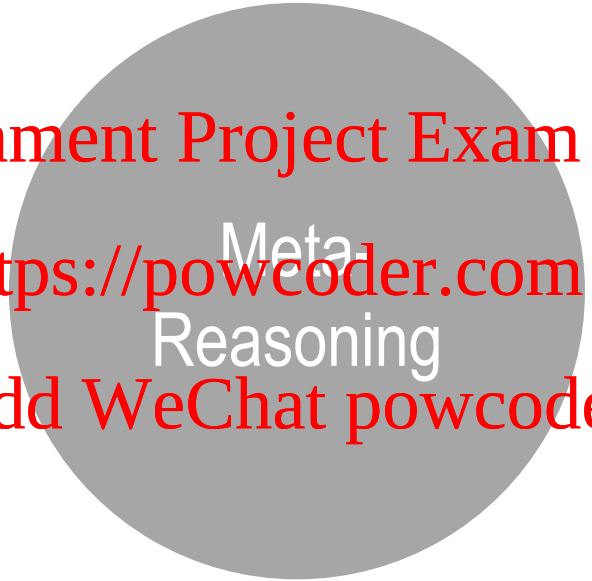
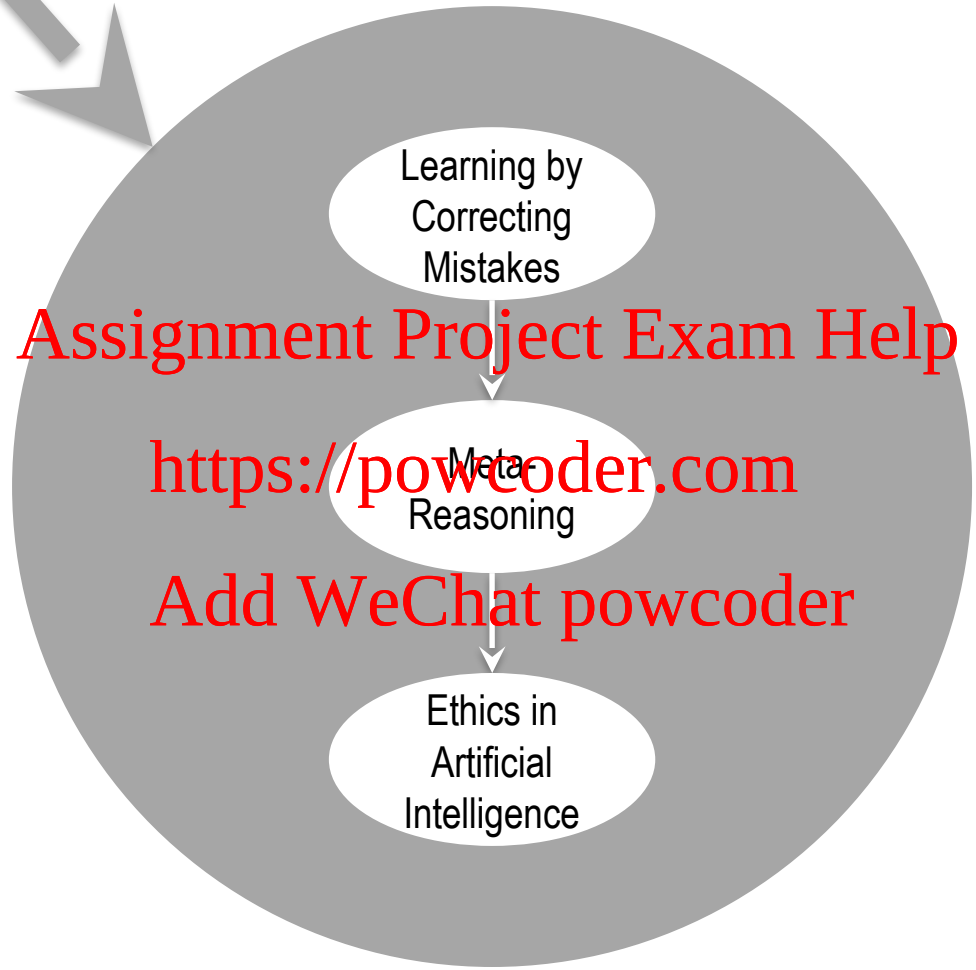
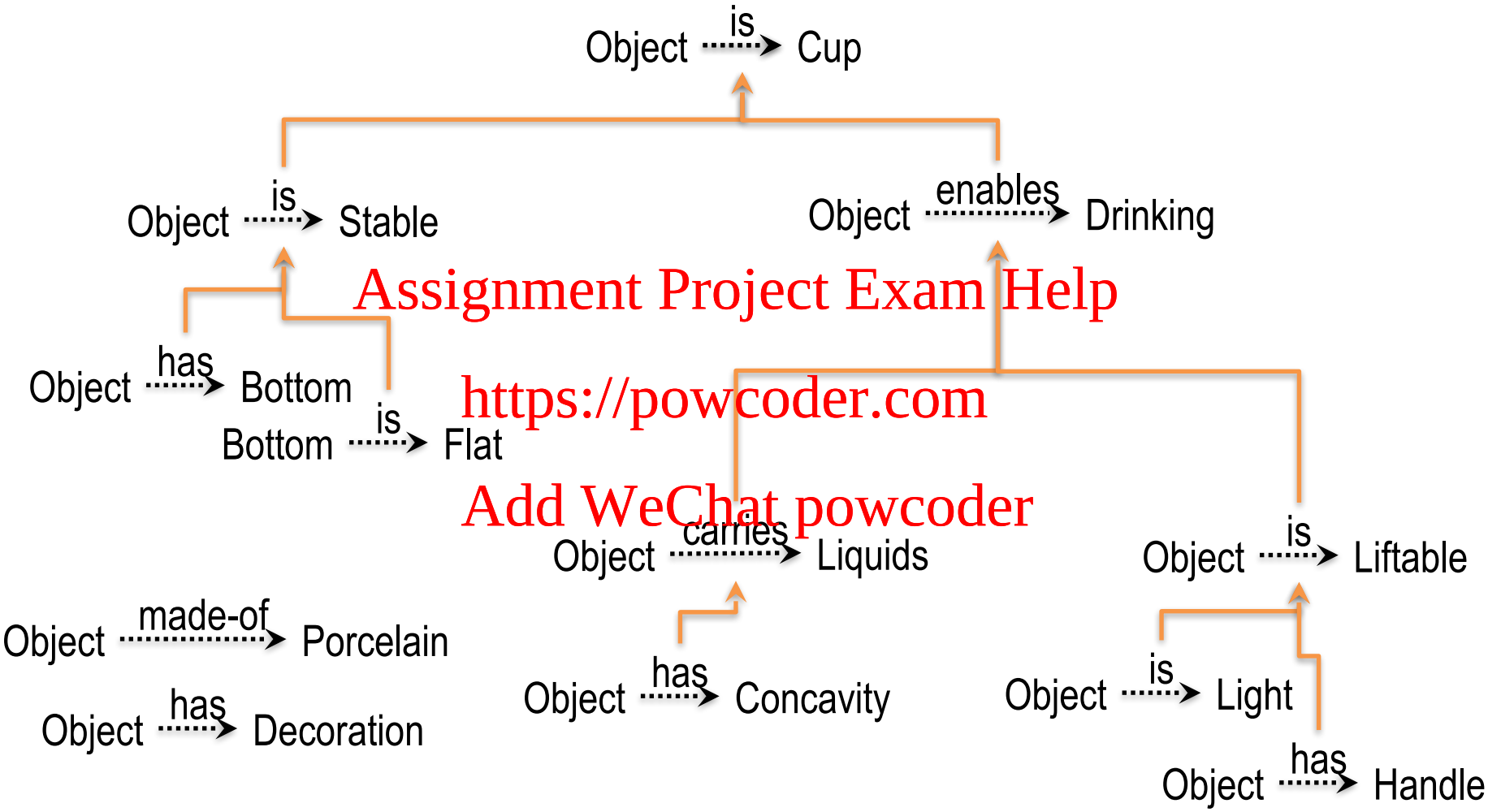


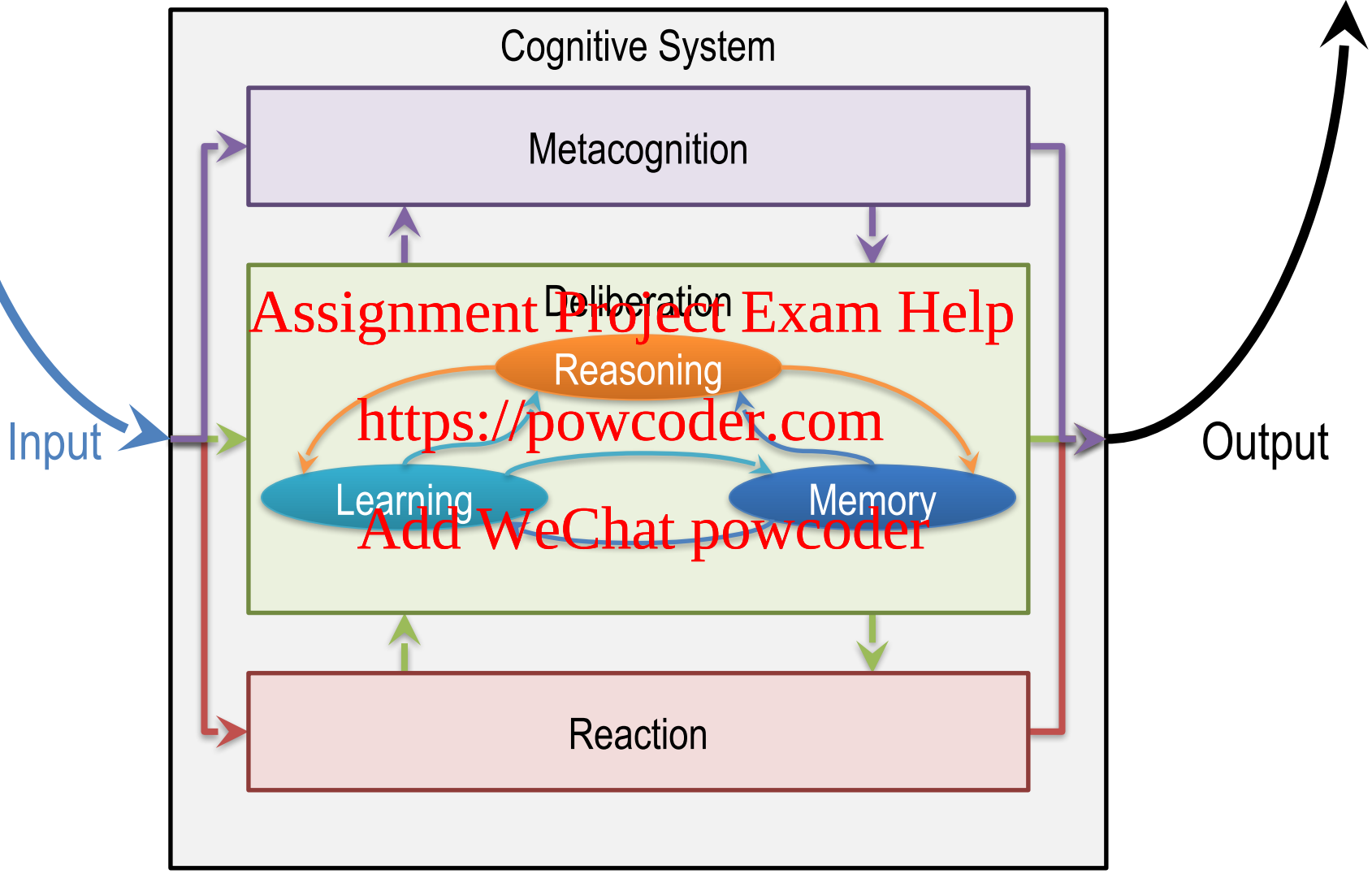
Metacognition



Lesson Preview

- Mistakes in knowledge, reasoning, and learning
- Gaps in knowledge and reasoning
- Strategy selection and integration
- Meta-meta-reasoning?
- Goal-based autonomy



