Concordia University

Engineering and
Computer Science

SOEN 6011
Software Engineering Processes
Summer 2016 / AA

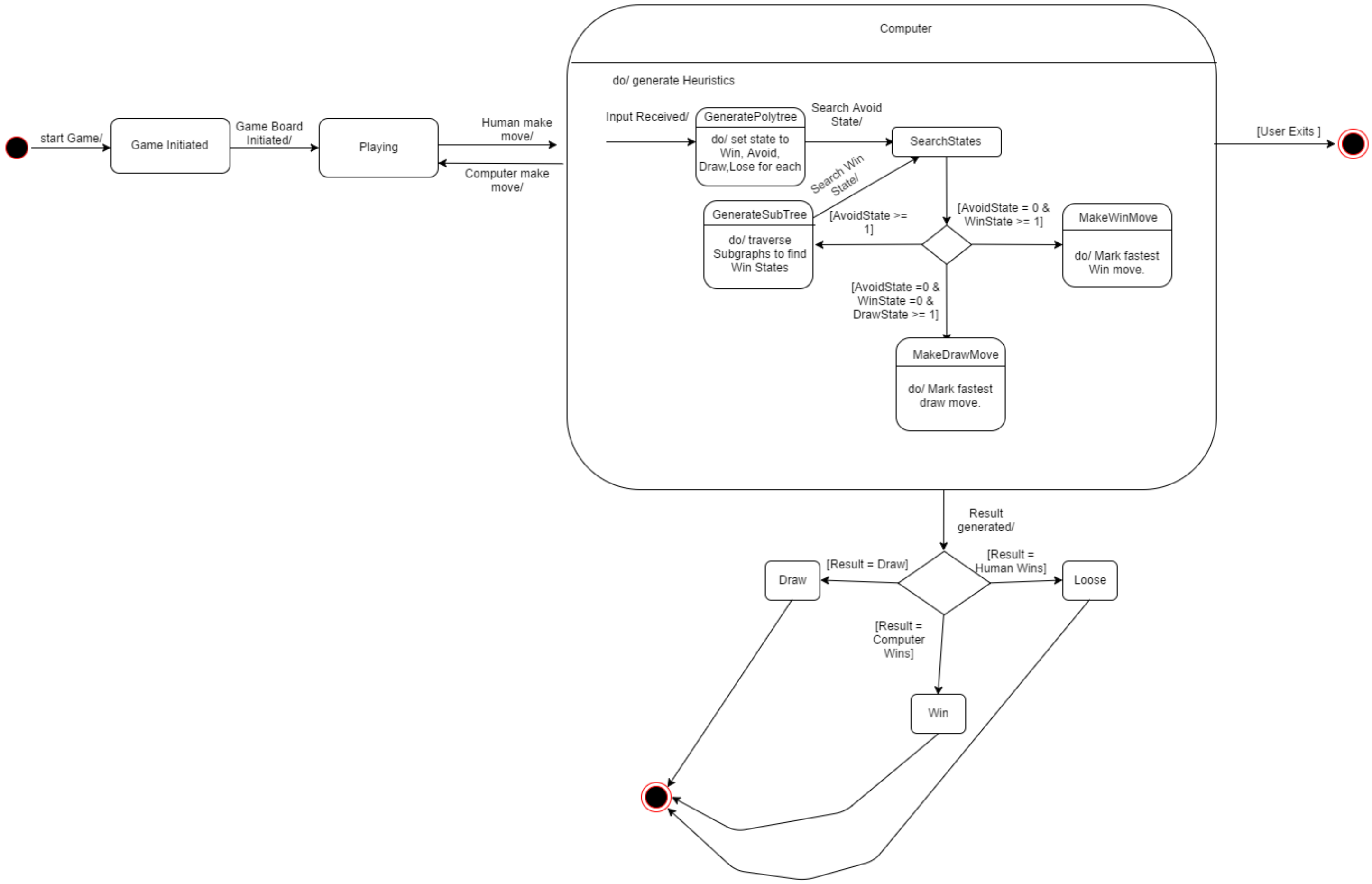
‘

ZeroX Game

Assignment 5: State Machine Diagram

Submitted To: Nicolangelo Piccirilli
Dittimi Tamarafinide

ZeroX Game: State Machine Diagram for Heuristics



The initial state of the machine is **Game Initiated** when a start game event is generated. After the initiation of game board the next state is **Playing.**

The state changes from Playing to **AI Heuristic** when a human player marks his turn. This event leads to generation of heuristics depending upon the human player input.

Within the **AI Heuristics** state, we have a sub state diagram explaining the transition of states for the Heuristic calculation.

The AI Heuristic sub-state diagram is as discussed:

- Computer moves to **Generate Polytree** state within which each state can be assumed to be Win, Avoid, Draw or Loose state.
- From **Generate Polytree,** transition is done to **SearchStates** to search for avoid states.
- If another avoid state is found then, **GenerateSubTree** state is active.
- From **GenerateSubTree,** transition is done to **SearchState** to find Win states.
- From SearchState, transiton can be done to **MakeWinMove** if WinStates are found and **MakeDrawMove** if no win or avoid state is found.

During a game, and only with the purpose of design an algorithm, the board could have 4 distinguishable states, from the point of view of the computer (i.e. these are not different states)

1. **Playing**, when there are movements available to do.
2. **Win**, when the computer win the game.
3. **Draw**, when no more moves are left, and there no winner or loser.
4. **Lose**, when the Human wins the game.

The game exists when a user abruptly exits the game or when a result is achieved.