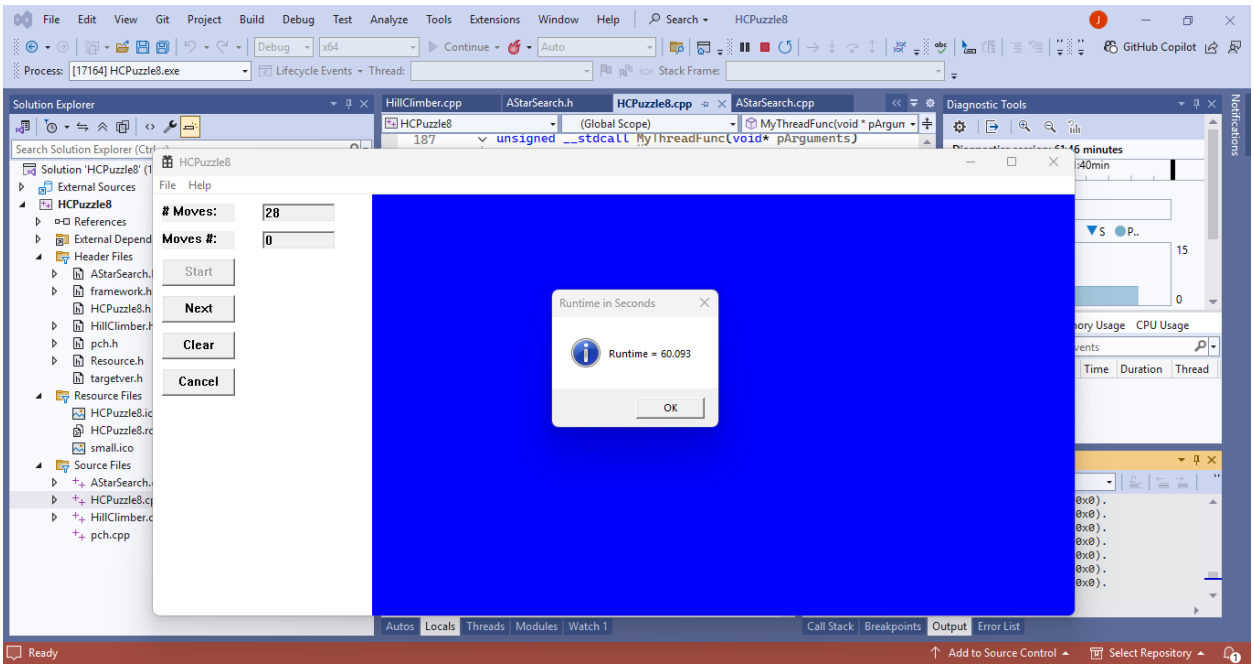
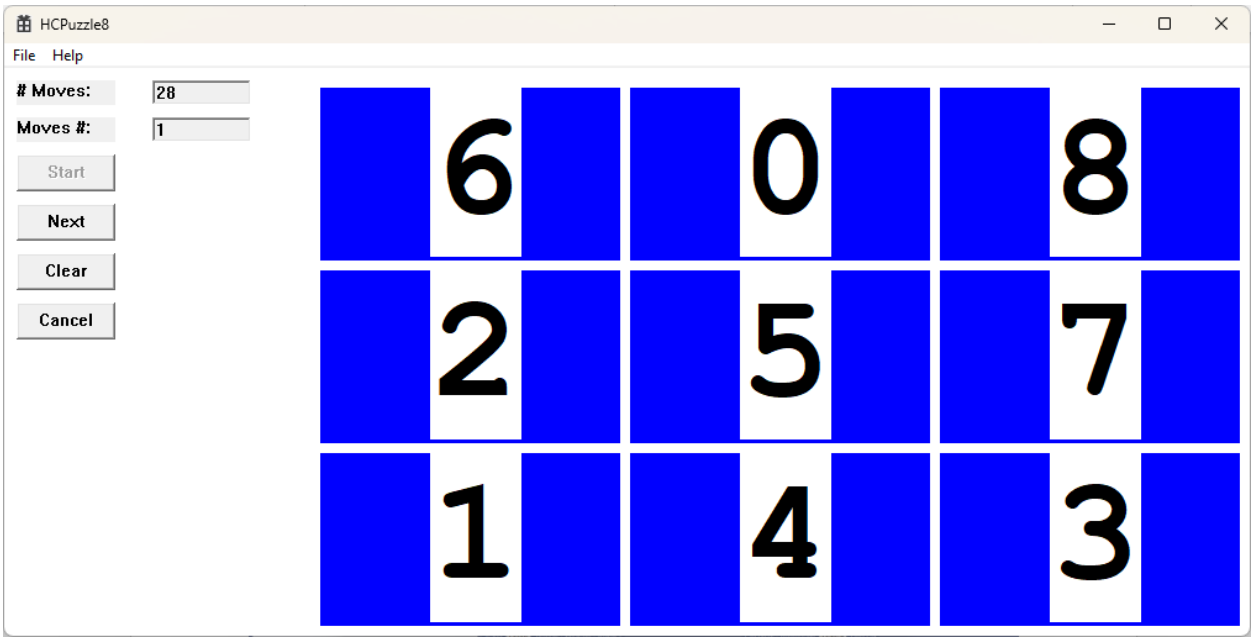
Blog Entry © Monday, November 17, 2025, by James Pate Williams, Jr. An Elitist Evolutionary Hill Climber to Solve the 8-Tile Puzzle

An elitist evolutionary hill climber algorithm for the 8-Tile Puzzle can be summarized as follows:

1. Initialize the tiles randomly
2. Create a population of 50 candidate solutions which are A* searchers
3. Use two fitness heuristics to evaluate the candidates:
    a. The number of tiles out of place
    b. The number of moves is limited to 256
4. Set the number of generations to 5,000,000
5. For each generation, we use tournament selection to create two children
6. Choose the child with the smallest fitness to be mutated
7. Mutate the selected child by a random swap operator
8. Replace the worst fitness individual in the population by the child

We have four hill climbers. We chose four since that is the number of cores on our Dell Latitude 3410 notebook computer with an Intel I5 processor and 8 GB of RAM. The resulting application requires around 15 MB of RAM.

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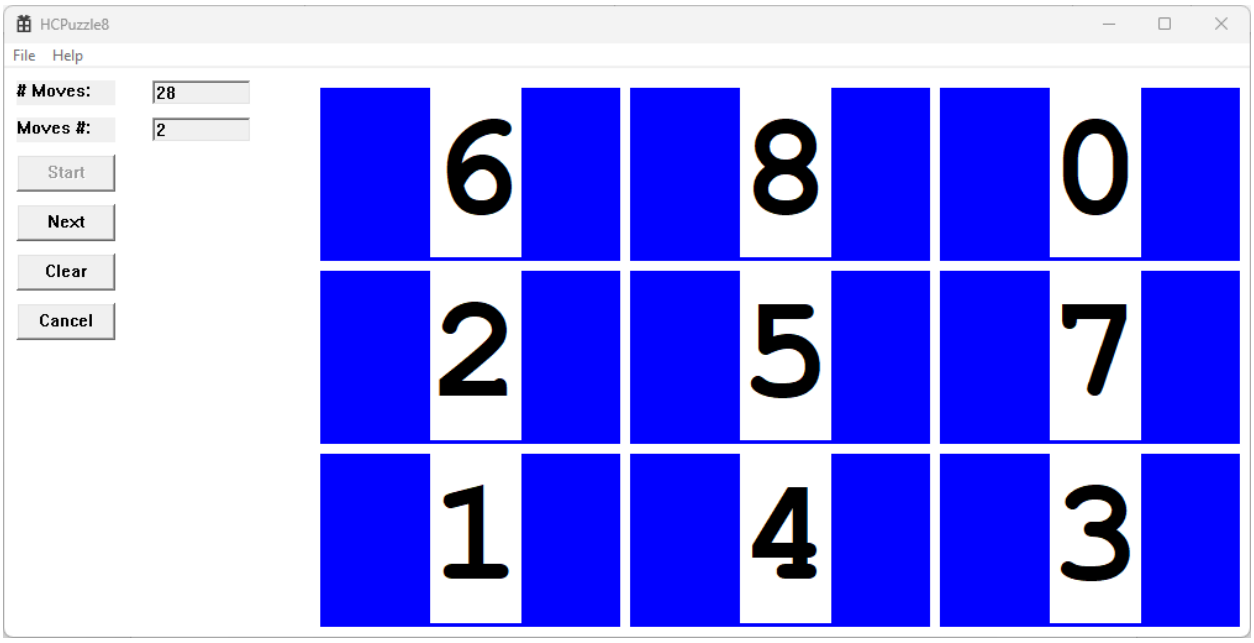
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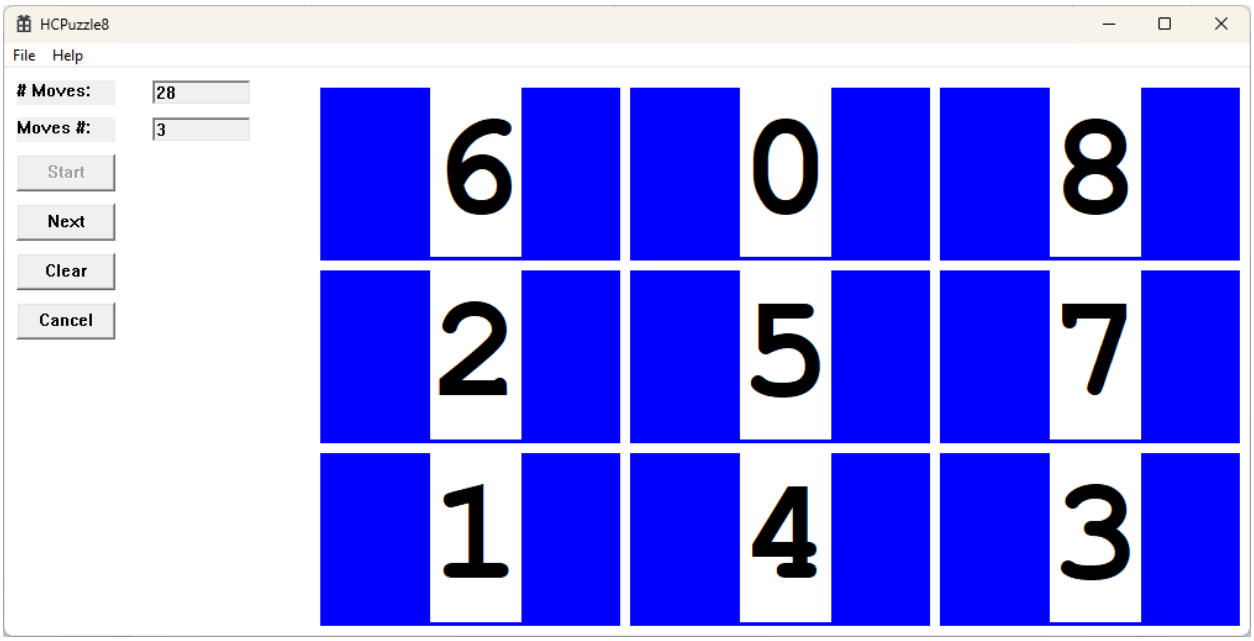
