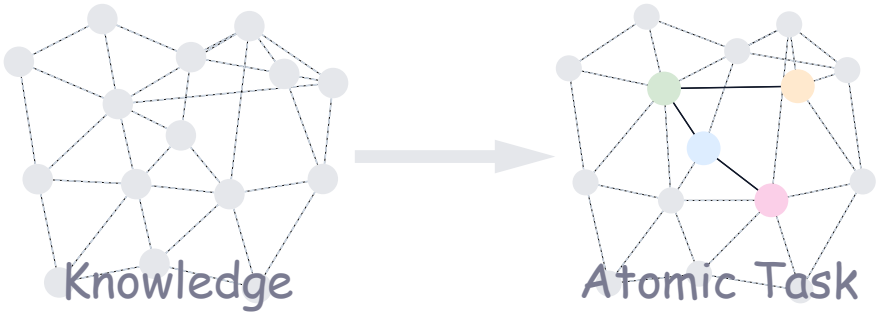
Step 1: Path Generation

Logical Causal Path (Atomic Tasks)



Knowledge Nodes

Atomic Task Selection

$$P = \{e_1 \xrightarrow{r_1} e_2 \cdots \xrightarrow{r_n} e_{n+1}\}$$

Step 2: Tool Grounding

Attribute-Based App Mapping

r_1: Entity Attribute

"Media"

Candidate App

Spotify

Step 3: Narrative Injection & Cognitive Simulation

A. Sequence Shuffling & Noise

Introduces non-linear ordering and irrelevant noise to test Dependency Resolution.

B. Contextual Parameter Resolution

Replaces explicit constants with references to test State Persistence.