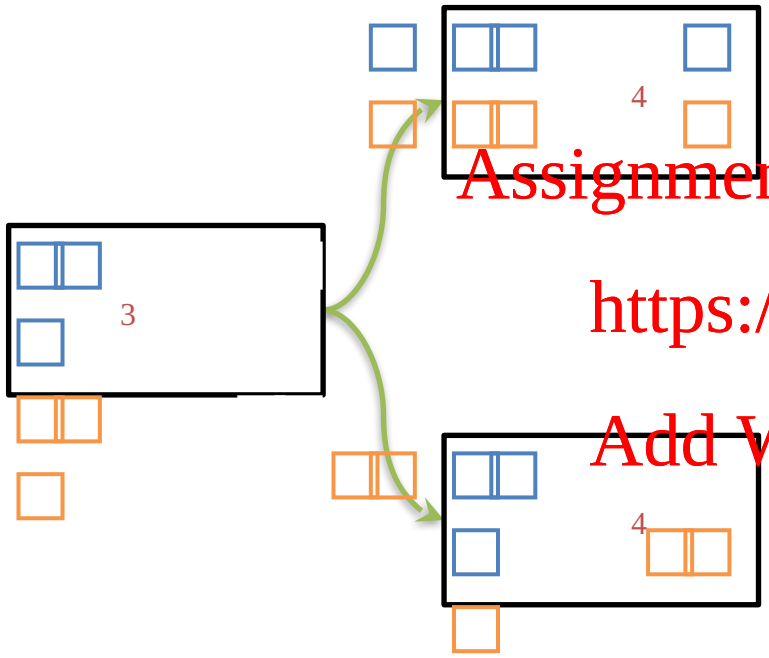
Guards & Prisoners Problem

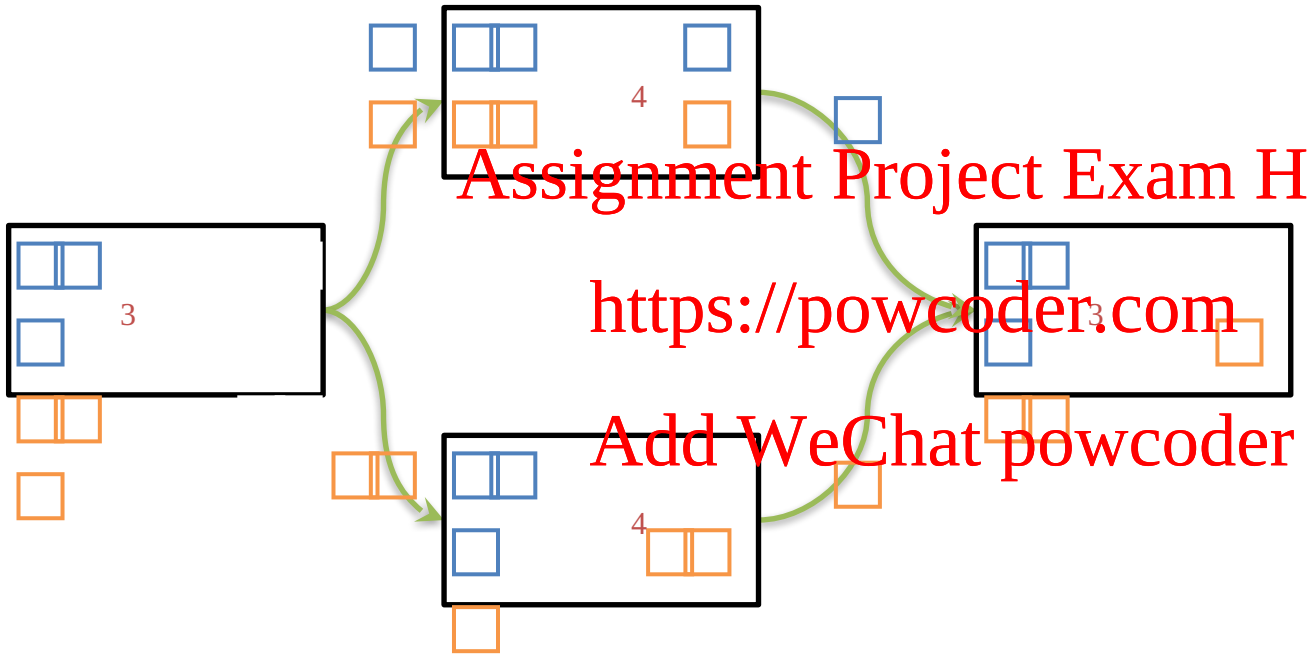
- Three guards and three prisoners must cross river.
- Boat may take only one or two people at a time.
- Prisoners may never outnumber guards on either coast, though prisoners may be alone on either coast).