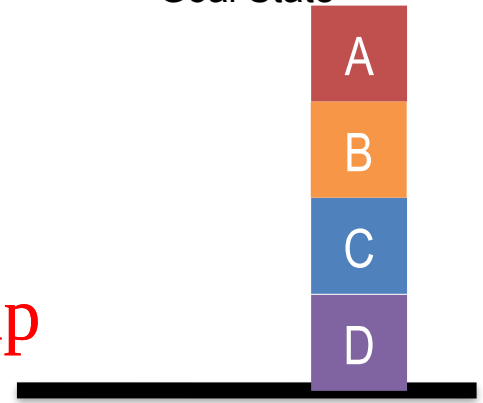


Current State

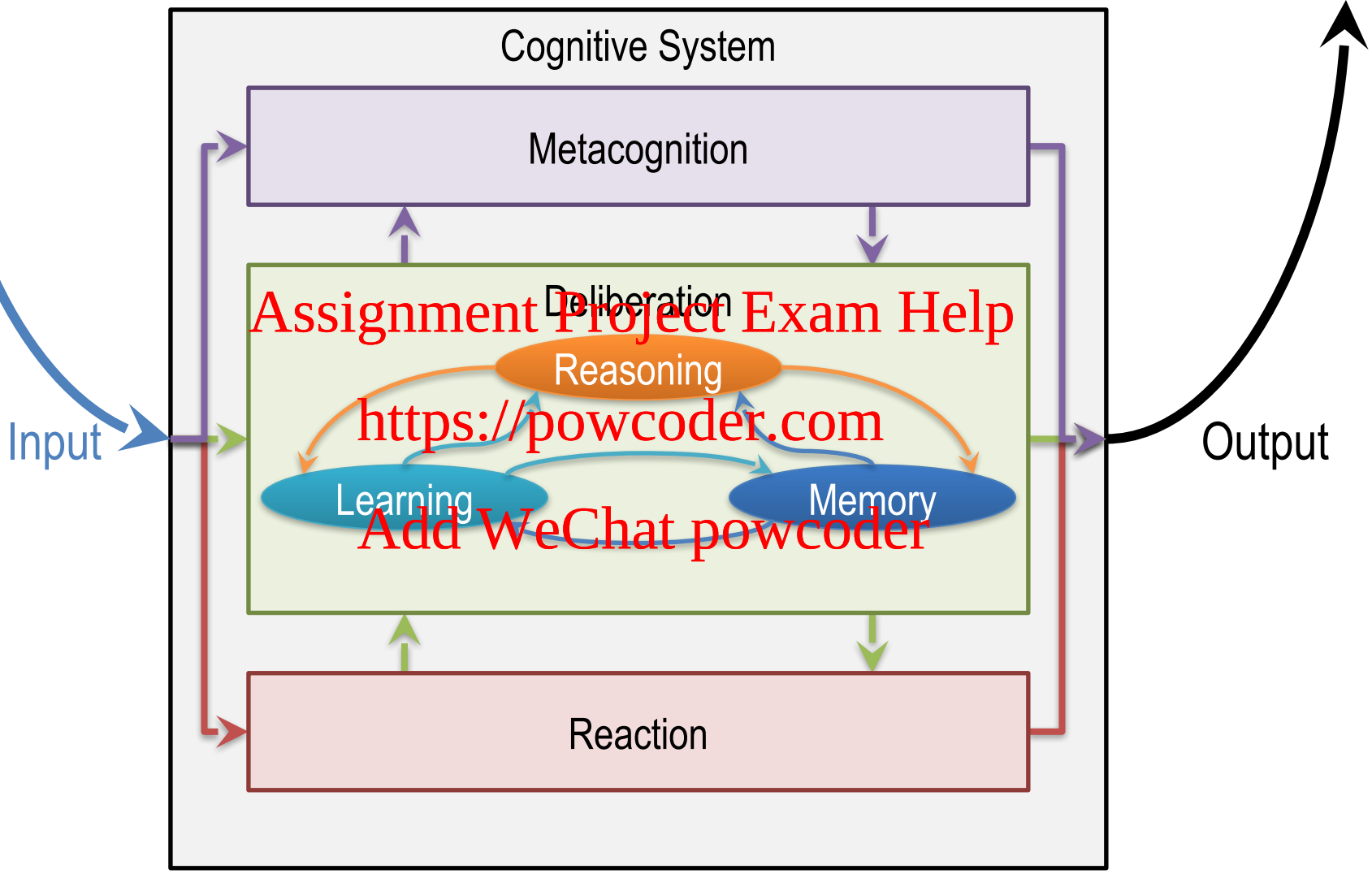
A on B
B on C
C on Table
D on Table

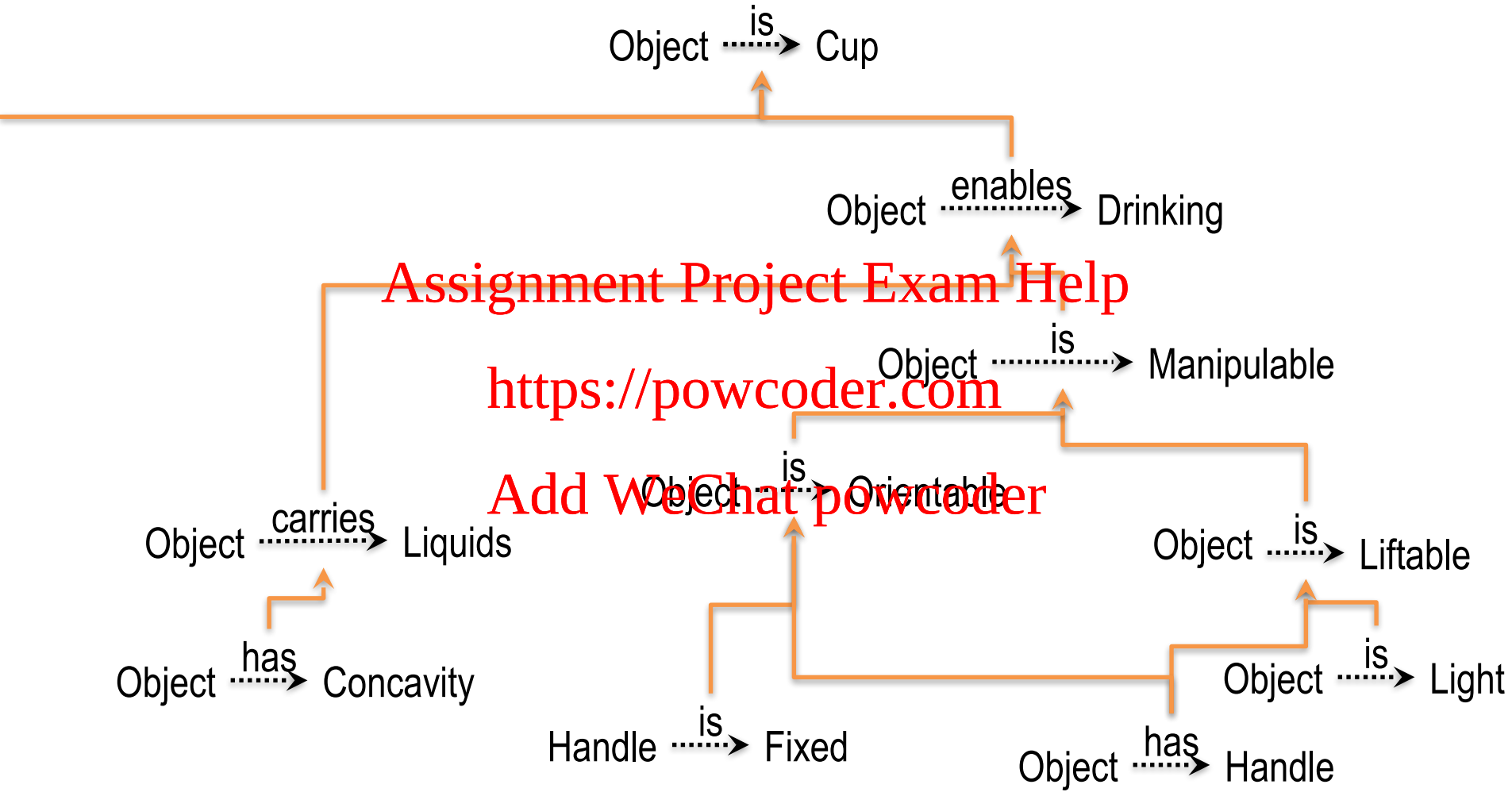
Δ = 1

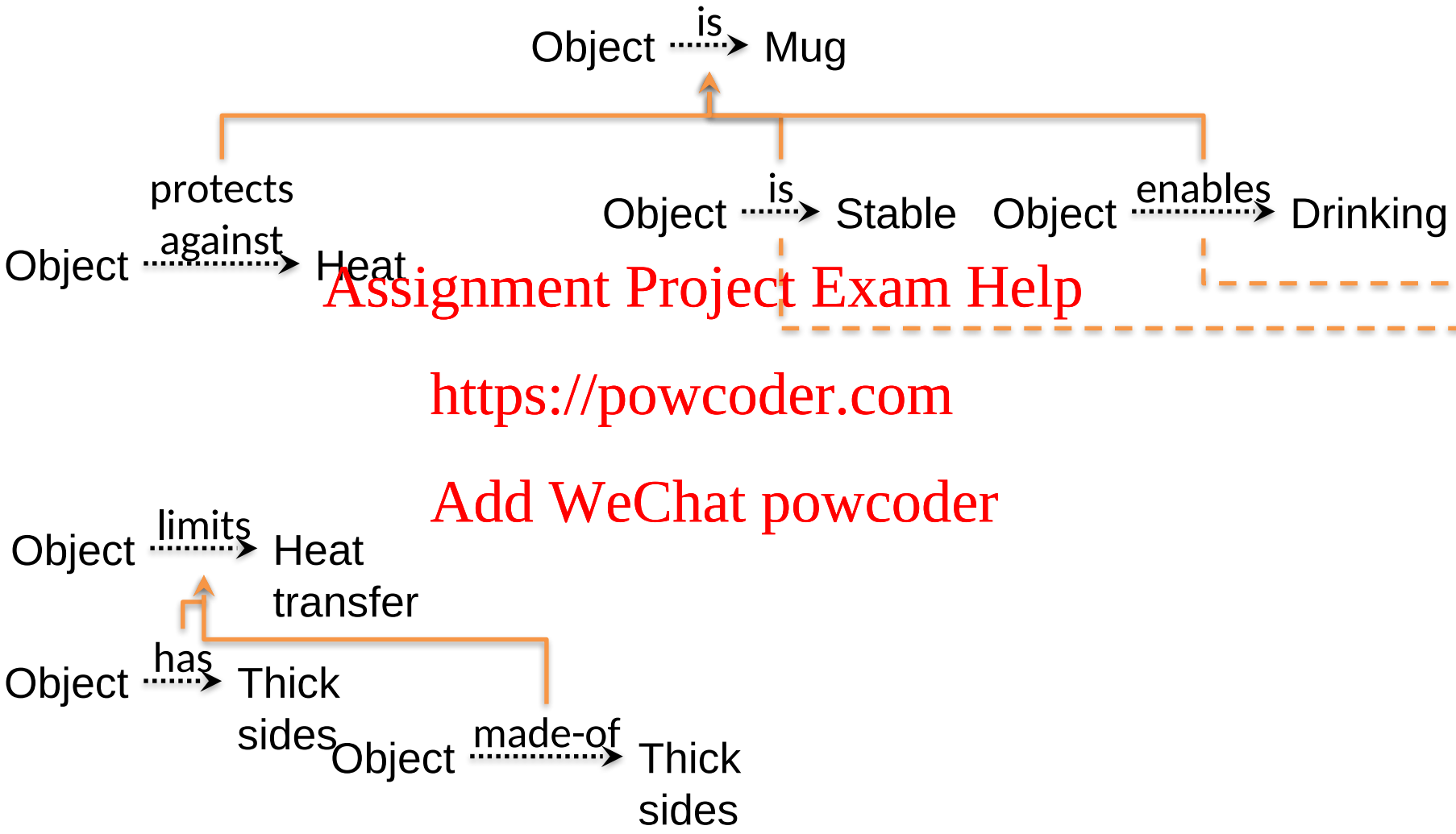
Goal State

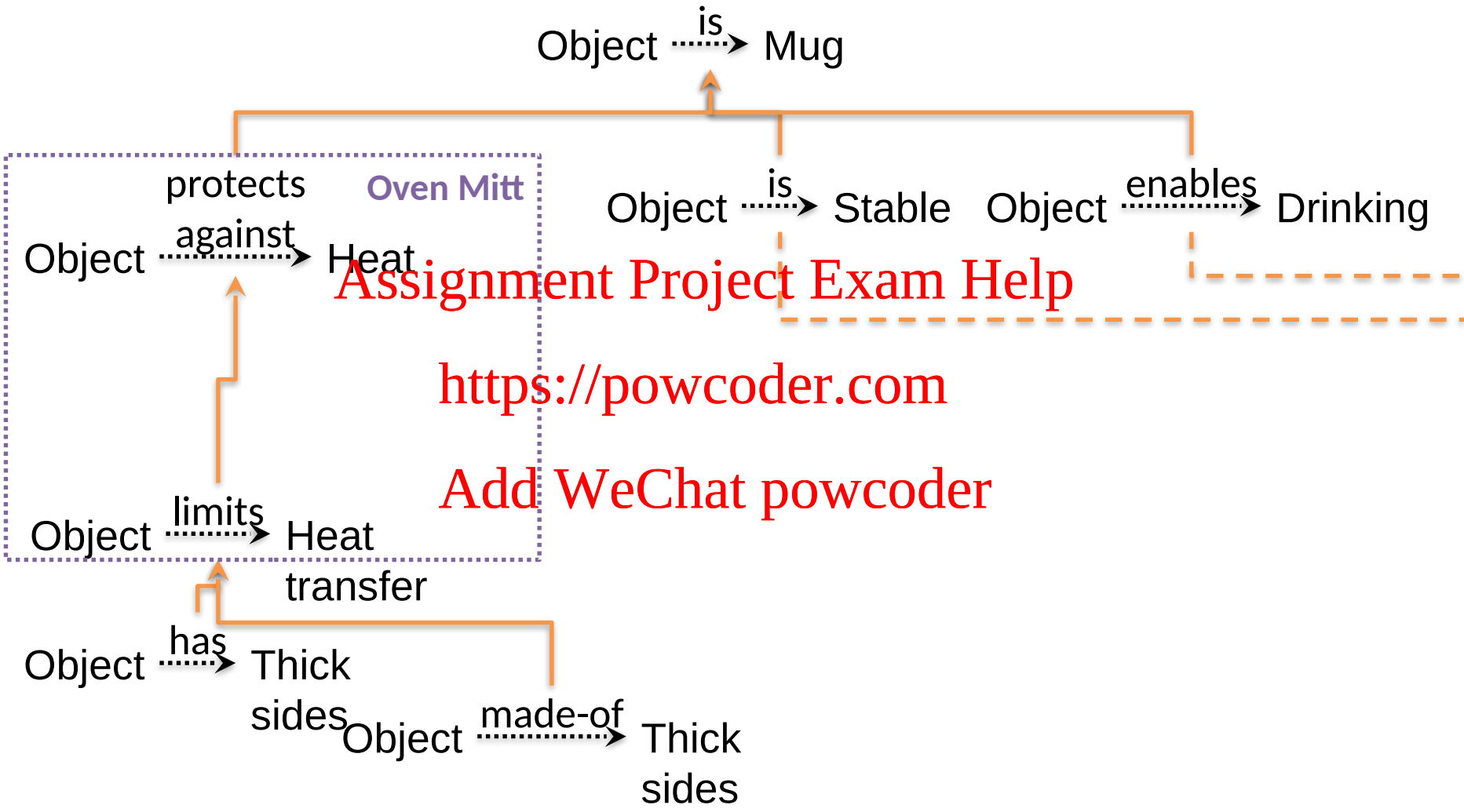


A on B
B on C
C on D
D on Table






Object
is
Mug
protects against
Object
Heat
Object
is
Stable
Object
enables
Drinking
Assignment Project Exam Help
https://powcoder.com
Add WeChat powcoder
Object
limits
Heat transfer
Object
has
Thick sides
Object
made-of
Thick sides

