

Subgame perfection

- A *subgame* Γ' of an extensive form game Γ is a subset of Γ which
 1. Begins at a decision node x'_0 , and contains this node, all of its successors, and no other nodes.
 2. Does not tear information sets: if $x \in \Gamma'$, $x \in h$, and $y \in h$, then $y \in \Gamma'$
- Strategy profile σ is a **subgame perfect equilibrium** of Γ (Selten, 1965) if it induces a Nash equilibrium in every subgame of Γ .
- Say that extensive form game Γ has *perfect information* if every one of its information sets is a singleton.
- **Theorem** (Zermelo's theorem) Every finite game of perfect information has a pure strategy subgame perfect equilibrium. If no player has the same payoffs at any two terminal nodes (and there are no moves by nature), there is a unique subgame perfect equilibrium.