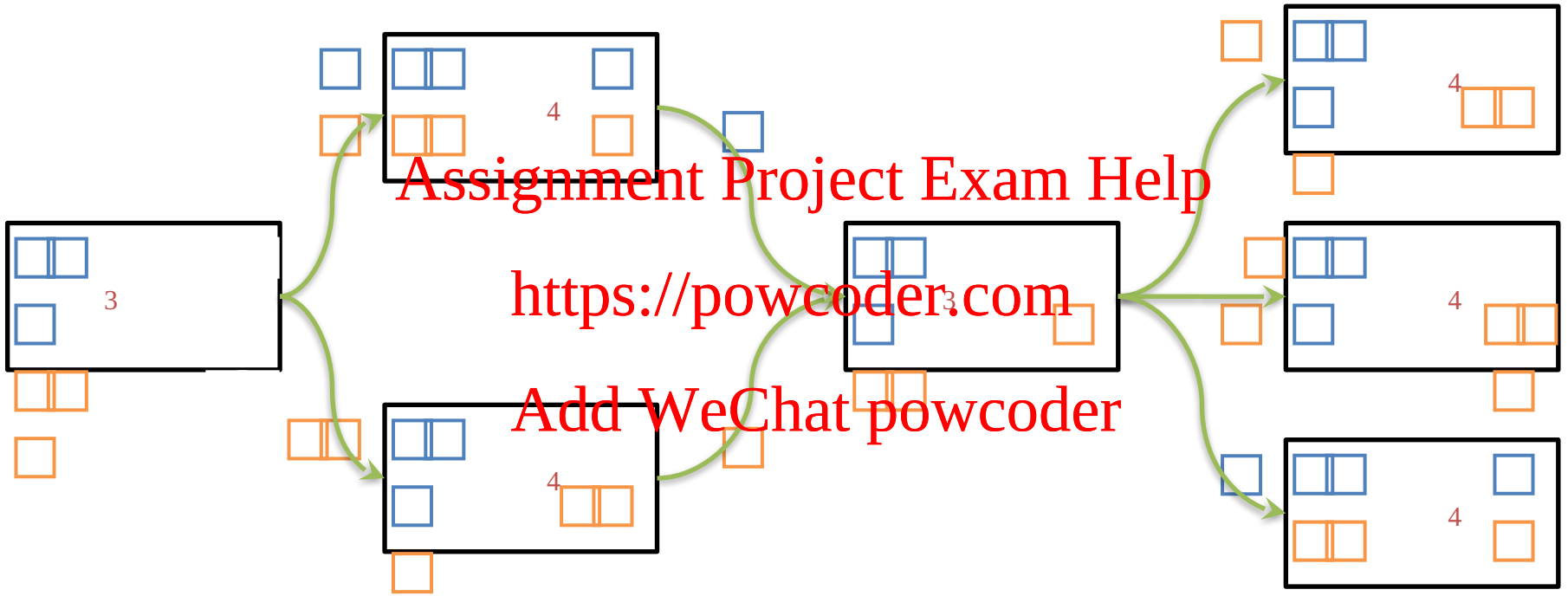


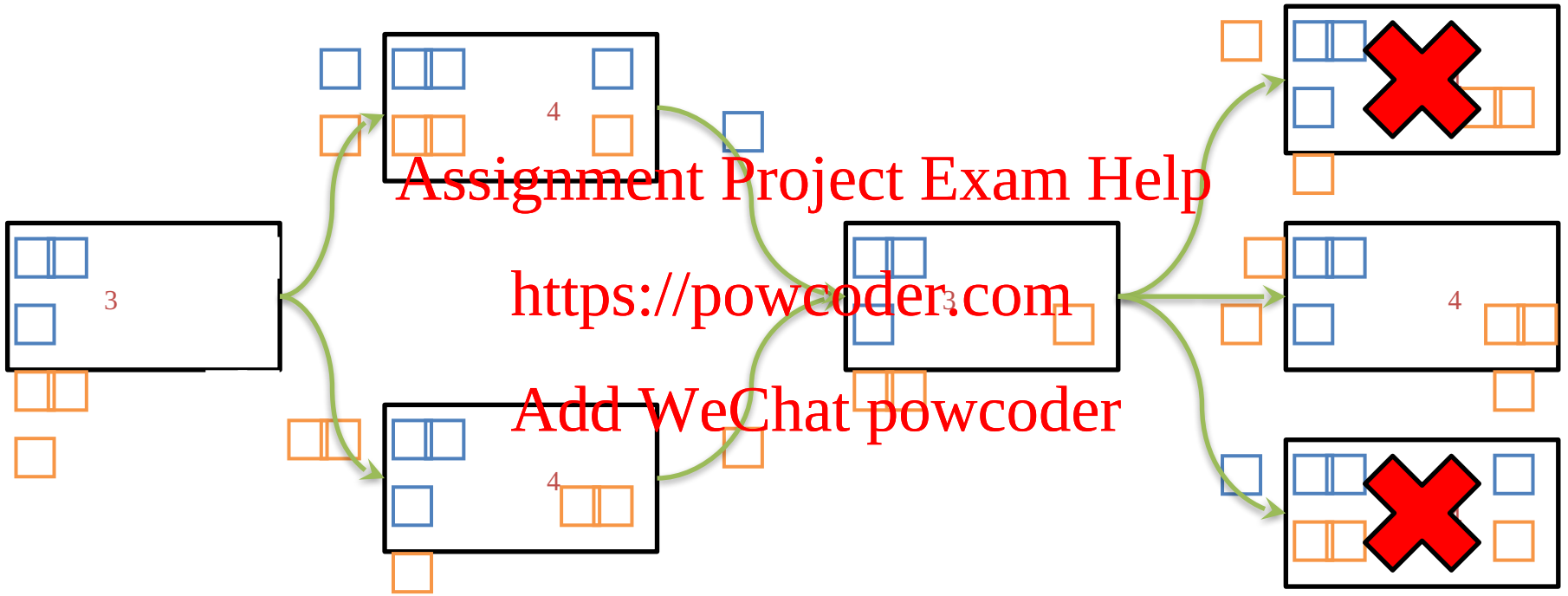


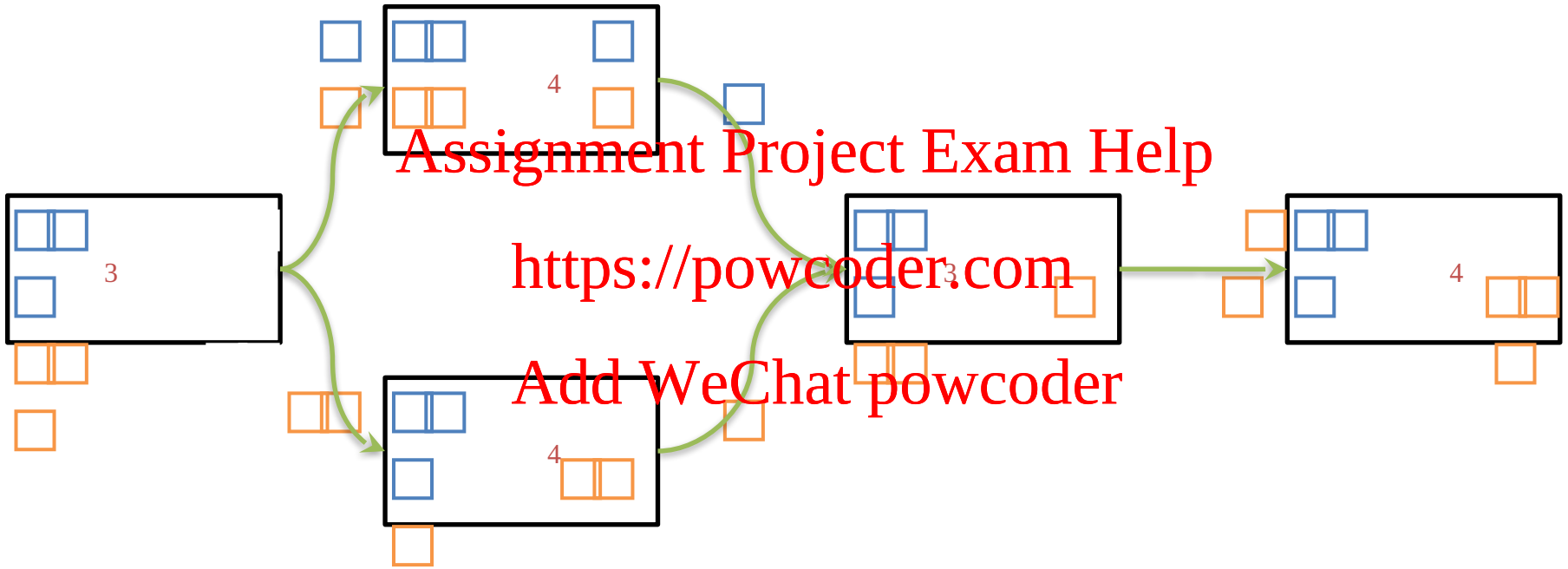