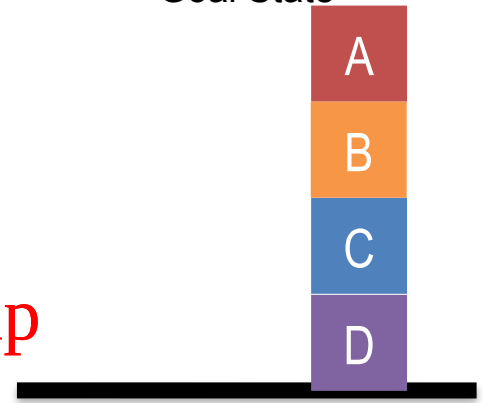


Current State

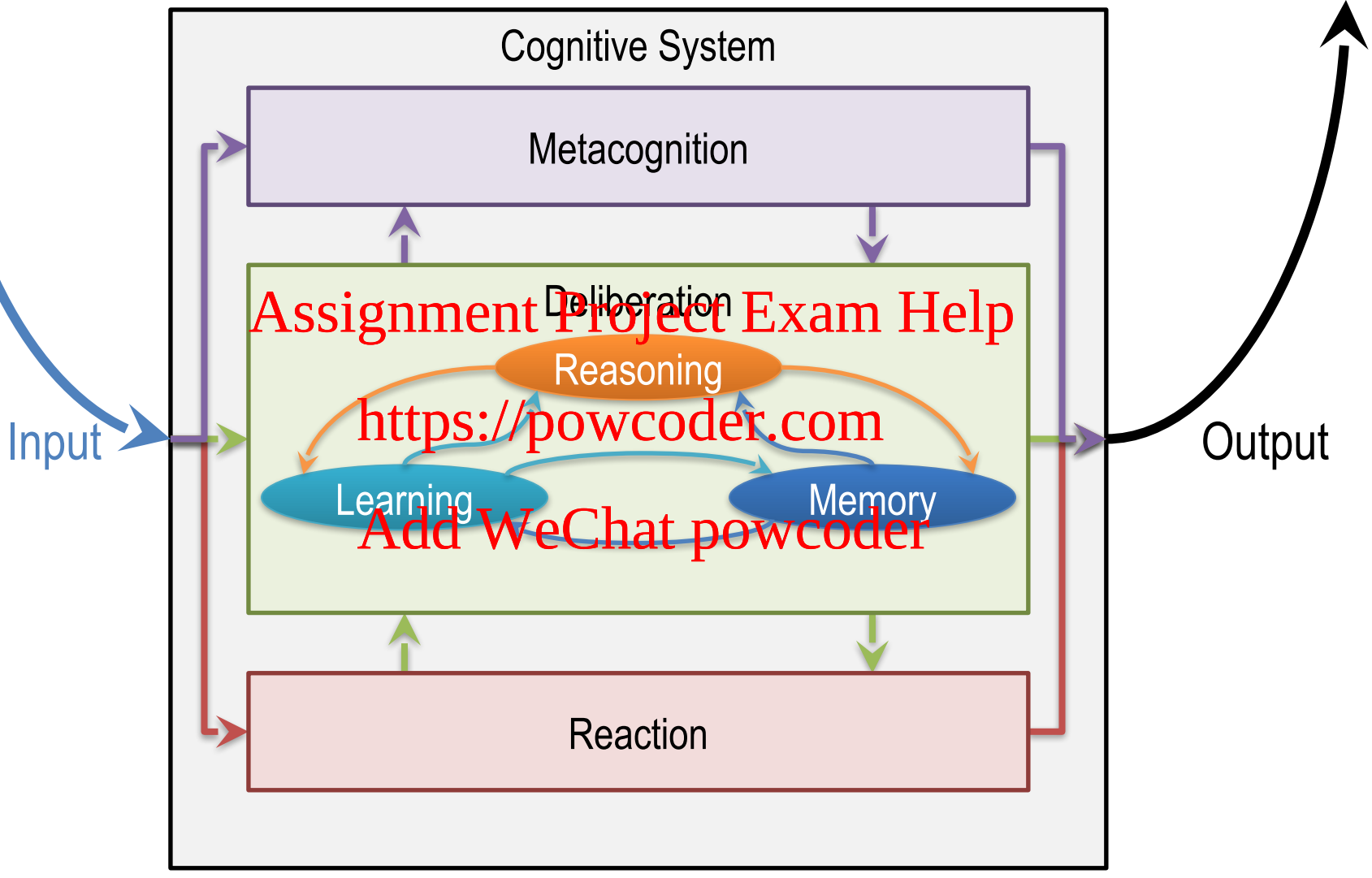
A on B
B on C
C on Table
D on Table

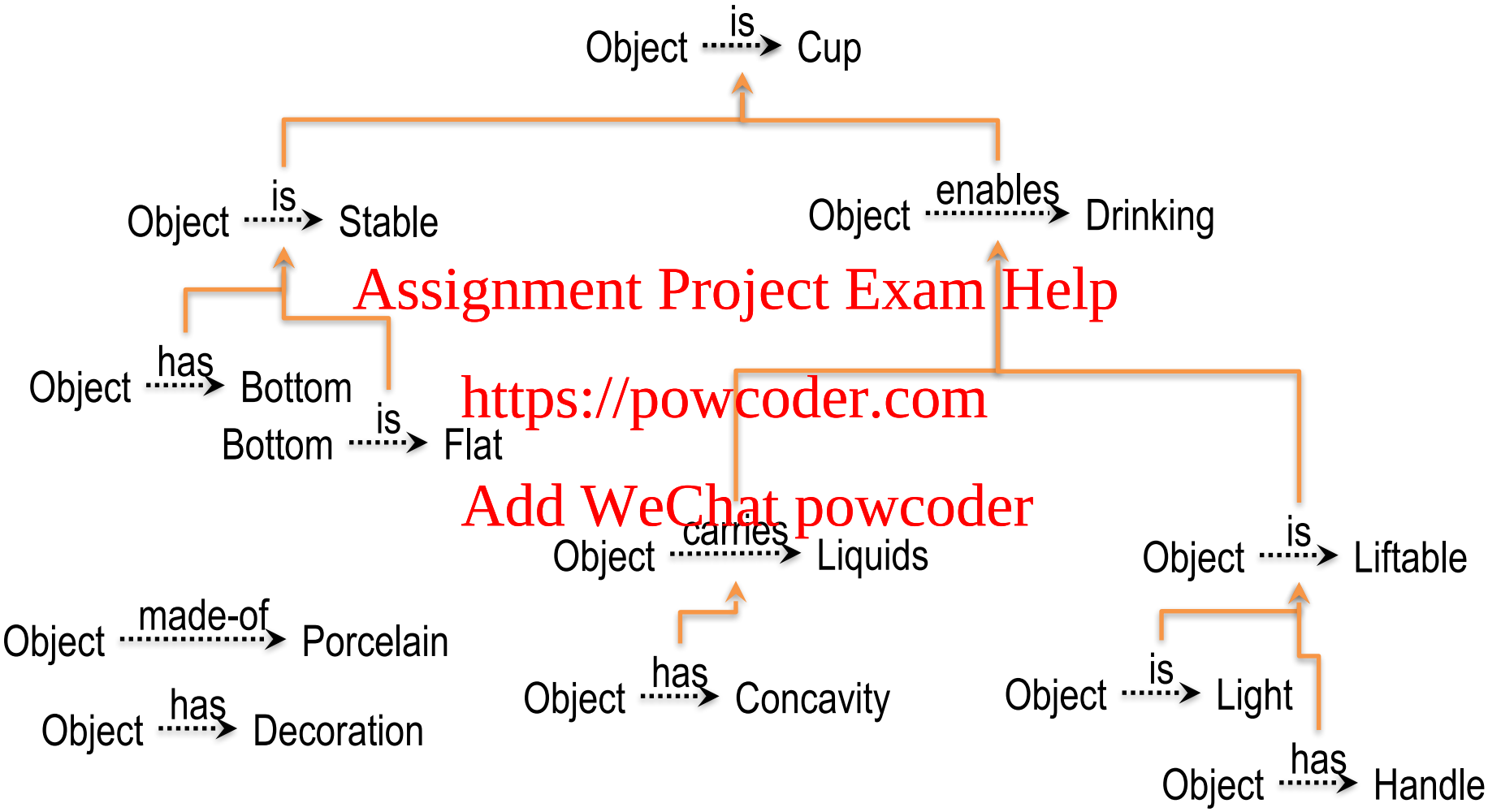
Δ = 1

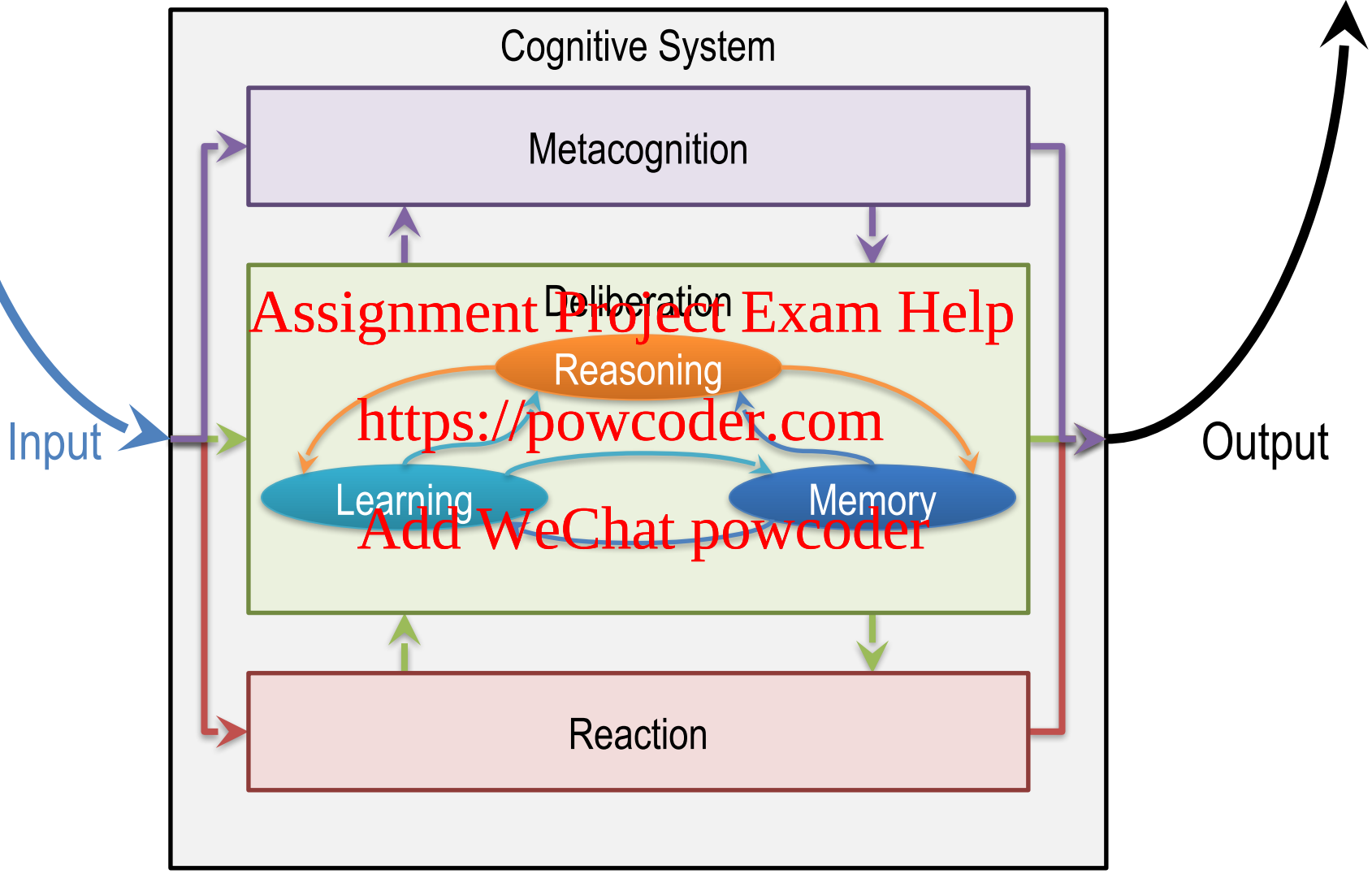
Goal State

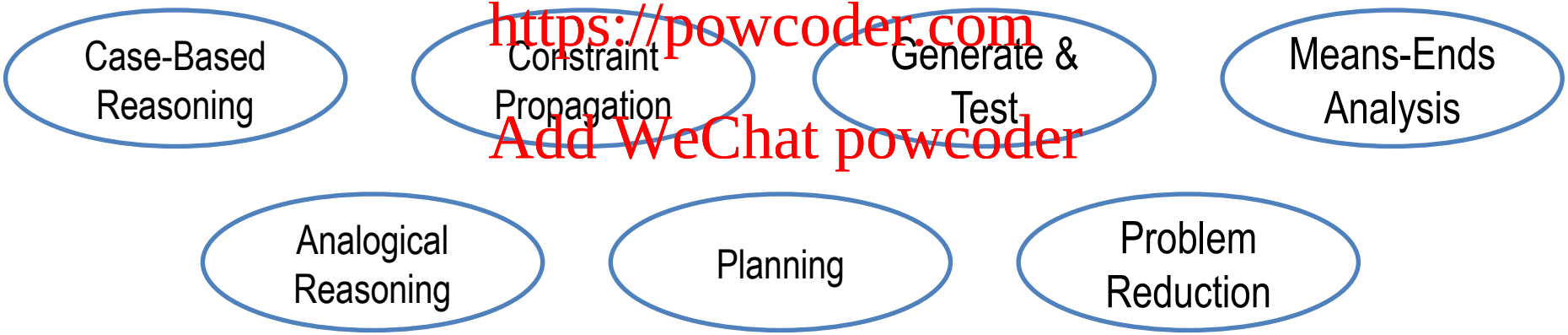


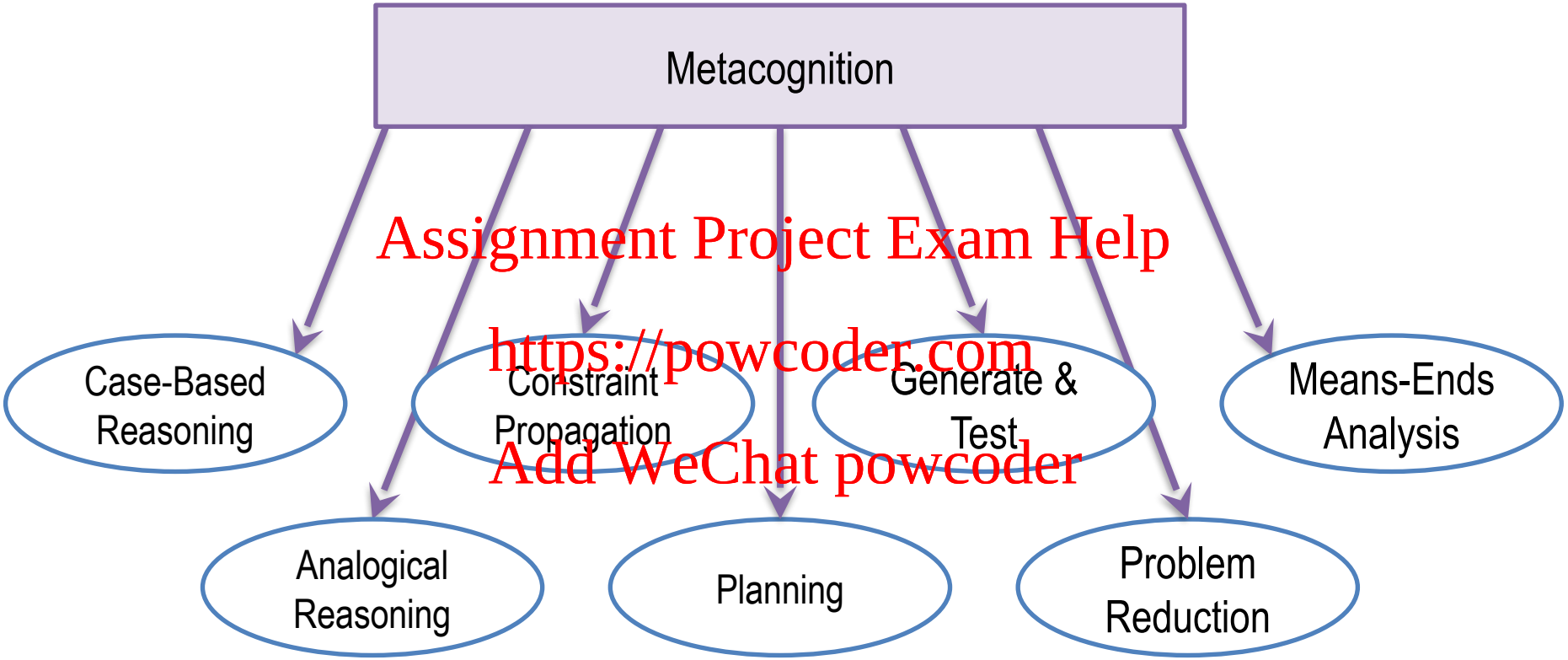
