

Playing Eleusis

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(slides by Lena Kurzen)

August 17th, 2012
ESSLI Student Session

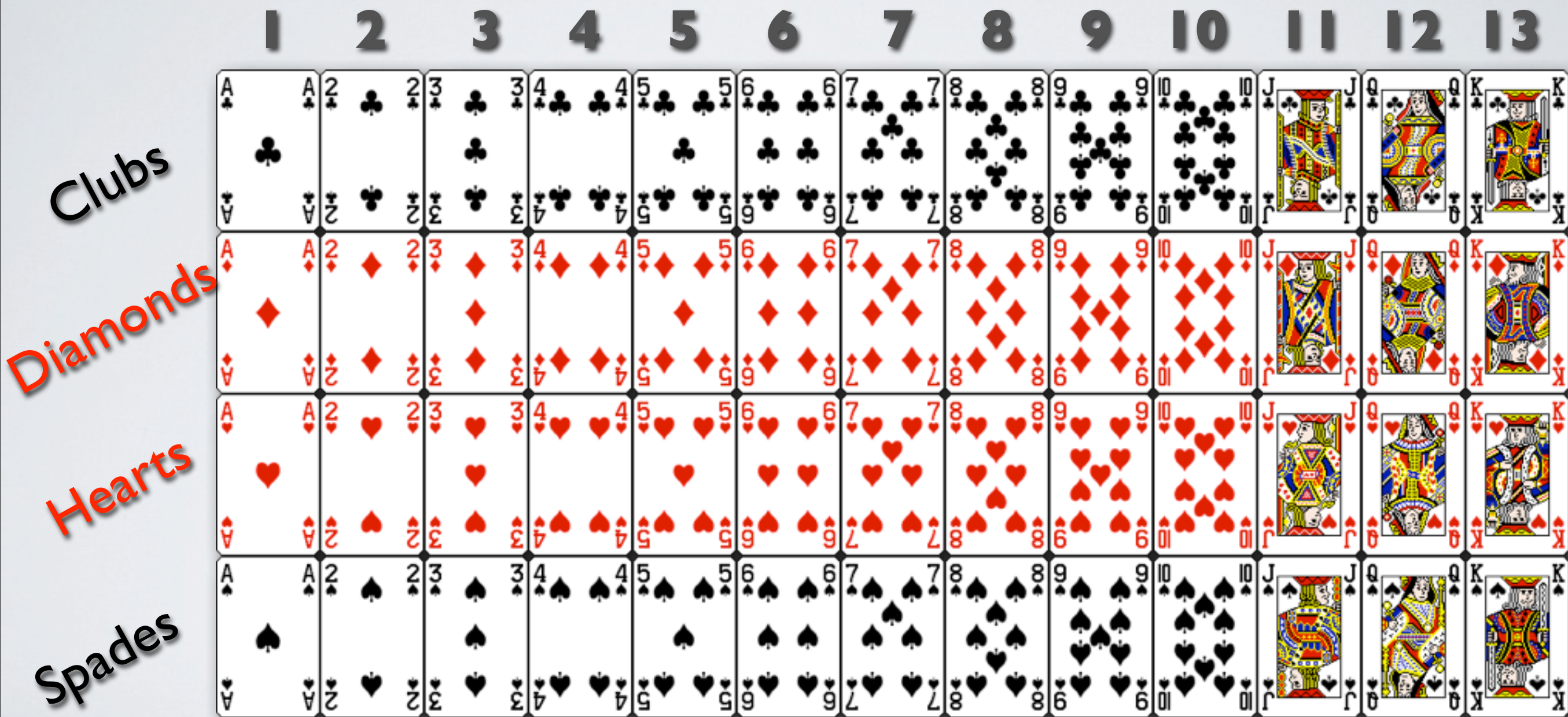
ELEUSIS

- Inductive inference game for four and more players, invented by Robert Abbott in 1956.

M. Gardner. On playing New Eleusis, the game that simulates the search for truth. Scientific American, 237:18–25, 1977.

J. Golden. Eleusis Express. <http://www.logicmazes.com/games/eleusis/express.html>.

ELEUSIS: A CARD GAME





ELEUSIS: THE RULES I



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- Player I gets the role of “God” or “Nature” and has to come up with a secret rule about which sequences of cards are accepted.



