Classification of Games for Computer Science Education

Peter Drake
Lewis & Clark College
Overview

* Major Categories
* Issues in the CS Classroom
* Resources
Major Categories

- Classical Abstract Games
- Children’s Games
- Family Games
- Simulation Games
- Eurogames (“German Games”)
Classical Abstract Games

* Simple rules
* Often deep strategy
* Backgammon, Bridge, Checkers, Chess, Go, Hex, Mancala, Nine Men’s Morris, Tic-Tac-Toe
Children’s Games

- Simple rules
- Decisions are easy and rare
- Candyland, Cootie, Go Fish, Snakes and Ladders, War
Family Games

- Moderately complex rules
- Often a high luck factor
- Battleship, Careers, Clue, Game of Life, Risk, Scrabble, Sorry, Monopoly, Trivial Pursuit, Yahtzee
Simulation Games

- Extremely complex rules
- Theme is usually war or sports
- Blood Bowl, Panzer Blitz, Star Fleet Battles, Strat-o-Matic Baseball, Twilight Imperium, Wizard Kings
Eurogames ("German Games")

- Complexity comparable to family games
- Somewhat deeper strategy
- Carcassonne, El Grande, Puerto Rico, Ra, Samurai, Settlers of Catan, Ticket to Ride
Issues in the CS Classroom

* Game mechanics
* Programming issues
* Cultural and thematic issues
* Games for particular topics
Game Mechanics

- Time to play
- Number of players
- Number of piece types
- Board morphology
- Determinism
Programming Issues

- Detecting or enumerating legal moves
- Hidden information
- Artificially intelligent opponent
- Testing
- Proprietary games
Cultural and Thematic Issues

* Students may be engaged by games from their own culture
* Theme may attract or repel various students
* Religious objections
* A small number of students just don’t like games
Games for Particular Topics

- Quantitative reasoning: play some games!
- Stacks and queues: solitaire card games
- Sets: word games
- Graphs: complicated boards
- OOP: dice, cards, simulations
- Networking: hidden information, multiplayer games
- AI: classical abstract games
Resources

- http://www.boardgamegeek.com
- http://www.funagain.com