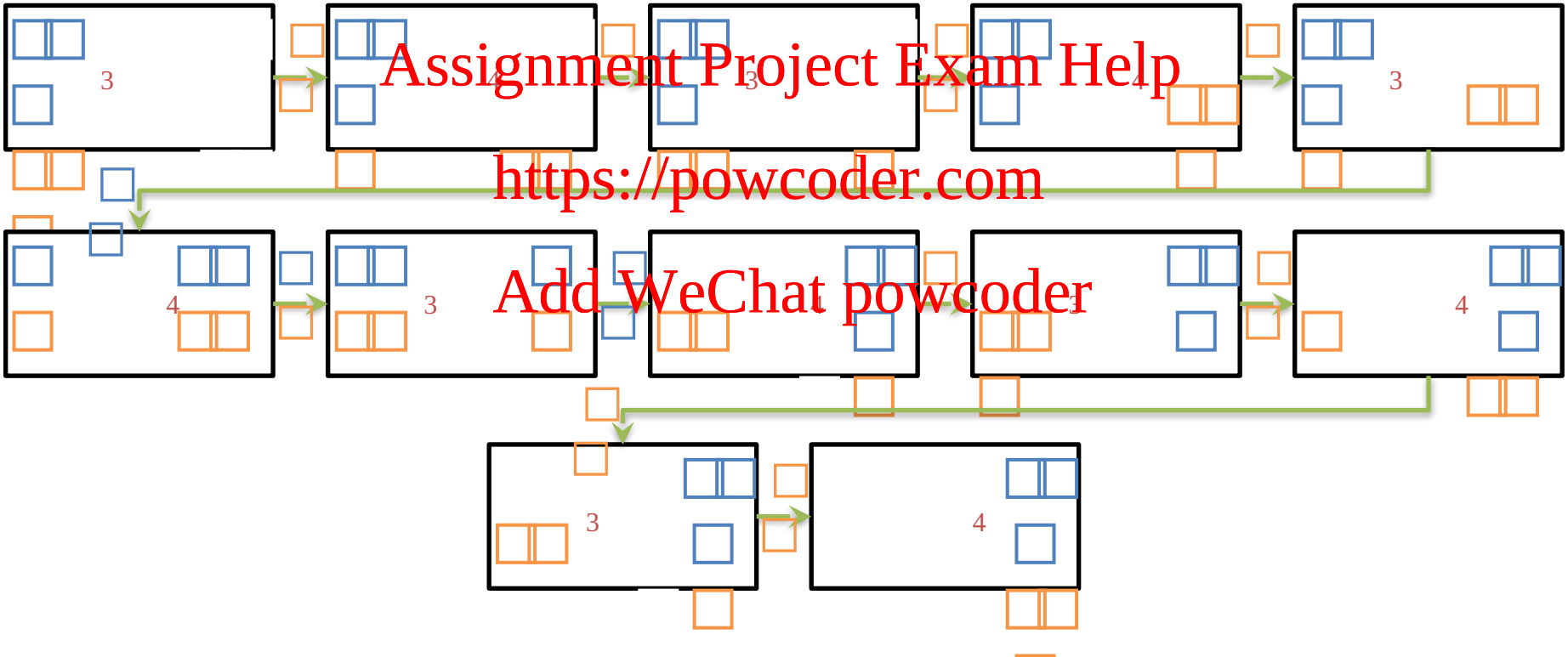


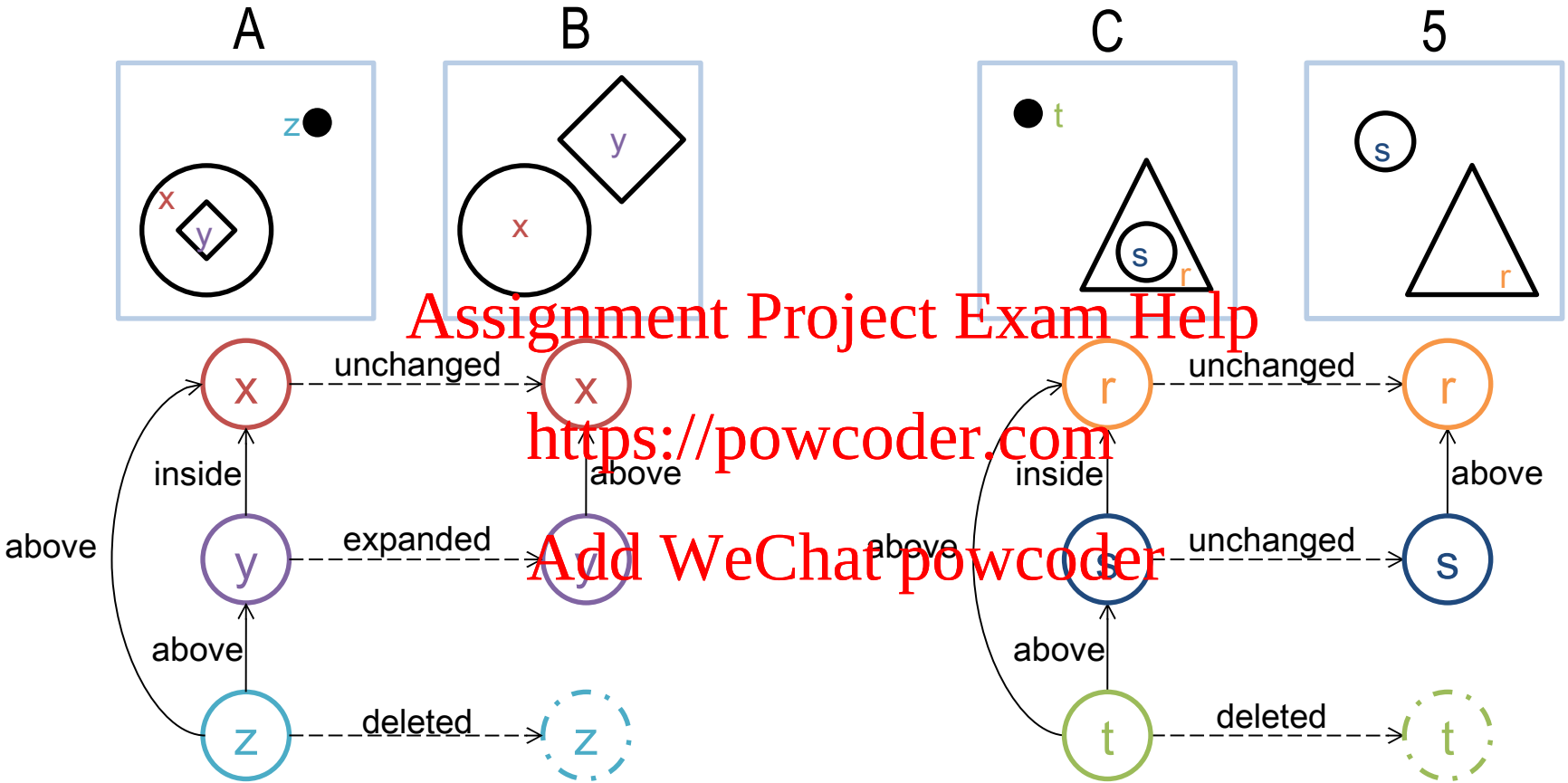


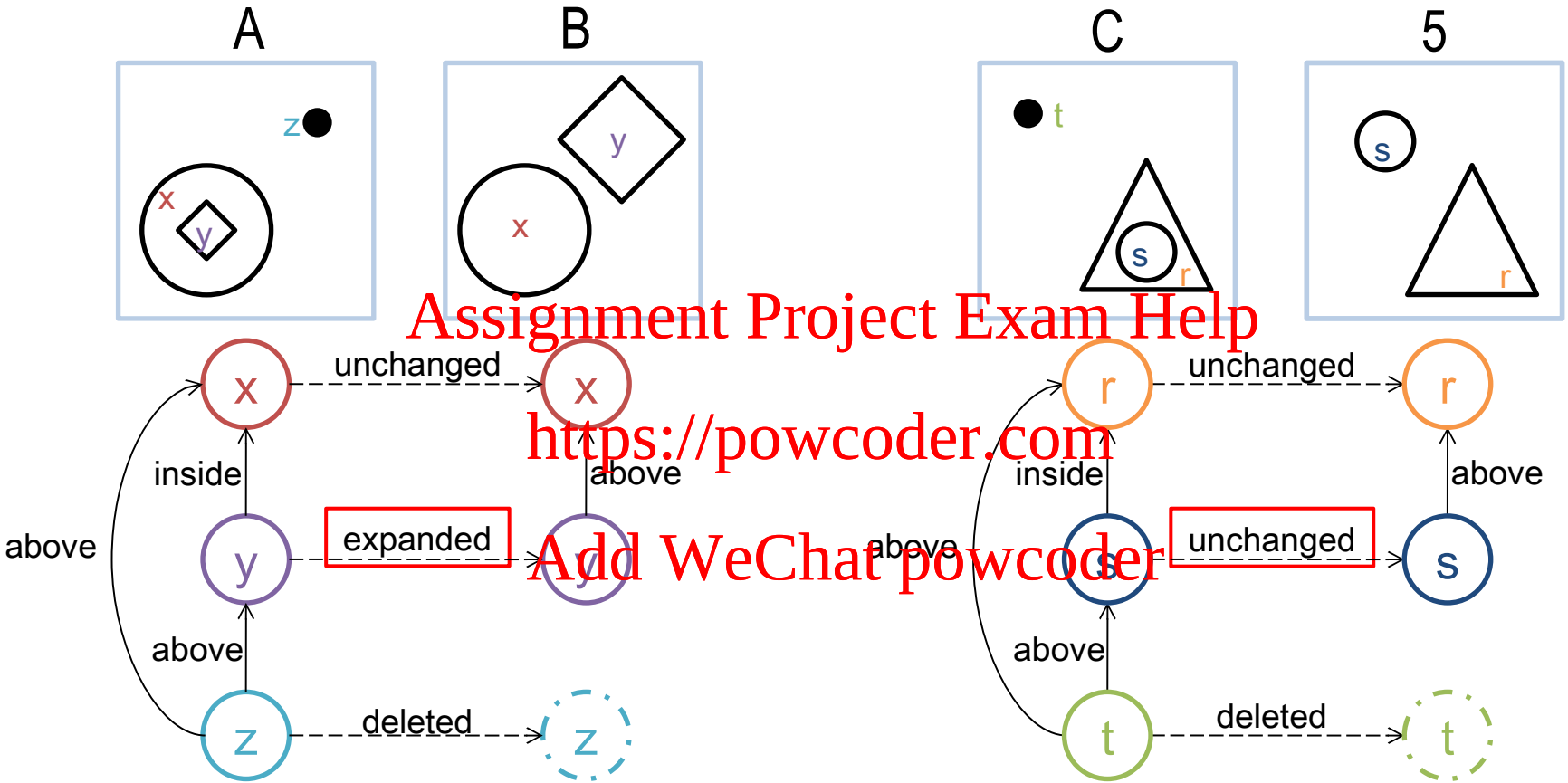


