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AI HW 7

**12.1**

**Predicates**:

Player(p)

Slots(c)

Symbol(m)

SymbolOf(p) - players have symbols

Win(c1, c2, c3) - winning positions c1,c2,c3

Opponent(p) - players have opponents

**Constants**:

Xp, Op - Players

X, O, blank - Symbols

C11, C12, … , C33 - Slots

S0 - Situation

**State**:

Turn(s) - situation s where it’s a player’s turn

Marked(c, s) - slot c has mark at situation s

Won(p, s) - situation where player has won

**Action**:

Mark(p, c) - player can mark slot c

**Axioms**:

SymbolOf(Xp) = X

SymbolOf(Op) = O

Opponent(Xp) = Op

Opponent(Op) = Xp

∀p Player(p) => (p = Xp) ⋁ (p = Op)

∀m Symbol(m) => (m = X) ⋁ (m = O) ⋁ (m = blank)

∀c Slots(c) => (c = C11) ⋁ (c = C12) ⋁ … ⋁ (c = C33)

∀c1,c2,c3 Win(c1,c2,c3) => [(c1 = C11) ⋀ (c2 = C12) ⋀ (c3 = C13)] … define all other win states

**12.2** - If the homework is still open on Saturday, I will finish this and turn it in then if it will be worth anything. I didn’t get the time to finish it due to overestimating my available time. Sorry about that.