A on B
B on C
C on D
D on Table

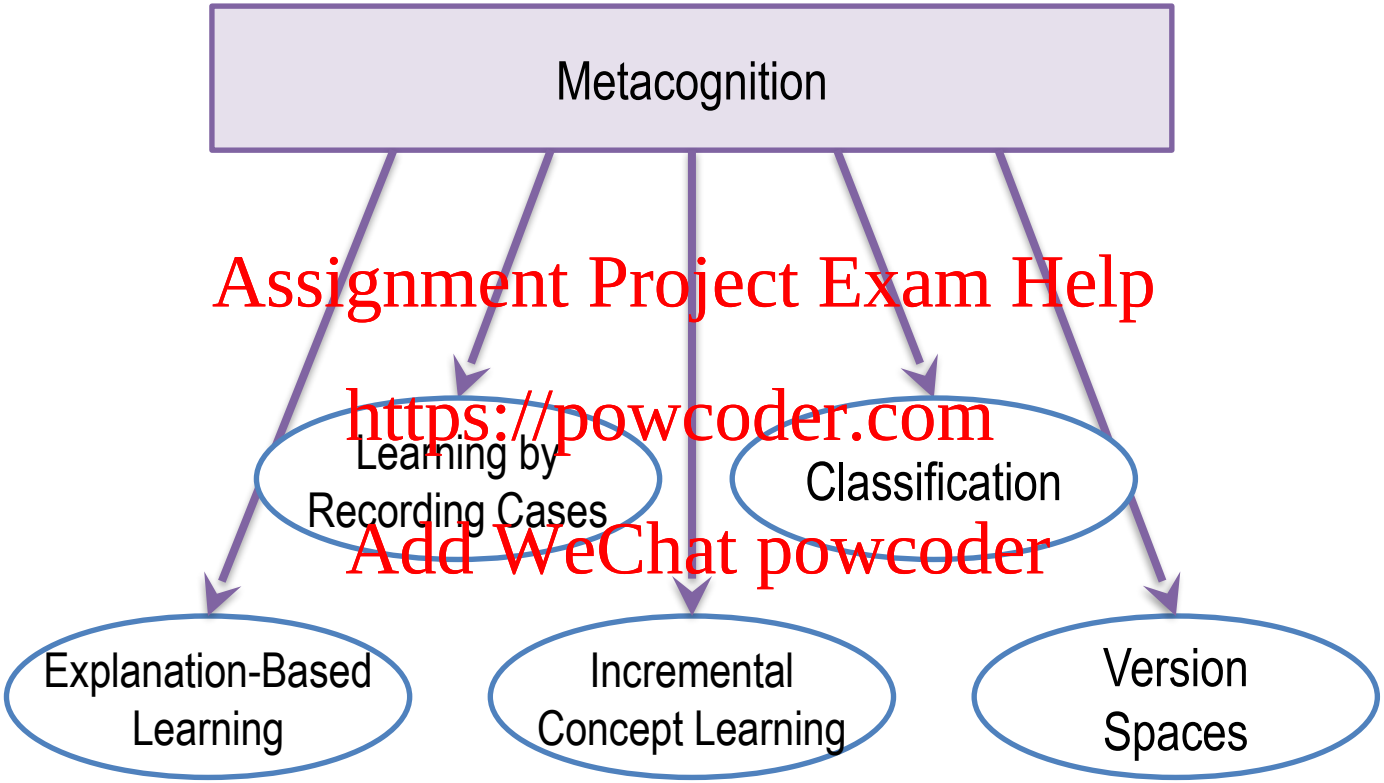


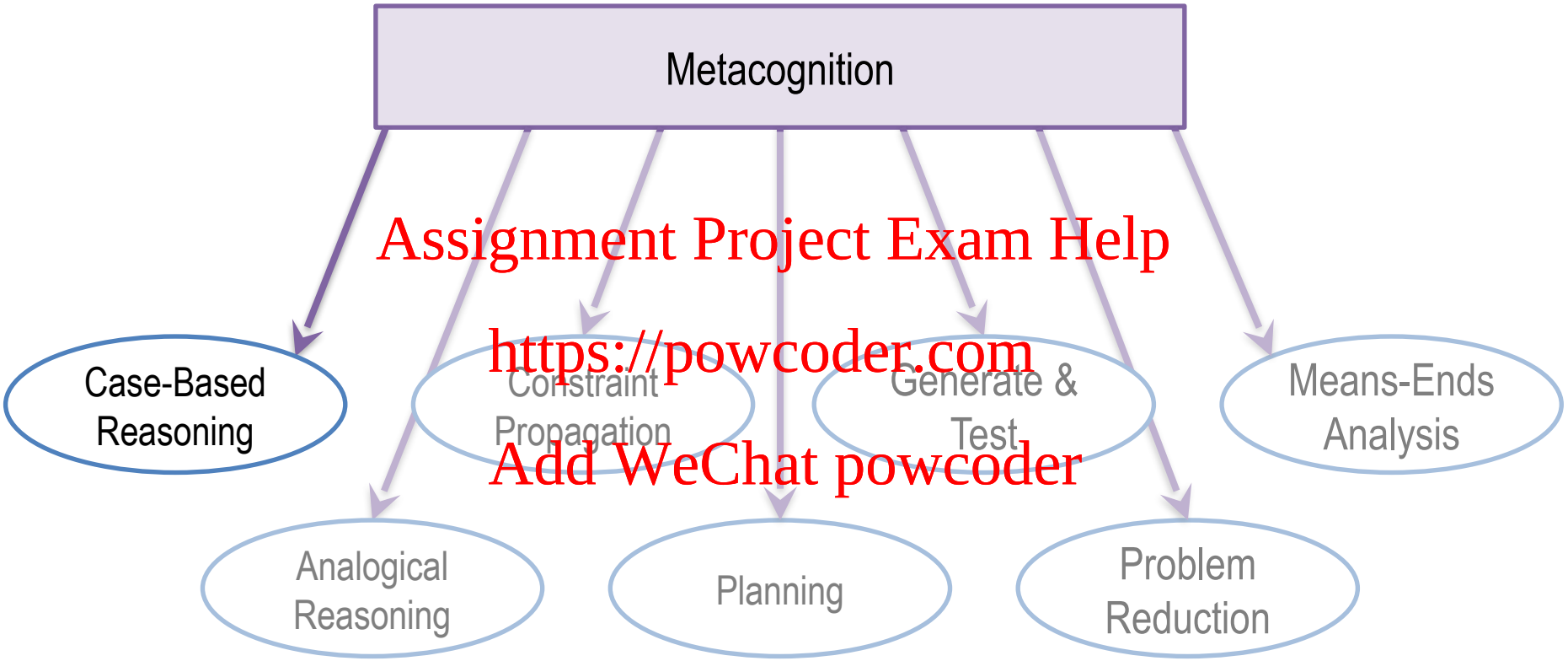


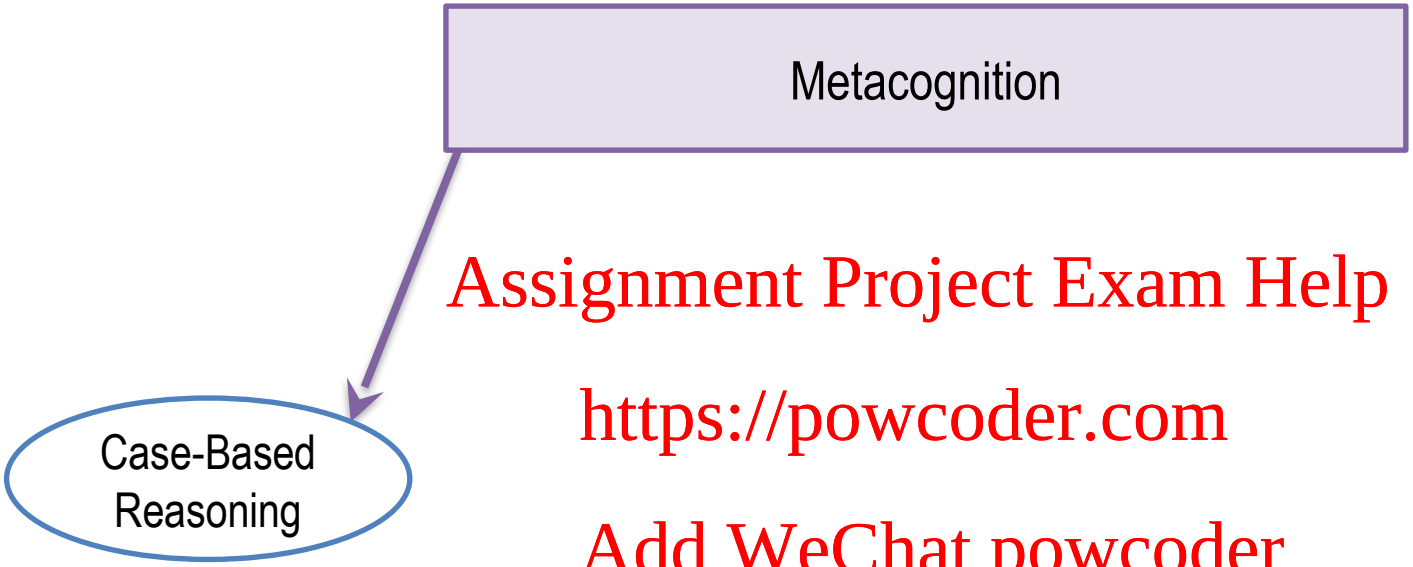


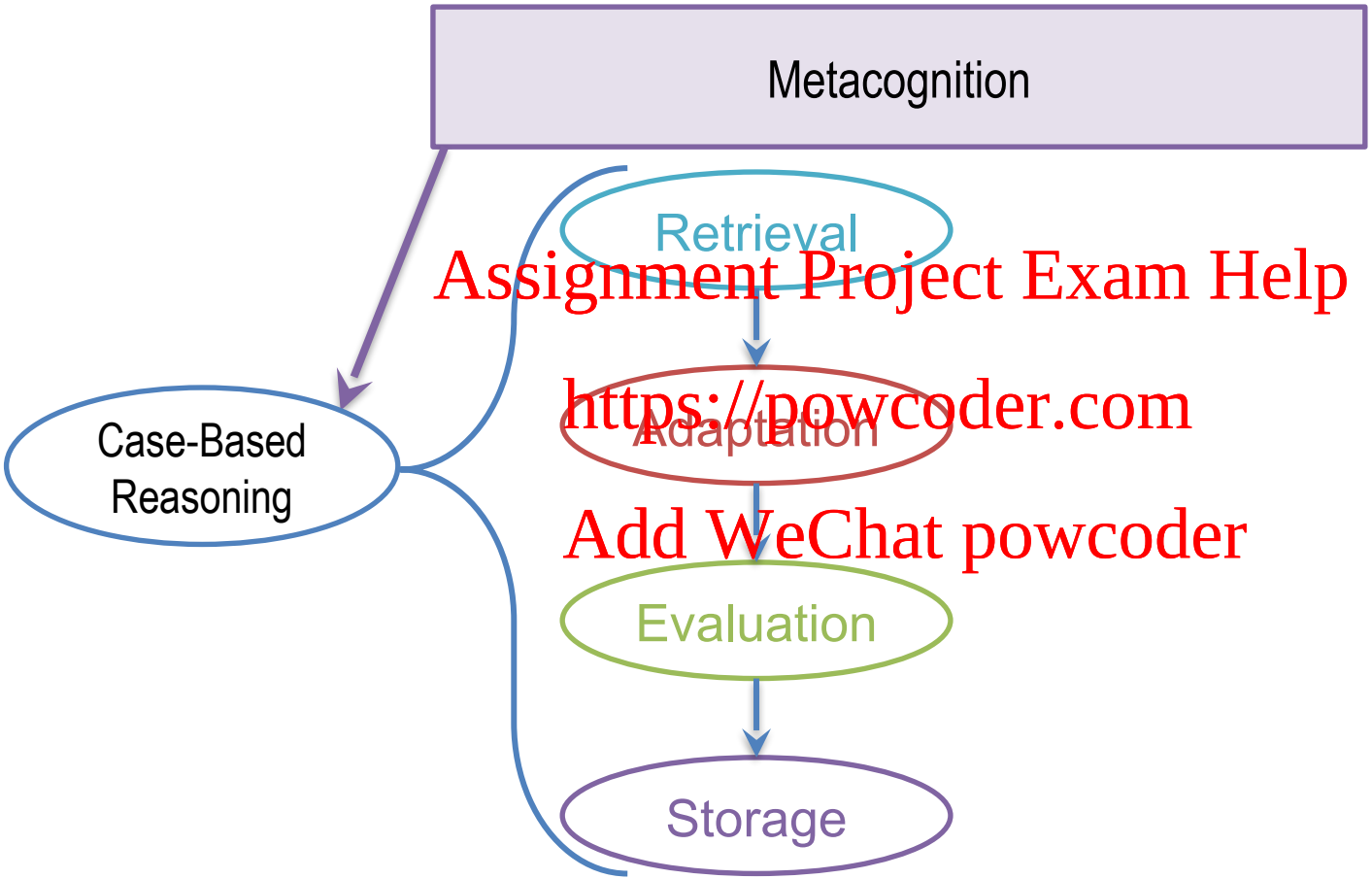


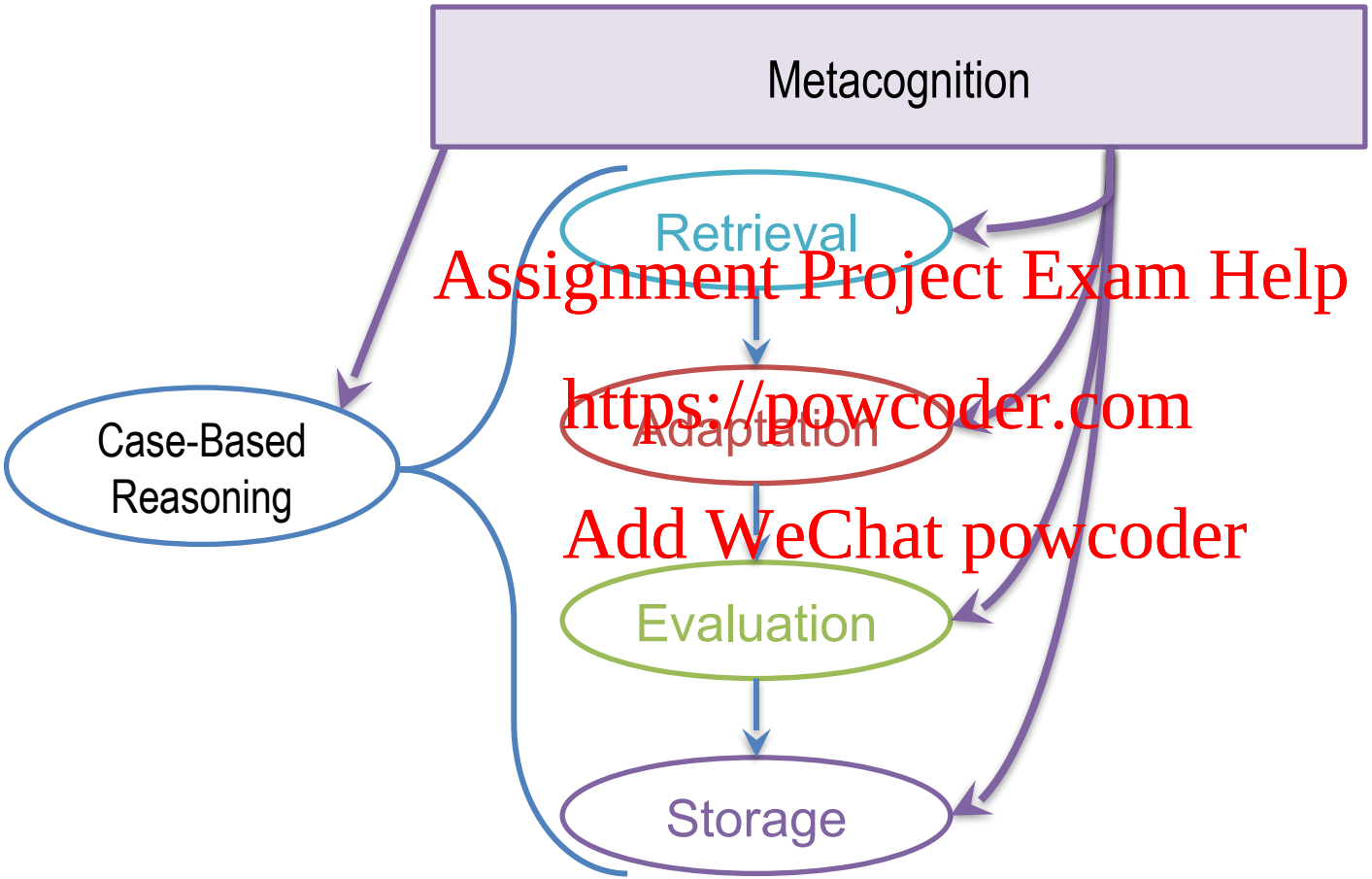


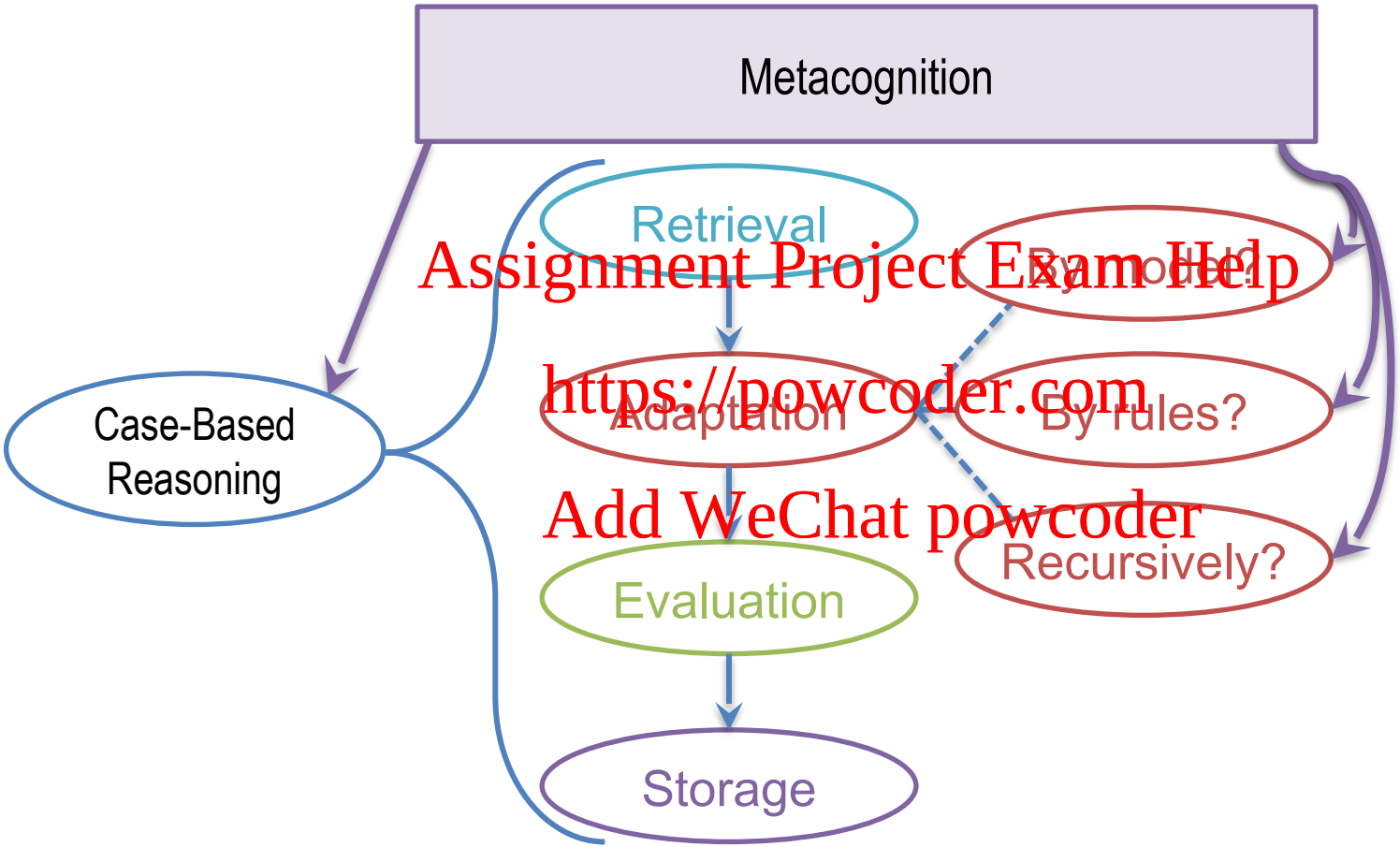