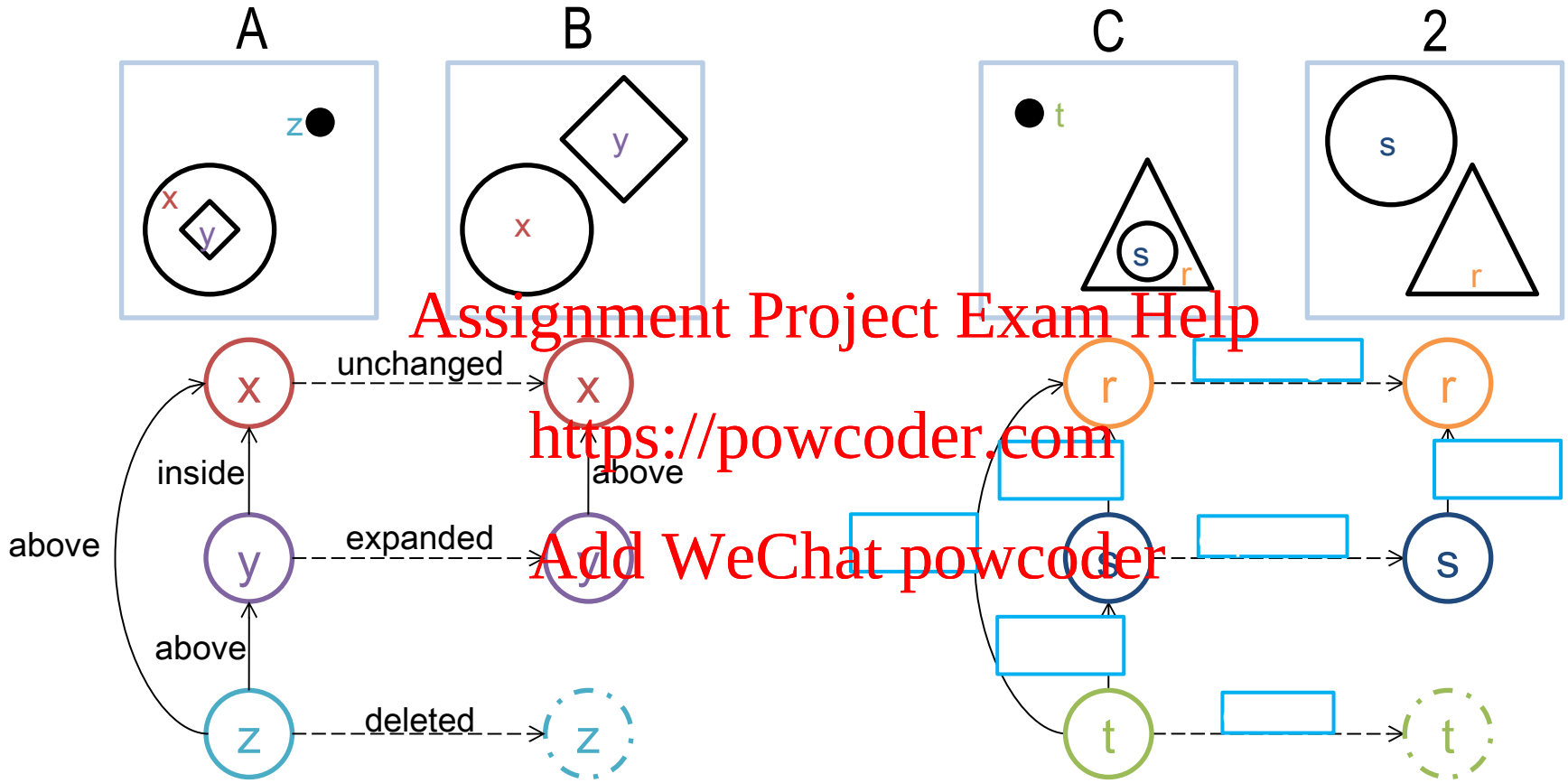


Exercise: How many moves does it take to move everyone to the other side?