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- Rules about the rule: It can only take into account previously accepted cards (i.e. “*Every black card has to be followed by a card with a face.*” is OK, but “*accept all and only the cards played by male players*” isn’t).



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 - Rules about the rule: It can only take into account previously accepted cards (i.e. “*Every black card has to be followed by a card with a face.*” is OK, but “*accept all and only the cards played by male players*” isn’t).
- The other players each get 14 cards and take turns in playing a card in the sequence and Player 1 says whether it is accepted/rejected.



ELEUSIS: THE RULES 2



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- If a player thinks any of his cards would be rejected, he can declare “no play”, and show his cards to everyone. If he was right, he gets a new hand of cards, 4 cards less than before. If he was wrong, Player 1 plays a correct card from his hand; and the player gets 5 additional cards.



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- If a player thinks he knows the rule, he can declare himself a *Prophet*, and he will take the role of Player 1.



ELEUSIS: THE RULES 3



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- If there is a prophet, Player 1 has to approve/disprove what the prophet does in each round. If the prophet makes a mistake he gets five cards as penalty, and returns back to normal play with his former hand of cards.



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- If there is a prophet, Player I has to approve/disprove what the prophet does in each round. If the prophet makes a mistake he gets five cards as penalty, and returns back to normal play with his former hand of cards.
- If a prophet correctly predicts the acceptance/rejection of 40 cards, a sudden death period is entered in which players are out of the game as soon as they play a card that is rejected.



ELEUSIS: THE RULES 3

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- If a prophet correctly predicts the acceptance/rejection of 40 cards, a sudden death period is entered in which players are out of the game as soon as they play a card that is rejected.
- The game ends if all non-prophet players got rid of all their cards or 'died' during the sudden death period.



ELEUSIS: THE RULES 4



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3. A prophet who survives until the end gets 1 point for each card he correctly accepted and 2 points for each correctly rejected card.

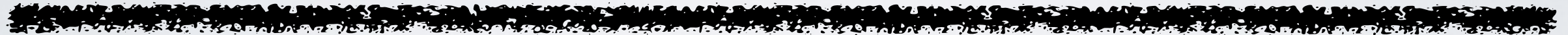


ELEUSIS: THE RULES 4

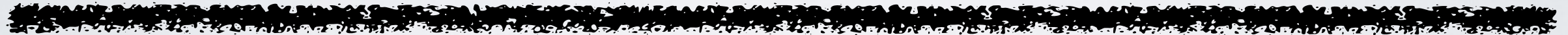
Scoring:

1. Everyone except Player 1 gets as many points as the largest number of cards held by any player minus the number of cards in his/her hand.
2. Anyone (except Player 1) with no cards at all gets a 4 point bonus.
3. A prophet who survives until the end gets 1 point for each card he correctly accepted and 2 points for each correctly rejected card. Player 1's score is the minimum of (a) the highest score of the other players and (b) twice the number of cards played before the successful prophet started being a prophet.