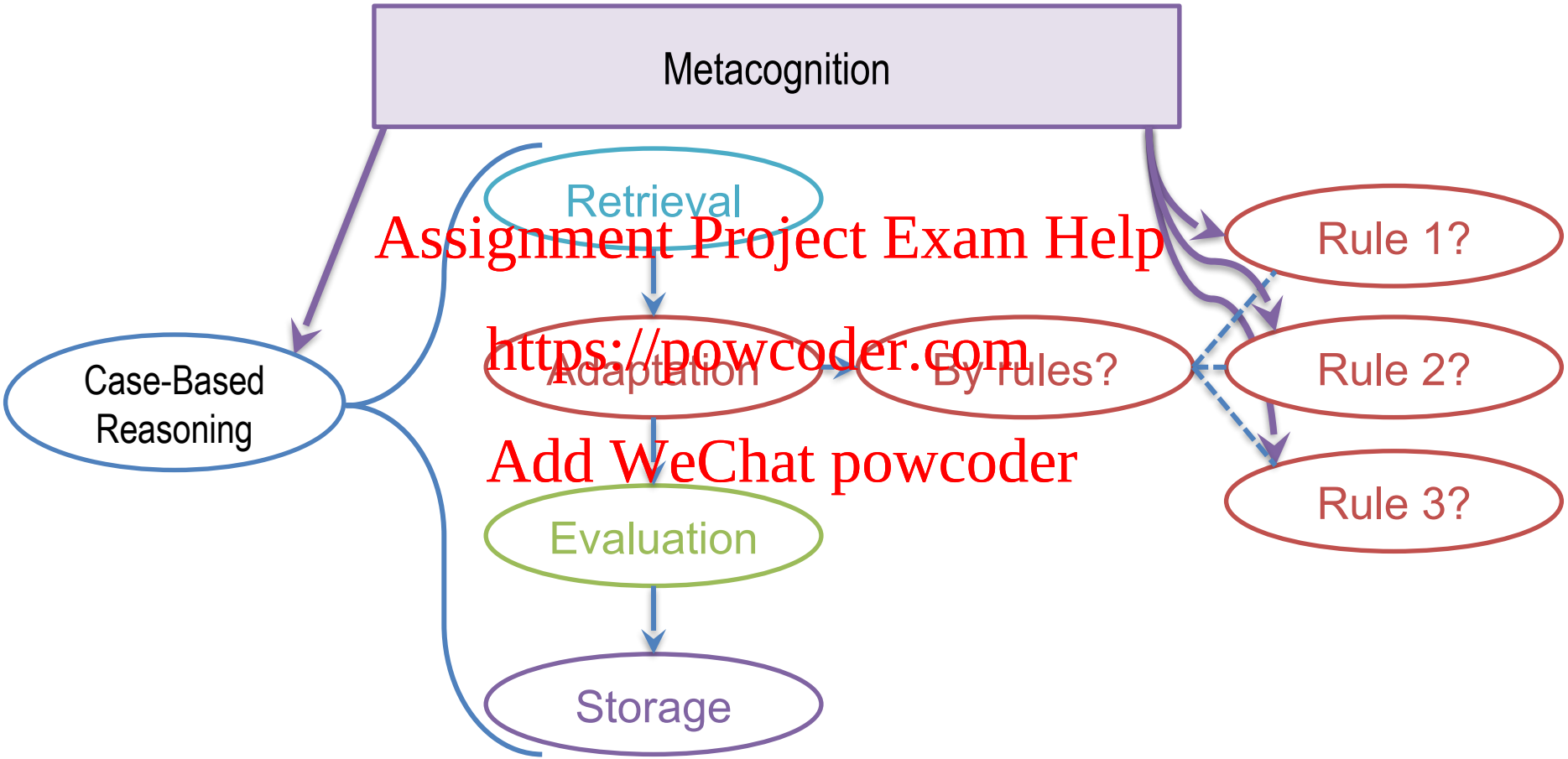


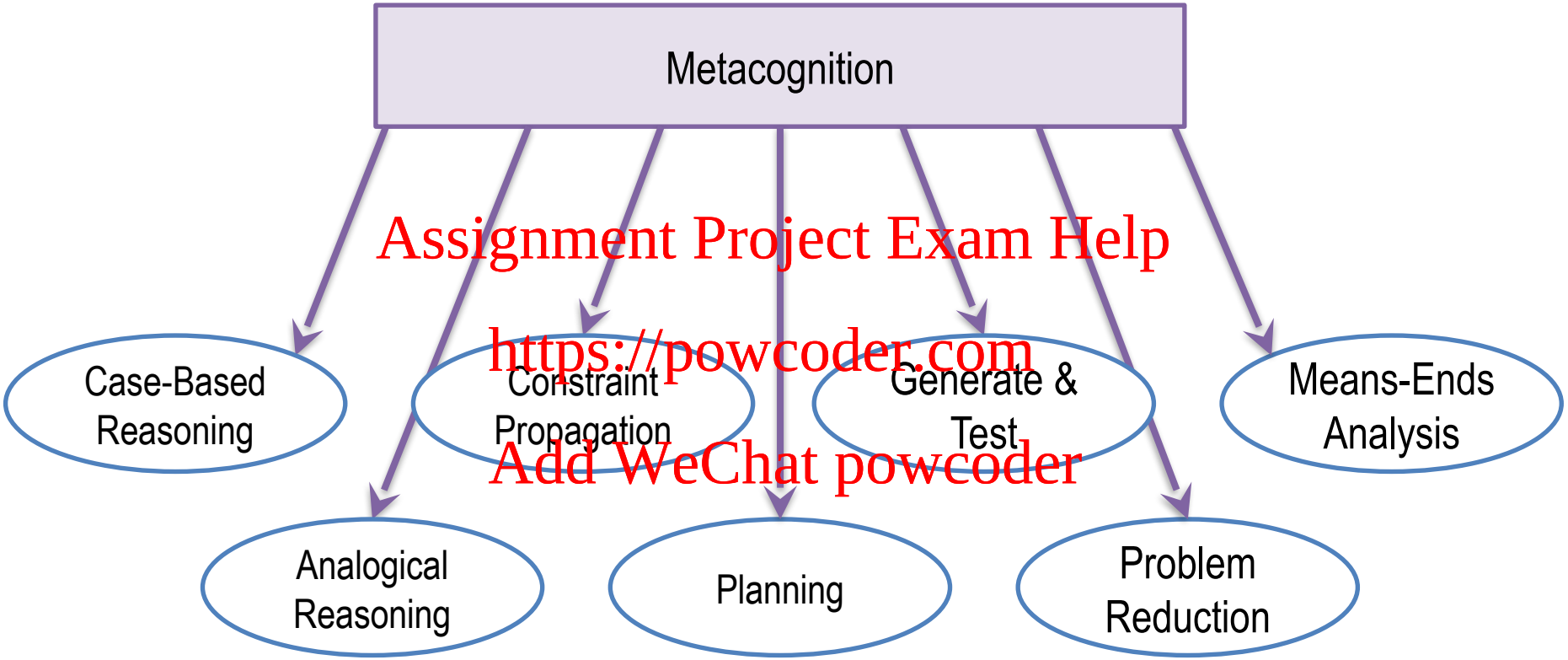


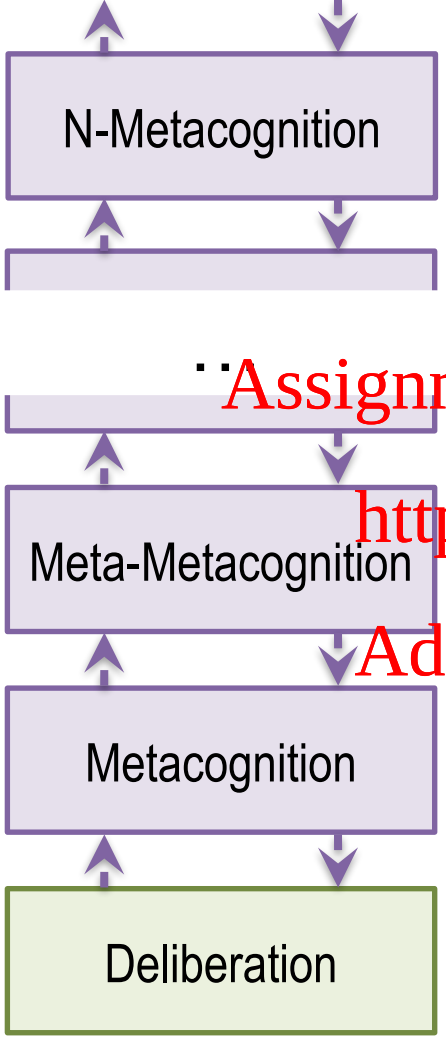












Is this a good way to think about levels of metacognition?

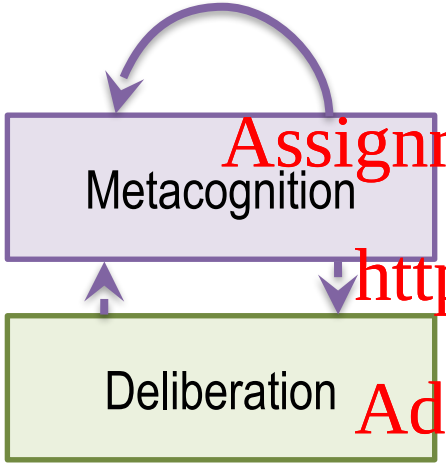
o Yes, because it is possible to think about every successive level.

o No, because there is a maximum level of metacognition possible.

o No, because each level of metacognition is conceptually identical, so they are better represented as self-referential.

o No, because there is no need to distinguish between metacognition and deliberation.

Is this a good way to think about levels of metacognition?