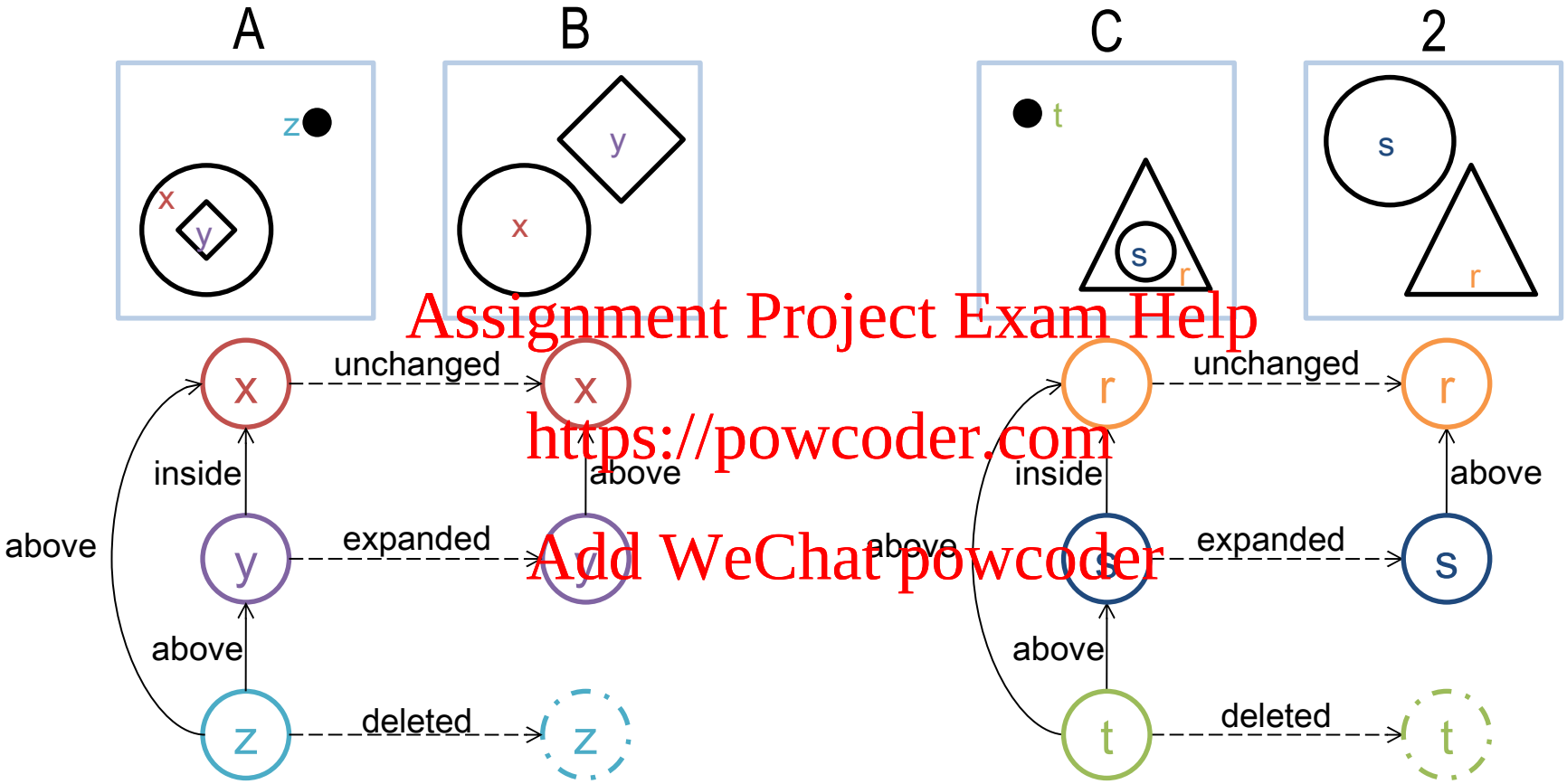




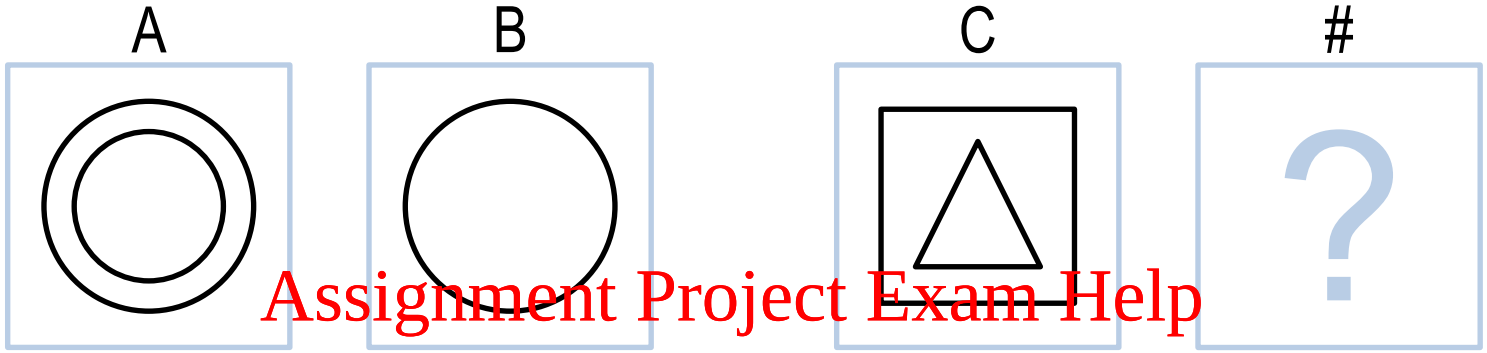


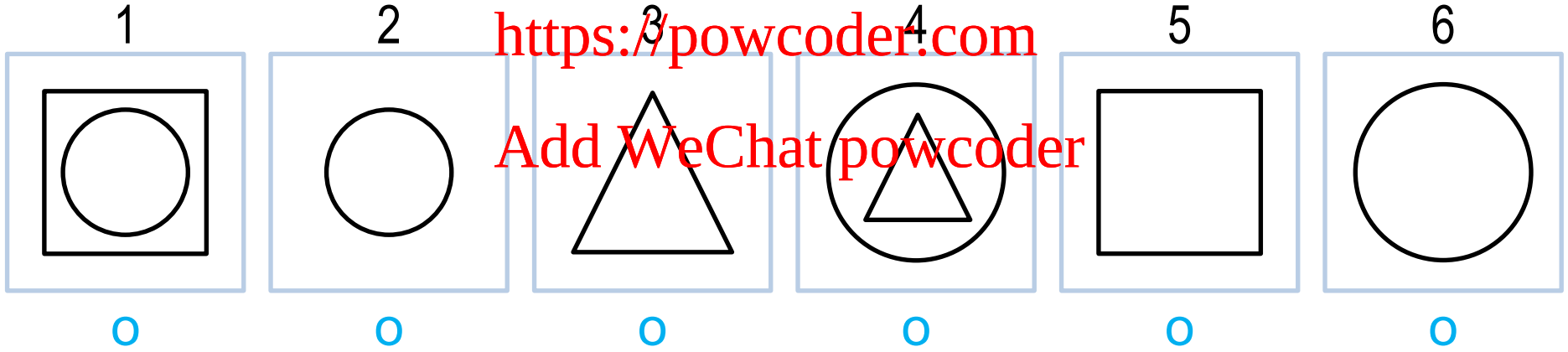


Is this the right answer to the problem? o Yes o No



Is this the right answer to the problem? o Yes o No





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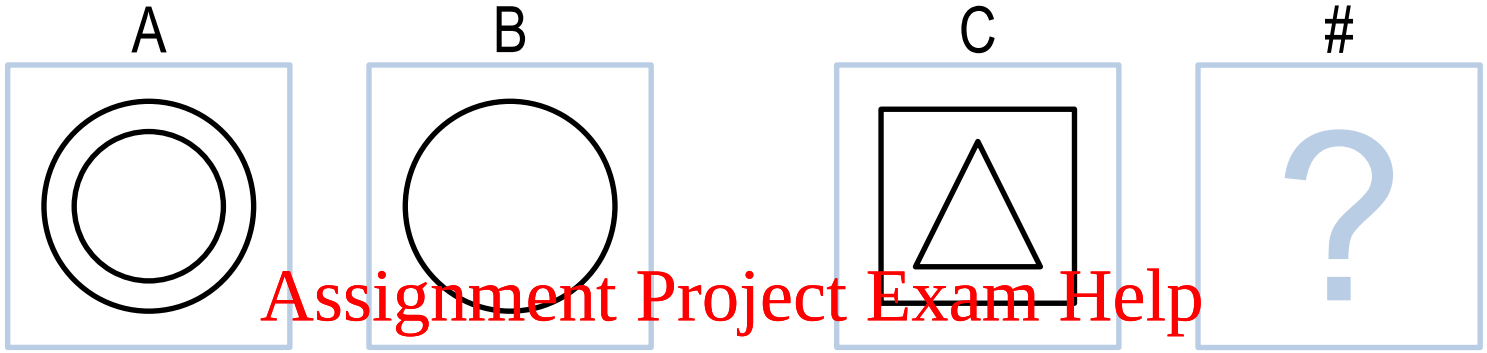

