

A Stepwise Programming Breakdown of Mr. Elephant's Matching Game (<http://www.learningplanet.com/act/mre/index.asp>)

Step 1

To clear a set of cards laid out on a board by matching identical pairs of cards, one pair at a time.

Step 2

- The player is presented with a set of X number of cards laid out face down in a grid formation.
- The player chooses any two cards on the board. The faces of the two chosen cards are revealed to the player. If the faces of the two cards match they are removed from the board, otherwise they remain on the board but are turned to face down again.
- When the player has removed all the cards from the board the game ends

Step 3

Part 1 – Levels

- The game has several levels.
- The game begins with a 3 X 3 grid and as the levels go up the size of the grid increases. Since a larger grid requires the player to remember more elements the level of difficulty increases with each level
- In each level a different set of elements to remember is presented to the player

Part 2 – Scoring

- Scoring is managed through the computation of points.
- The game begins with the player having 0 points.
- Every time the player turns a card over 1 point is deducted from the total for the level.
- If the player matches a pair of cards each card yields 3 points totalling 6 points for the pair
- Before the points are added to the level point tally they are multiplied by a multiplier.
- The level begins with a multiplier of 1
- Each time the player successfully matches a pair the multiplier increments by 1. Each time the player turns a non matching pair a point is deducted from the multiplier.
- The number of points added to the player tally is 6 times the multiplier.
- When the player clears the board the total number of points accumulated in this level by the player is displayed along with the minimum number of points required to move to the next level, and the total number of points accumulated by the player throughout the game.
- If the player managed to accumulate the minimum number of points his/she moves up to the next level, else the game ends.

Part 3 – Game Play

- The game begins with a 3X3 grid and increases in size by a row or column every two levels until a grid of 5X5 is reached.
 - Levels 1-2 have a grid of 3X3
 - Levels 3-4 have a grid of 3X4
 - Levels 5-6 have a grid of 4X4
 - Levels 7-8 have a grid of 4X5
- In level 9 and beyond the same cycle begins again
- The game ends when a player fails to reach the minimum number of points for any given level or when the player presses the "exit" button.
- The game has no time limit.
- The 3X3 grid in levels 1 and 2 has an empty cell so that an even number of cards (8) can be shown to the player for correct pairing.
- There are 6 distinct sets of elements to memorize
 - Animals (level 1)
 - Geometric shapes (level 2)
 - Dice faces (level 3)
 - Lower case letters (level 4)
 - Numbers (level 5)
 - Colors (level 6)
- In the first 6 levels the sets are presented in the order defined above. In higher levels the choice of a set appears random but the number of elements in the set increases to fill the larger grid.

Part 4 – Feedback

- Initially all cards are presented face down with the back of the card showing 3 question marks.
- Cards that have been turned over by the player but are still on the board are displayed with a back showing wavy lines.
- Empty space adorns the cells from which cards have been successfully removed.
- When the player clicks a card facing down, a sound is played, the card is turned face up, a -1 is shown in the vicinity of the card and a point is deducted from the point counter (the counter can show negative numbers).
- When the player clicks an empty space or a card that has been turned face up already nothing happens.
- When two cards have been turned face up, the system compares their faces. If they match a sound is played, they are removed from the board and a 3 is displayed in the vicinity of each card. The point counter and the multiplier are incremented. If the cards do not match they are turned back down, this time having a wavy pattern on their back, a different sound is played and the multiplier is decremented.

One can take this analysis further.....