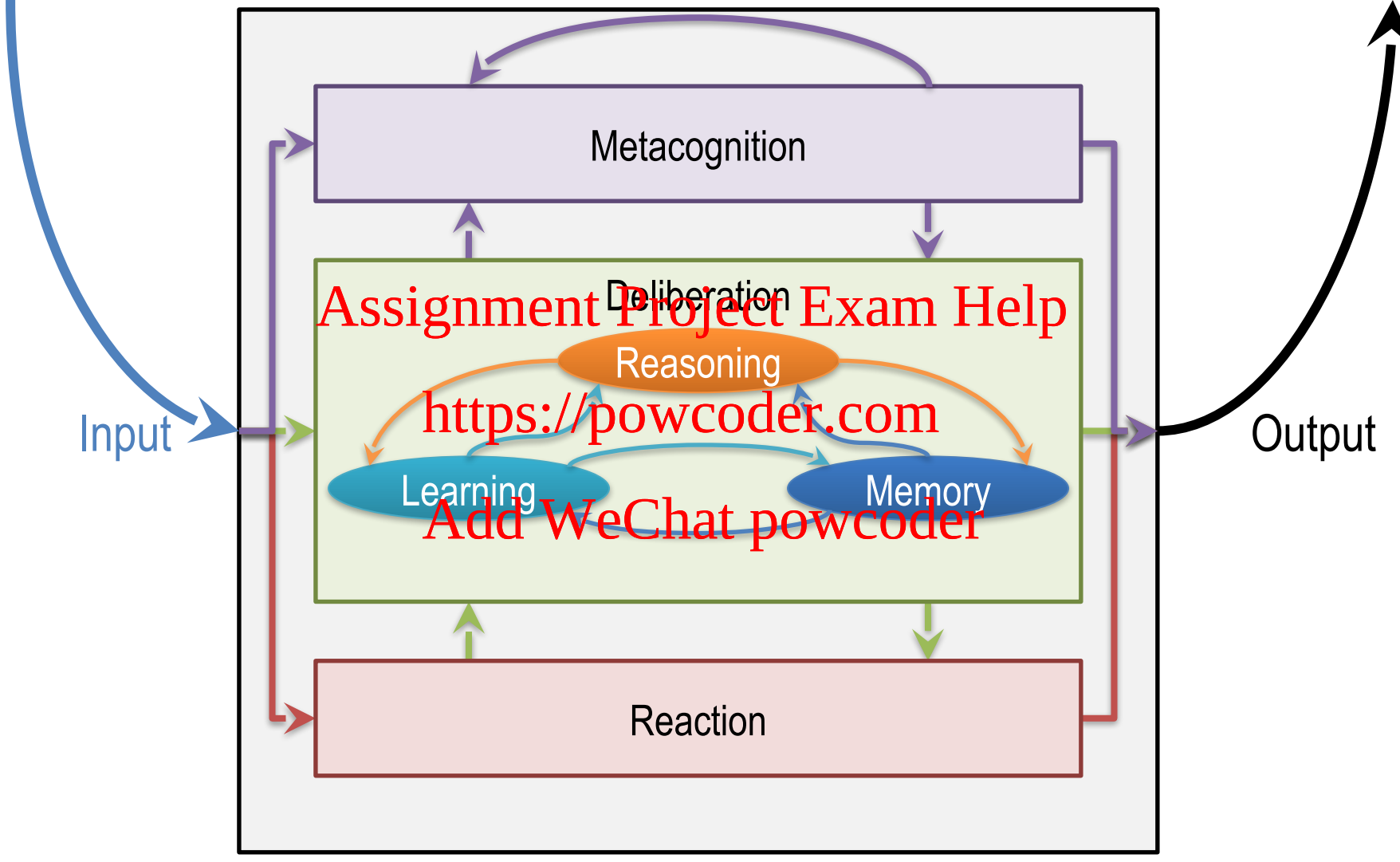


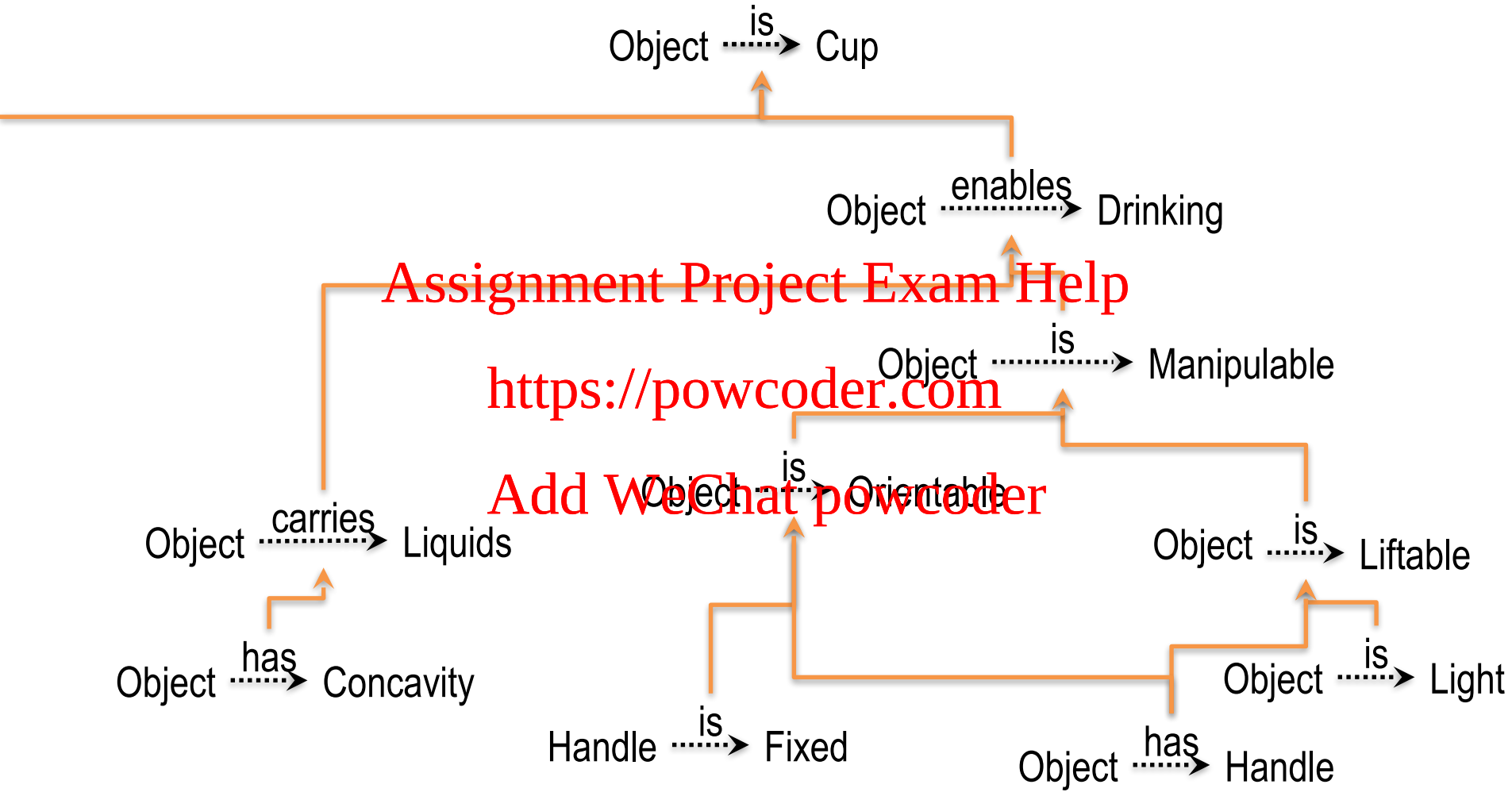
o Yes, because it is possible to think about every successive level.

o No, because there is a maximum level of metacognition possible.

o No, because each level of metacognition is conceptually identical, so they are better represented as self-referential.

o No, because there is no need to distinguish between metacognition and deliberation.





Goal: Painted(Ladder)

On(Robot, Floor) ∧
Dry(Ladder) ∧ Dry(Ceiling)

paint-ladder

On(Robot, Floor) ∧
¬Dry(Ladder) ∧ Dry(Ceiling)
∧ Painted(Ladder)

climb-ladder:
Precondition:
On(Robot, Floor)
∧
Dry(Ladder)

Postcondition:
On(Robot, Ladder)

Goal: Painted(Ceiling)

On(Robot, Floor) ∧
Dry(Ladder) ∧ Dry(Ceiling)

climb-ladder

On(Robot, Ladder) ∧
Dry(Ladder) ∧ Dry(Ceiling)

paint-ceiling

On(Robot, Ladder) ∧
Dry(Ladder) ∧ ¬Dry(Ceiling)