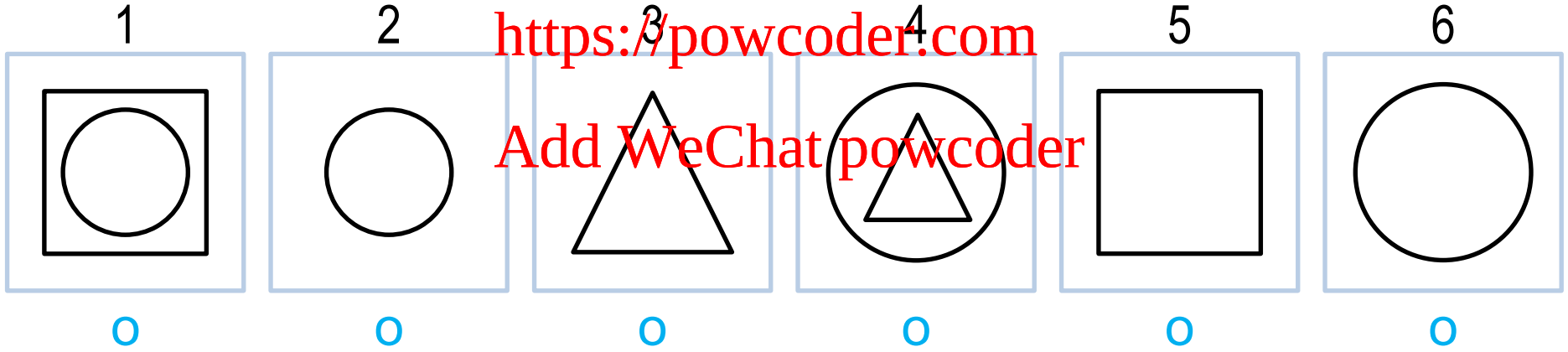

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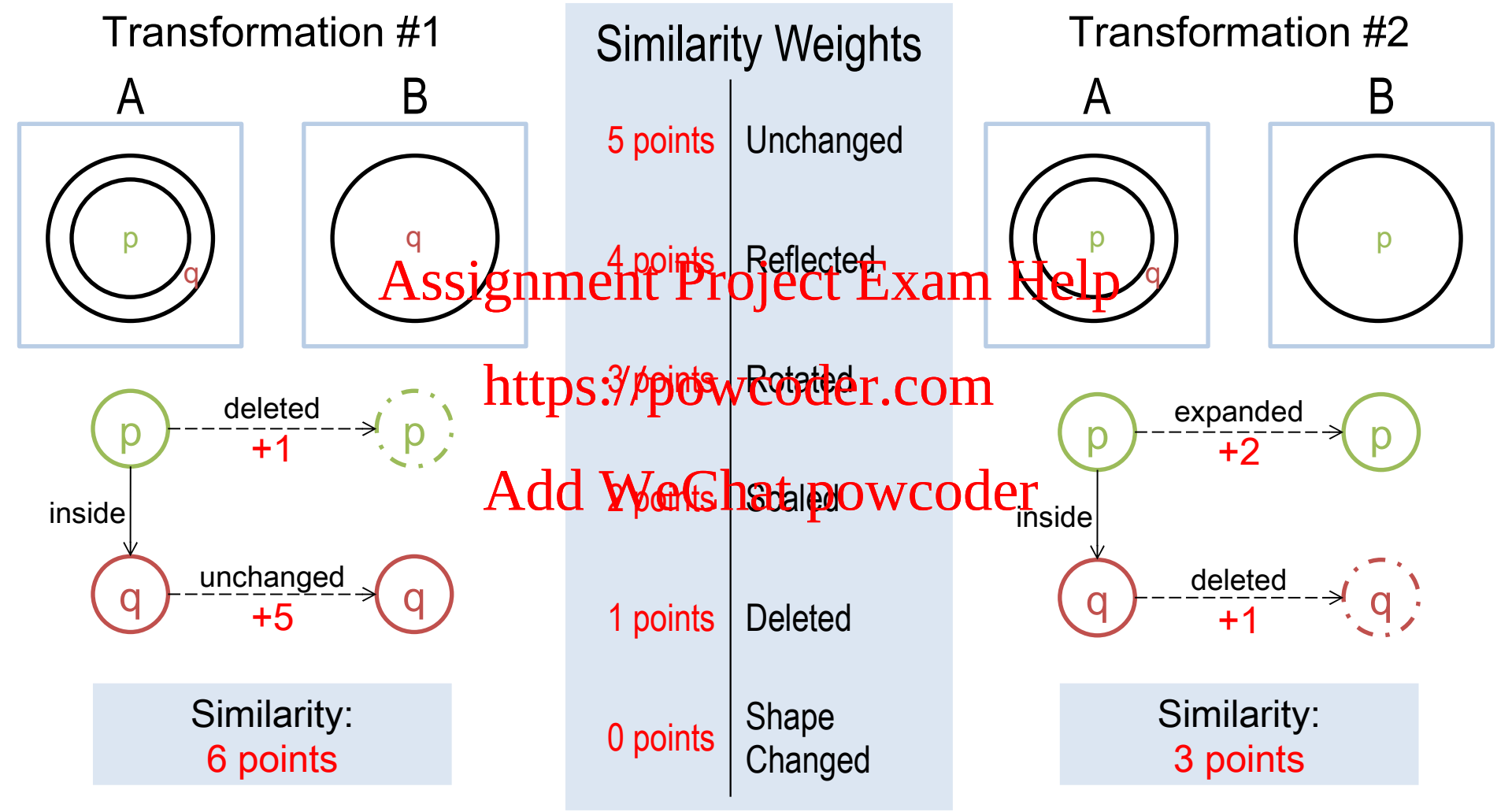

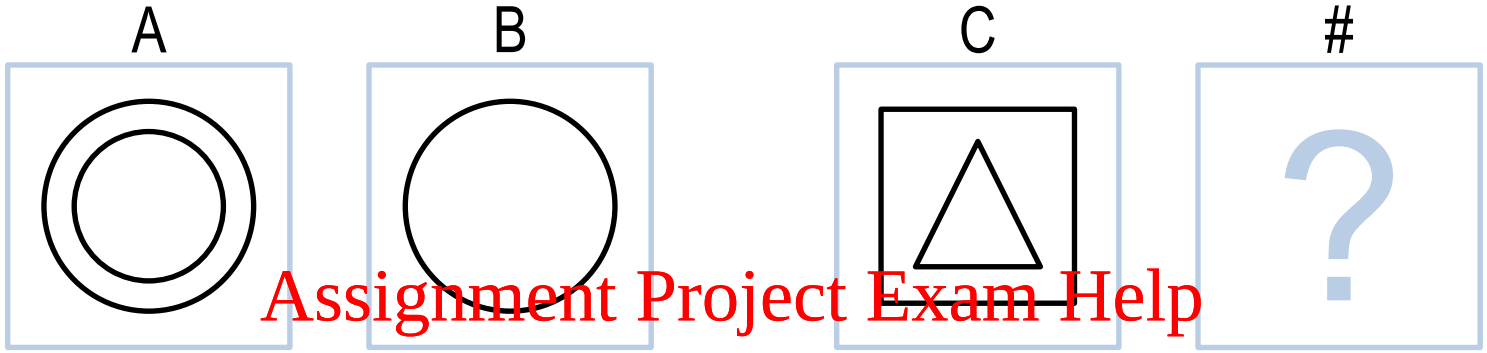

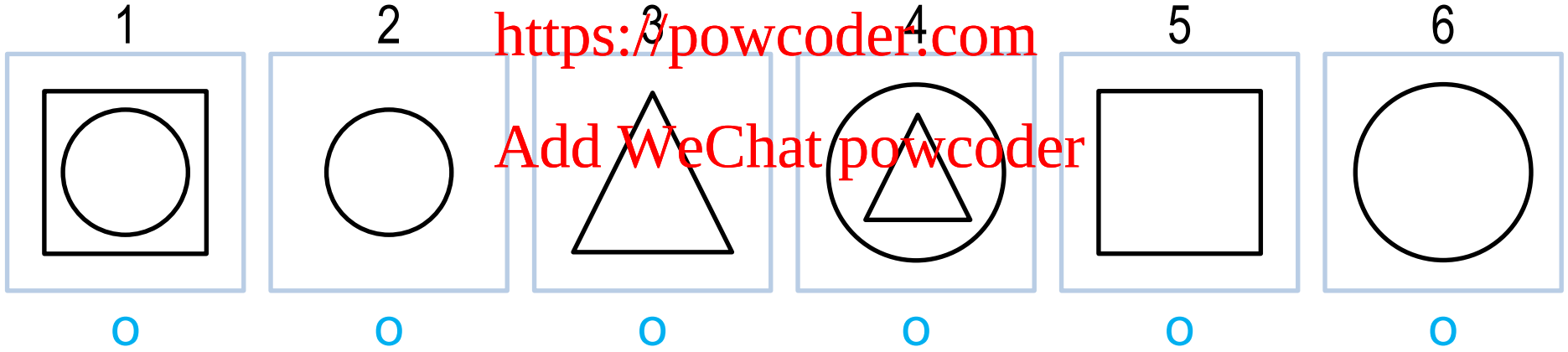

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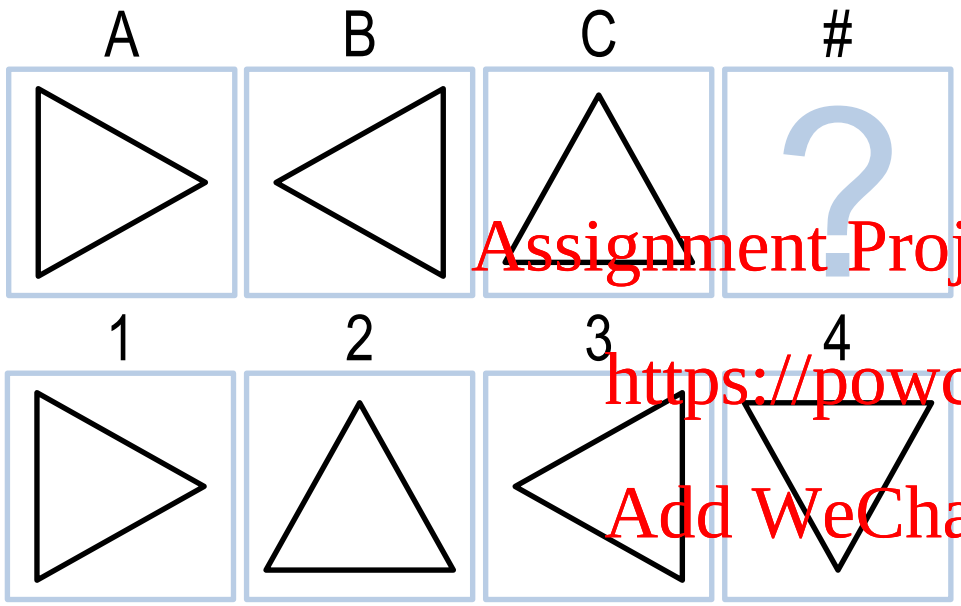


Similarity Weights

5 points	Unchanged
4 points	Reflected
3 points	Rotated
2 points	Scaled
1 points	Deleted
0 points	Shape Changed

Assignment

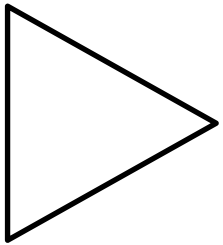
How would you use semantic networks to design an agent that can answer Raven's Progressive Matrices?