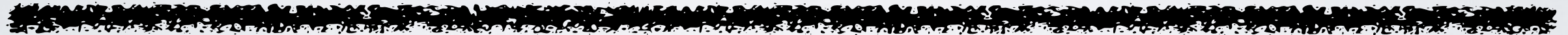
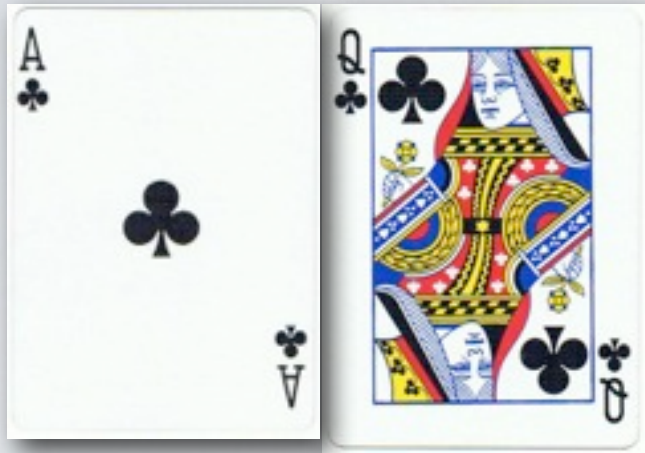
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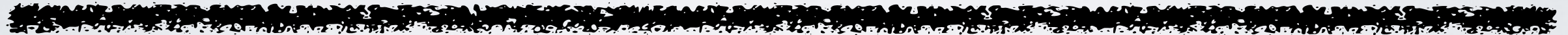
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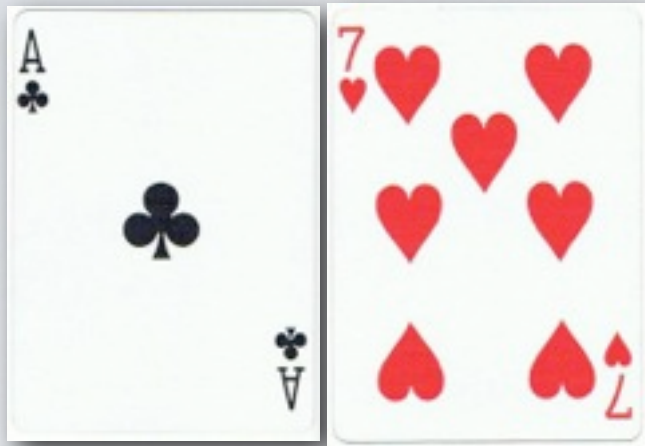
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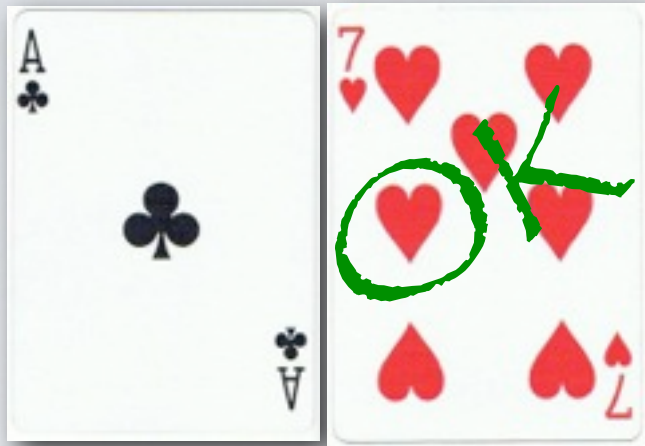
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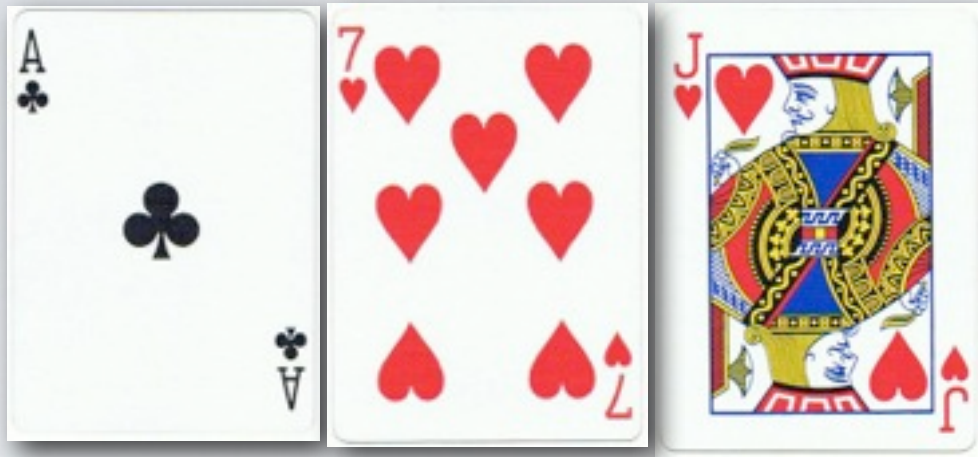
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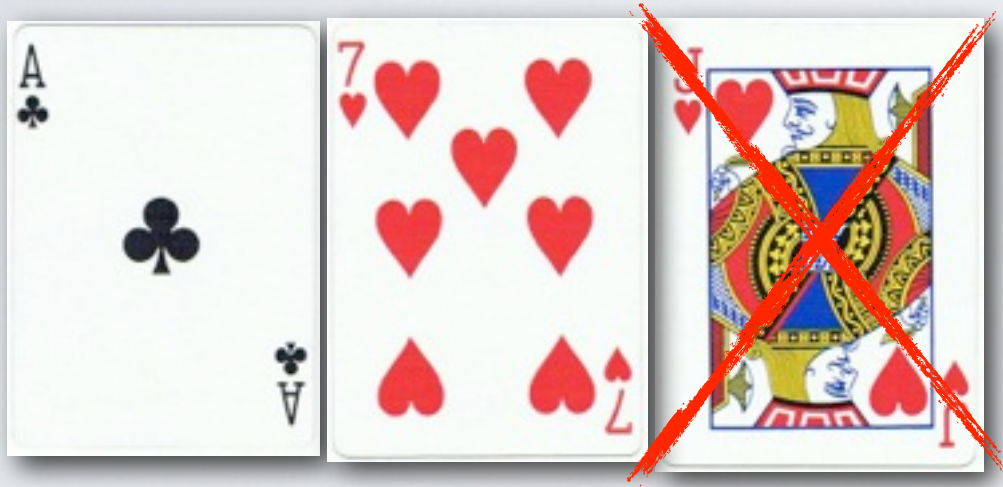
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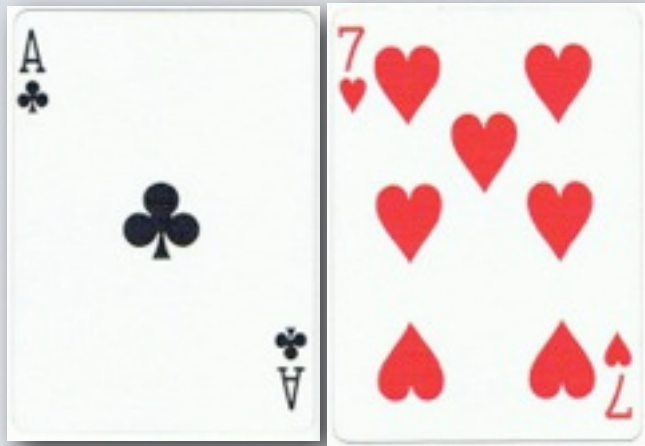