∧ Painted(Ceiling)

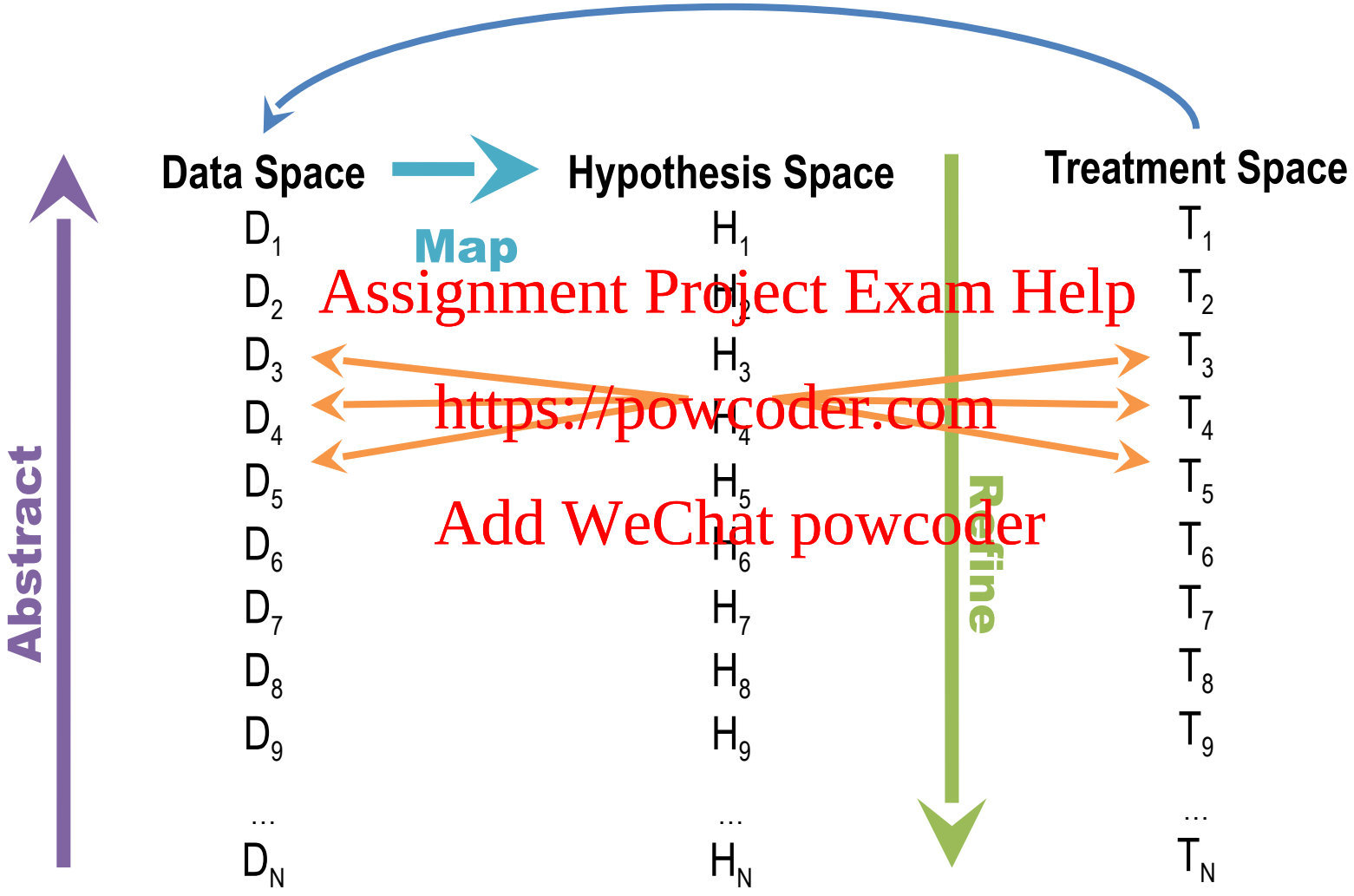
```
inning : 5th
portion : bottom
game : 131
weather : windy
runners : 1st, 3rd
outs : 1
batter : Pierzynski
average : .283
bats : left-handed
score : 1-4
goal : pitch
pitch : throw-fast-ball
result : homerun
```


(r8) If two operators selected and one has an episode with **result** *homerun*

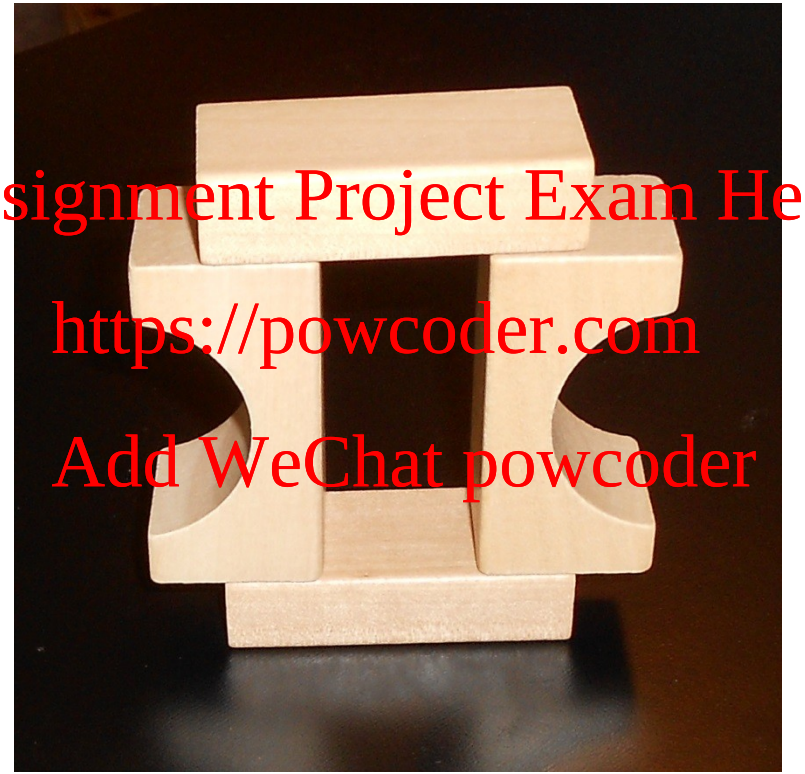
then prefer other operator

“chunking”

Version Spaces



Is this a foo?



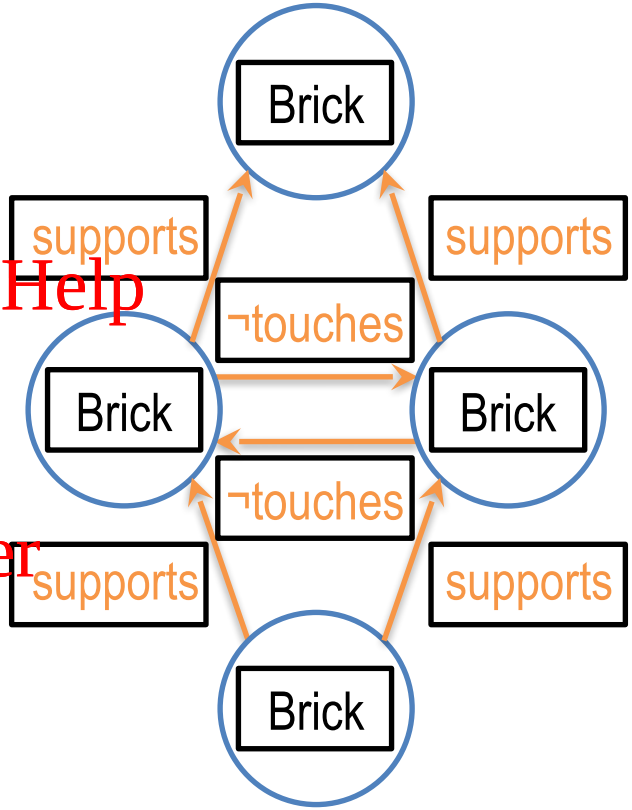
o Yes

o No

This is not a foo.

Modify the concept on the right to specialize based on this example.

Current Concept



Assignment

How would you use meta-reasoning to design an agent that could answer Raven's progressive matrices?

To recap…

- Resolving mistakes and gaps
- Strategy selection and integration
- Meta-meta-reasoning?
- Goal-based autonomy