To recap…

- Representations
- Semantic networks
- Represent & Reason
- Weights with Represent & Reason

What is the answer to this problem?

A



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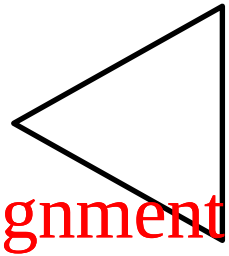

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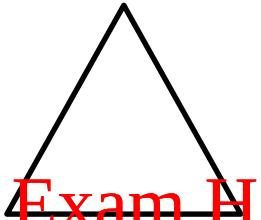

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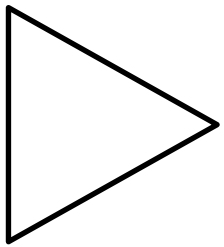

o

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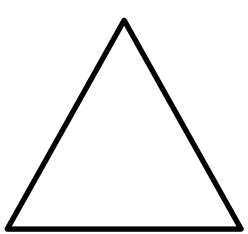

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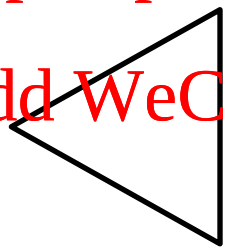

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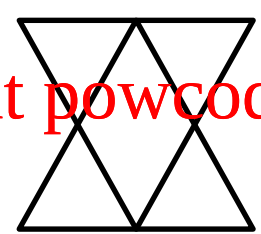

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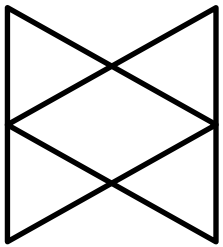

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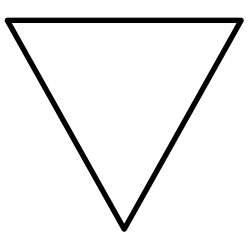
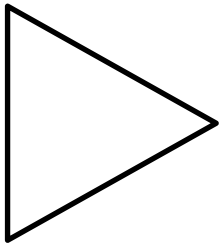


o

What is the answer to this problem?

A



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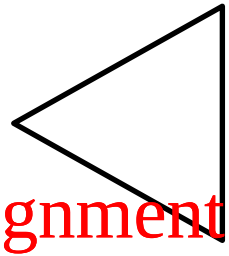

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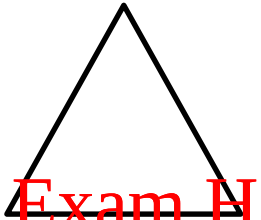

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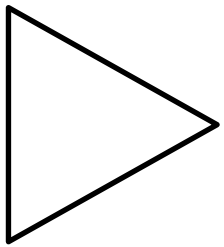

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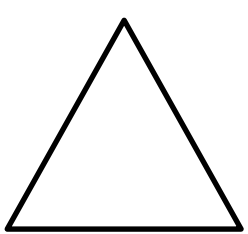

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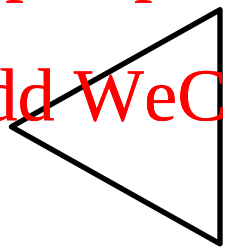

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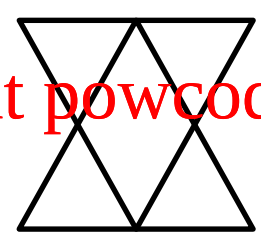

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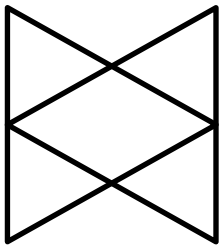

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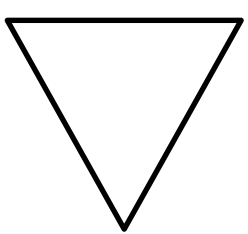