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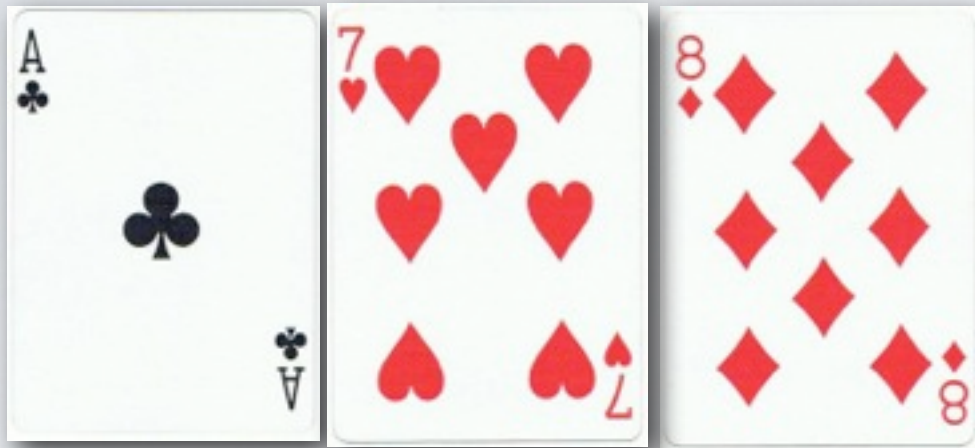
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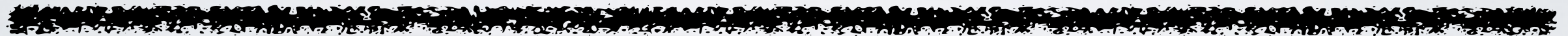
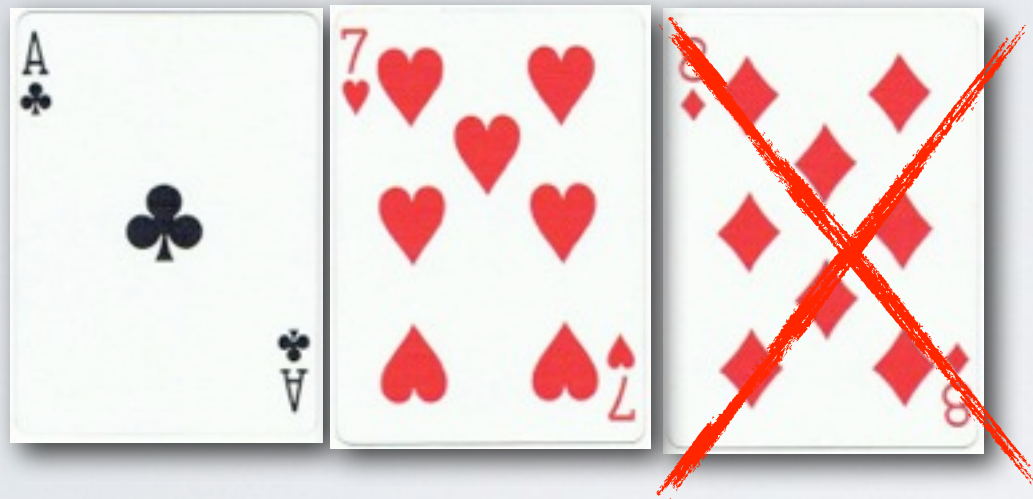
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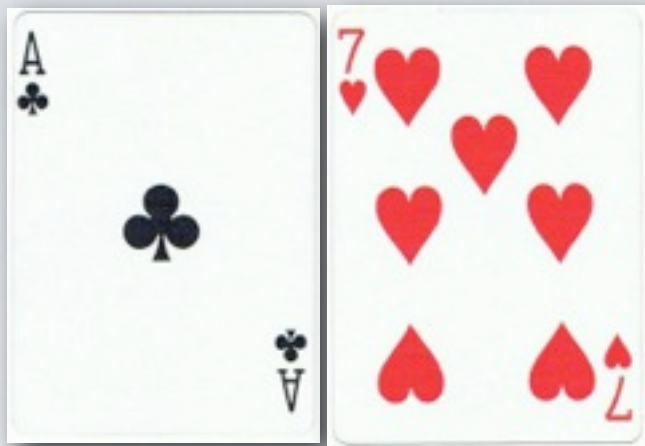
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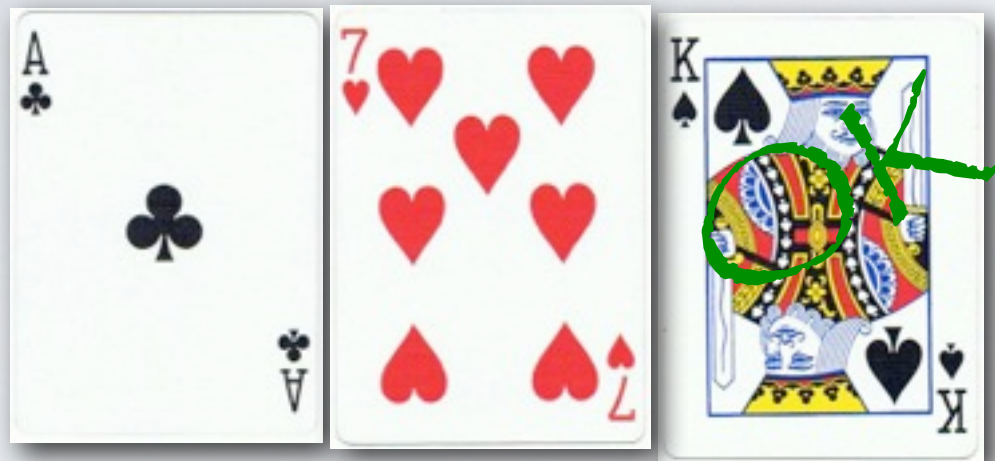
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EXAMPLE



black red black red etc.



EXAMPLE



EXAMPLE



the value of a card
has to be either
lower than that of
the previous one, or
larger with a
difference of at
least 5 and at most

10



AN INTERESTING GAME!!

- offers various levels of difficulty
- simulation of scientific inquiry
- illustrates active learning frameworks

M. J. Berry. APL and the search for truth: A set of functions to play New Eleusis. In APL '81: Proceedings of the international conference on APL, pages 47–53, New York, NY, USA, 1981. ACM.

T. G. Diettrich and R. S. Michalski. Learning to predict sequences. In Machine Learning: An Artificial Intelligence Approach, volume II. Morgan Kaufmann, 1989.

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ACKNOWLEDGEMENTS

- Thanks to Lena Kurzen for the slides!

L. Kurzen, Complexity in Interaction. PhD Thesis (Chapter 6), University of Amsterdam 2011.

F. Sangati, eleusisgame.org, 2011.

LET'S PLAY!