How to Solve Cribbage

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Can I play Cribbage?

- How to play the game
- What's important
- The approach taken
- Preliminary results

Who knows how to play cribbage?

- First player to 121 points wins.
- Play divided into hands.
- Score of hand = score of play + score from hands

The choice points are critical!

- Suit doesn't matter during the play.
- The play has $4! = 24$ possible choices.
- Suit does matter during the count.

Approach taken: the theoretical level

- Guess policy and prove correctness.
- Policy is assumed to not include randomization.
- phenotypes (cards without suit)

Approach taken: the implementation level

- using Ocaml (+/-)
- Abuse the RAM: Cache every computation you can.
- Direct index of combinations
- Play policy - room for cool work here.

Preliminary Results

Portions are coded up and tested.

- Choice of optimal hand subset = multiyear computation.
  - inner loop in C might imply x10 speed
  - Parallelizable, but requires much RAM.
- Choice of play-policy iteration = O(days)
- 1-suit deck does not converge.
- Hand subset not considering play does converge.