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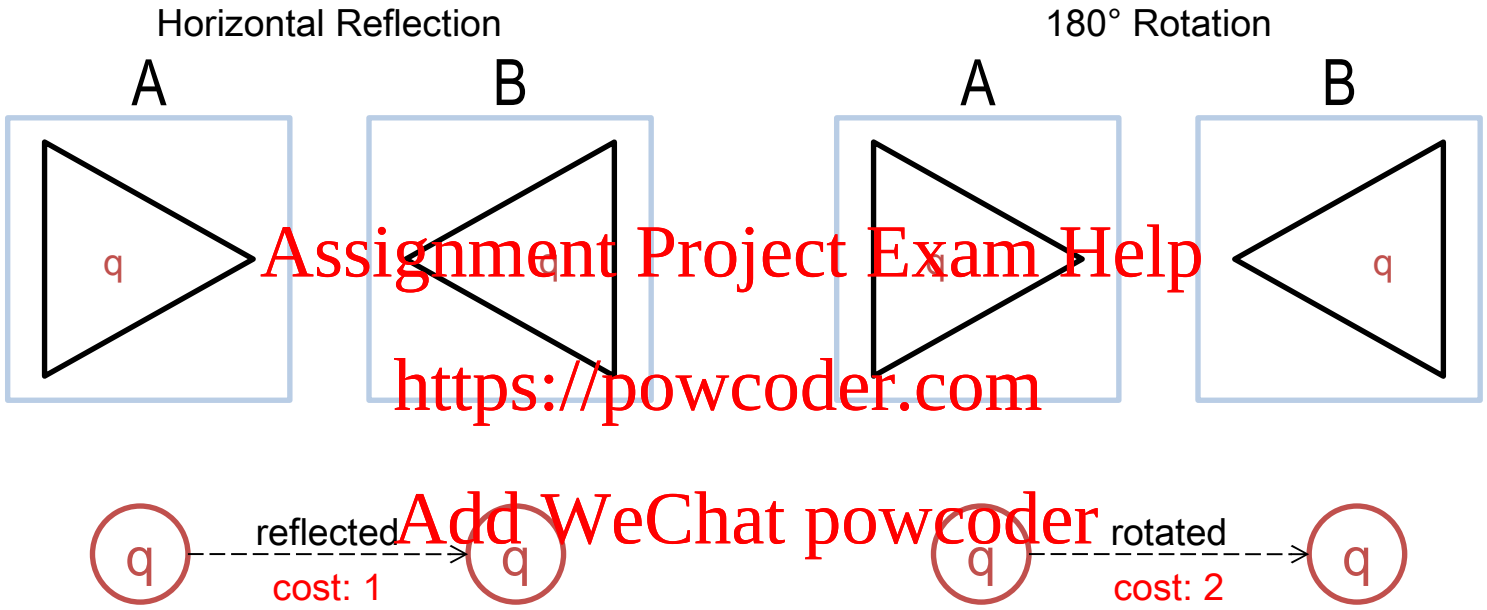
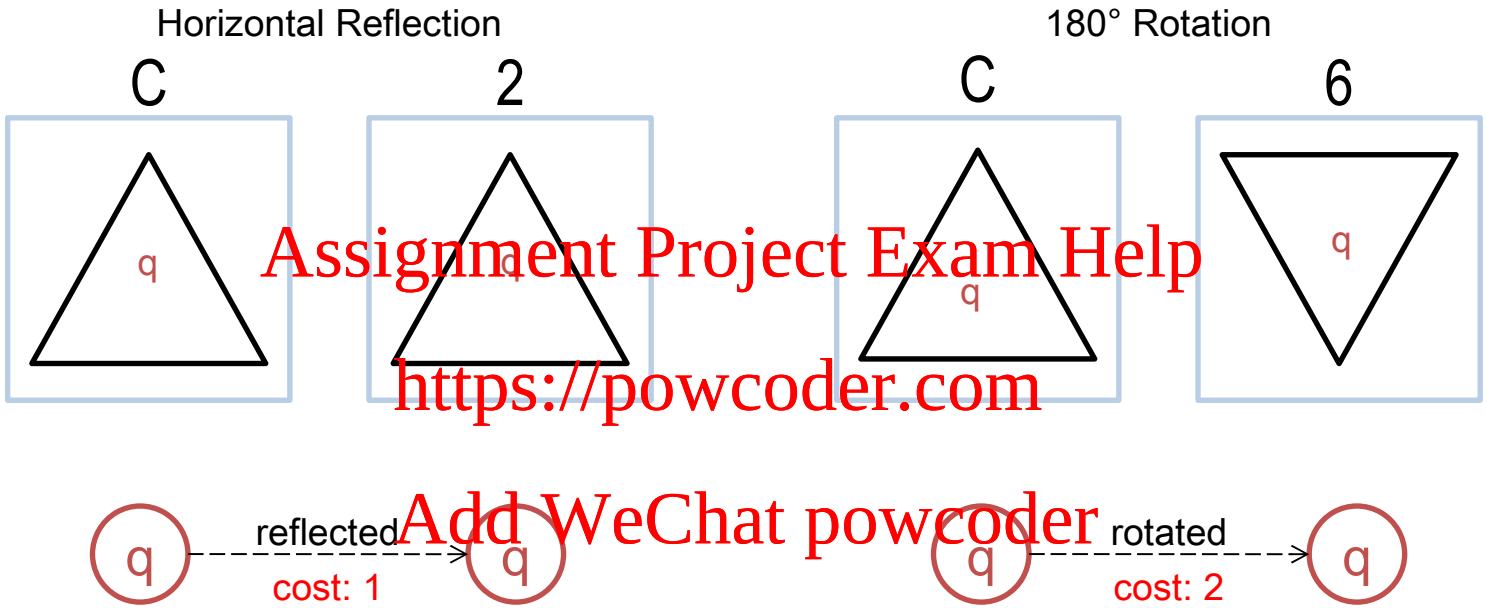
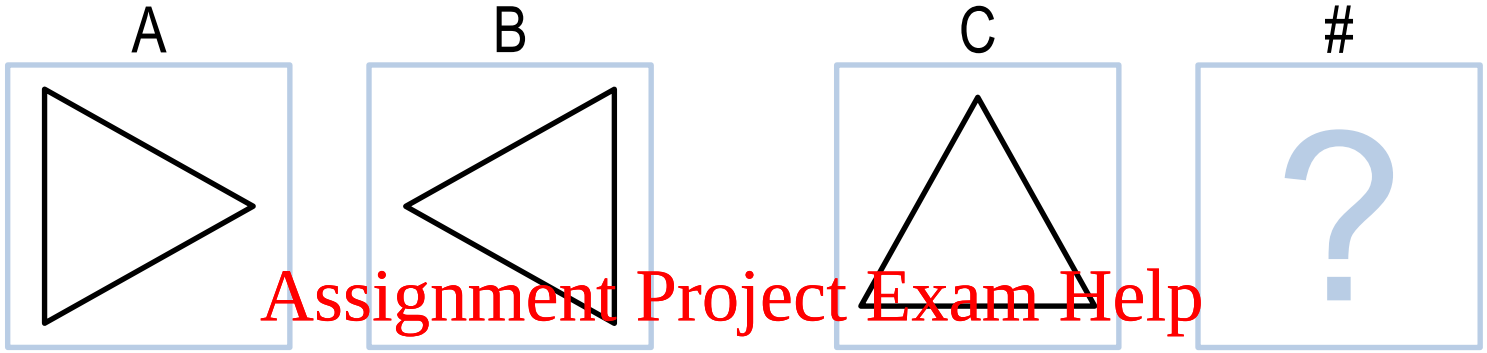
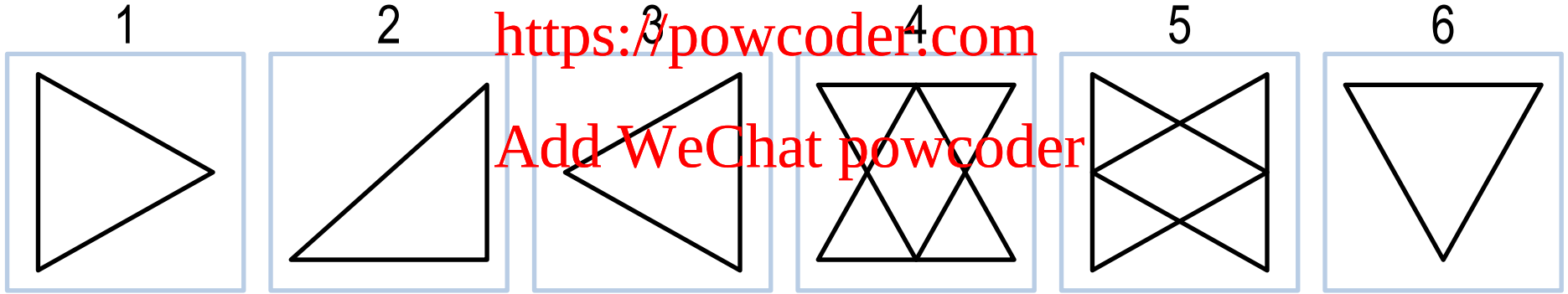




What would the answer be? o 2 o 6





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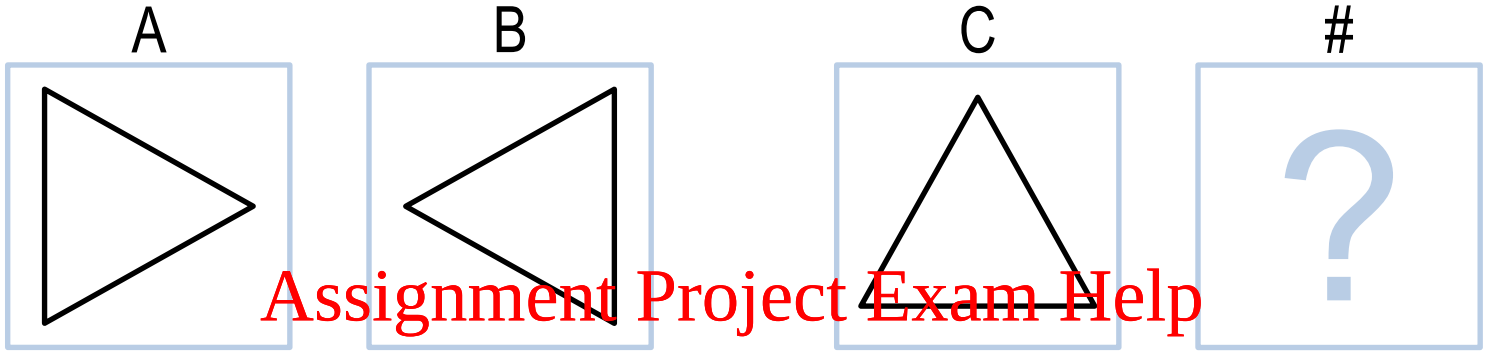

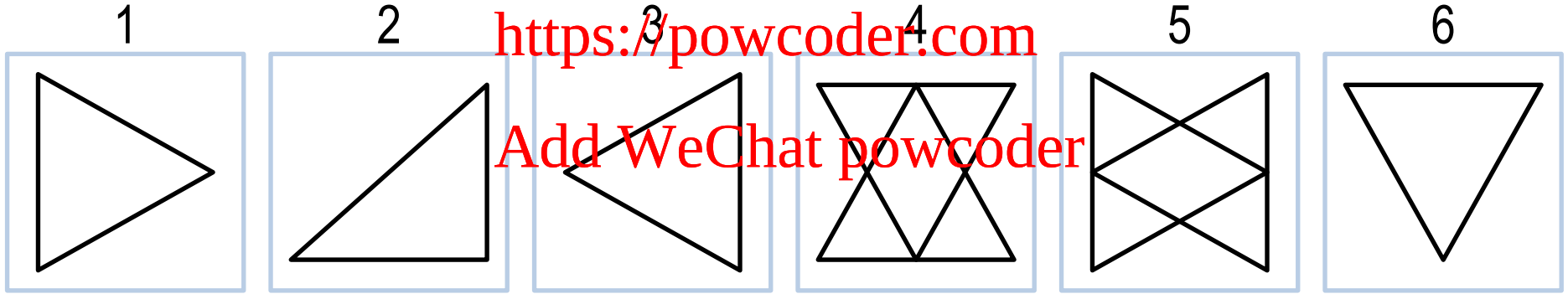

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