# CS7637: Knowledge-Based AI: HomeWork1

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## 1 SEMANTIC NETWORKS WITH THE RING

### 1.1 Semantic network 2 States

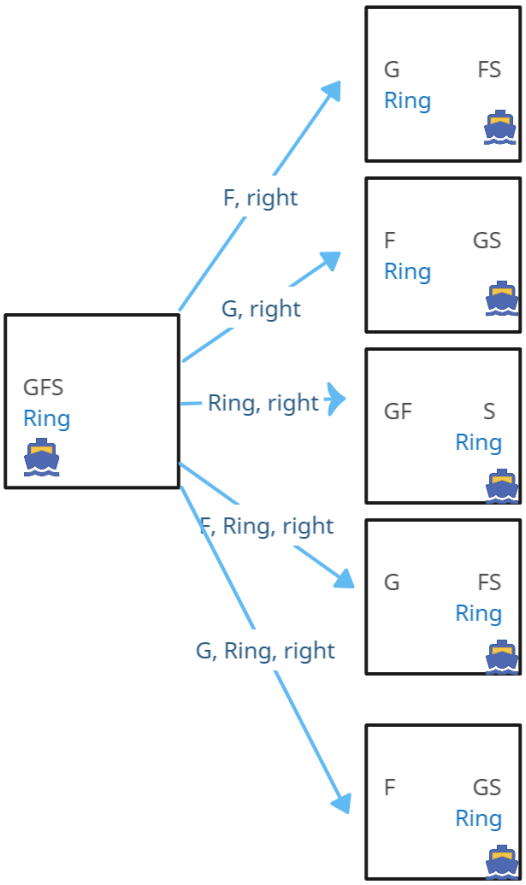


***Figure 1*** — 2 states

In above 2-state semantic network, the characters Frodo, Sam, and Gollum are denoted by their initials: F, S, and G respectively. Since Sam is the only one capable of steering the raft, we omit the letter S in transitions. The network showcases the problem's initial state and the subsequent state, displaying all possible outcomes for F after transitions. The details of transitions are indicated on the arrows. Currently, the generator might permit S to move with either F or G when they have the Ring.

## 1.2 Apply Generate & Test

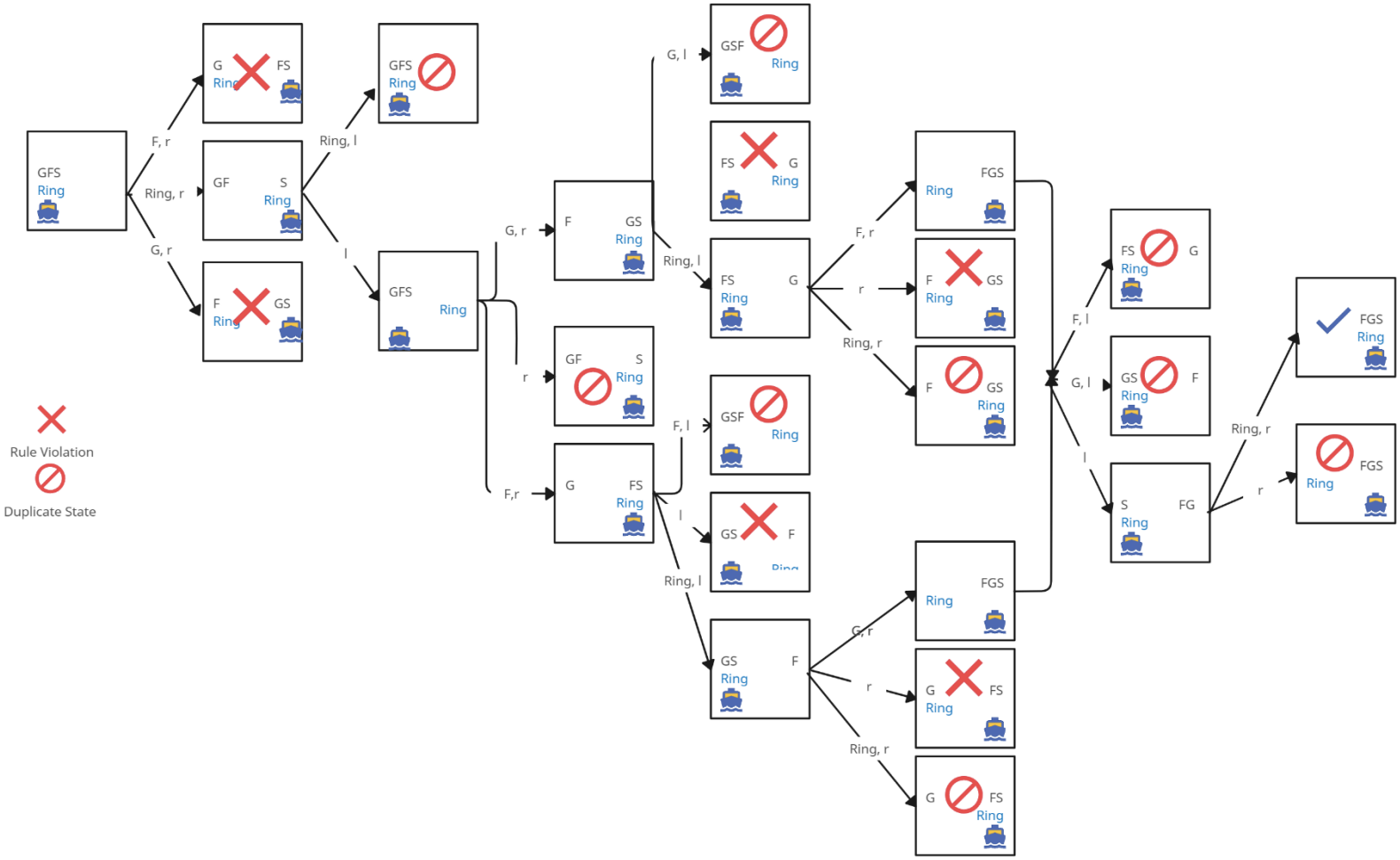


*Figure 2* — entire semantic network

Figure 2 reveals the complete network. The generator has been enhanced to make only valid moves, so it no longer allows simultaneous movement of either G or F with the ring. States marked with a red cross and red circle cross are invalidated by the tester for two reasons: I) The Ring is left unaccompanied with either Gollum or Frodo, or II) The state has been encountered before. All such states are ruled out by the tester before the generator progresses to deeper levels. The eventual solution consists of P transitions, such as:

(Ring, right),

(left),

(F, right),

(Ring, left),

(F, right),

(left),

(Ring, right)