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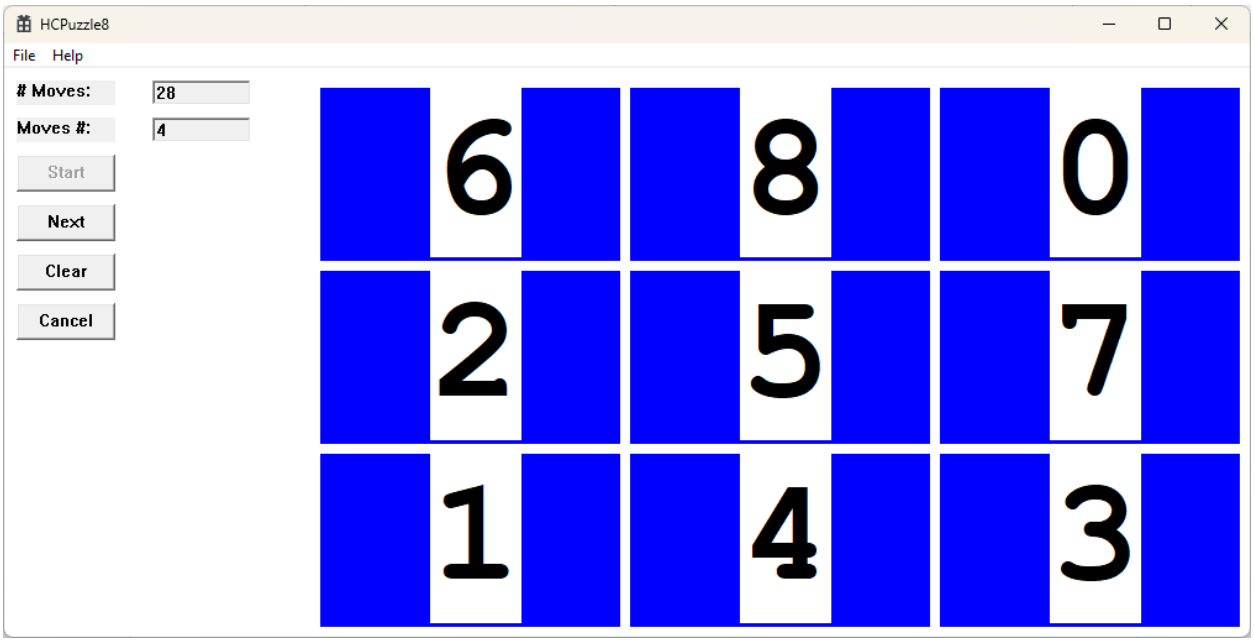
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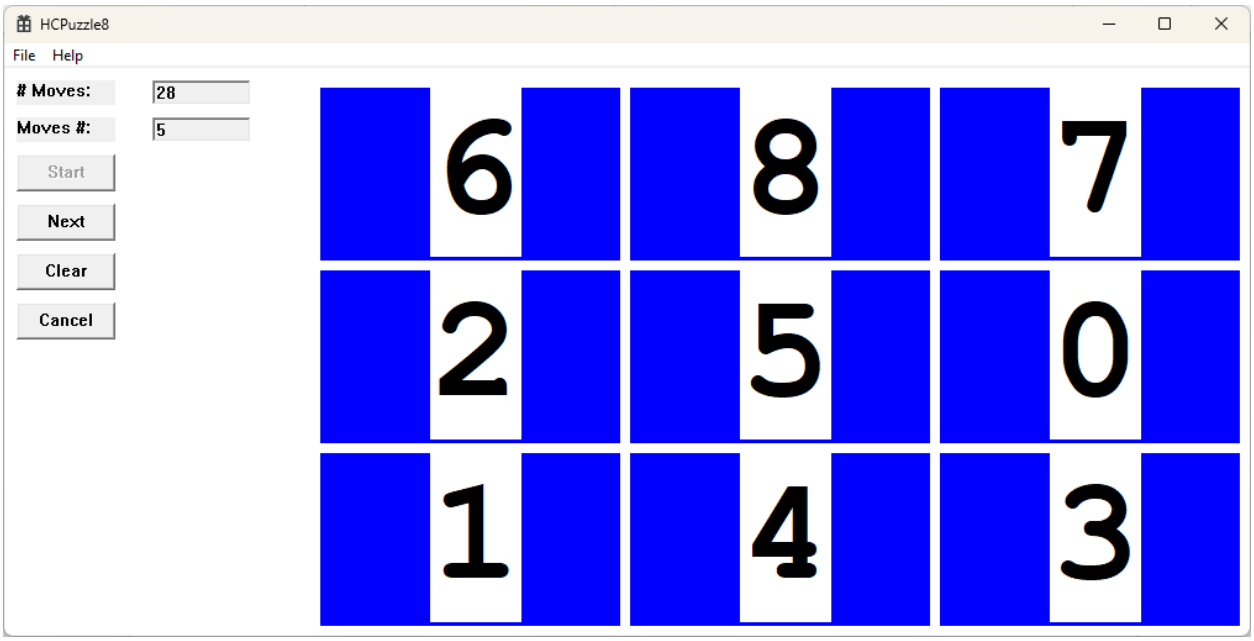
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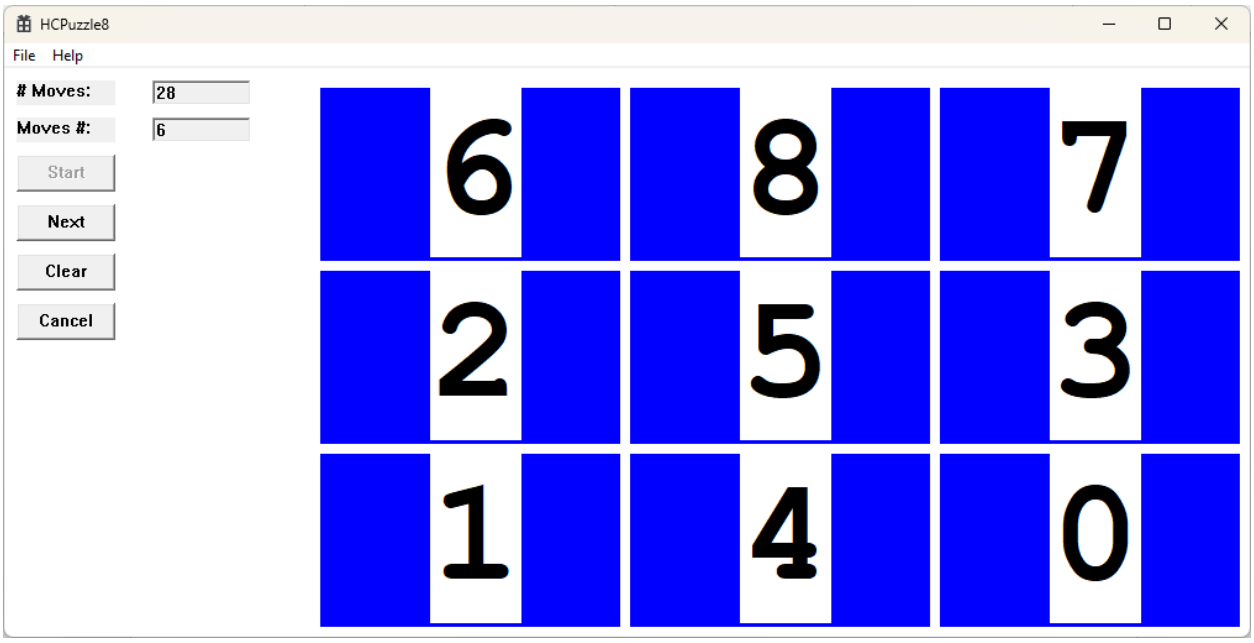
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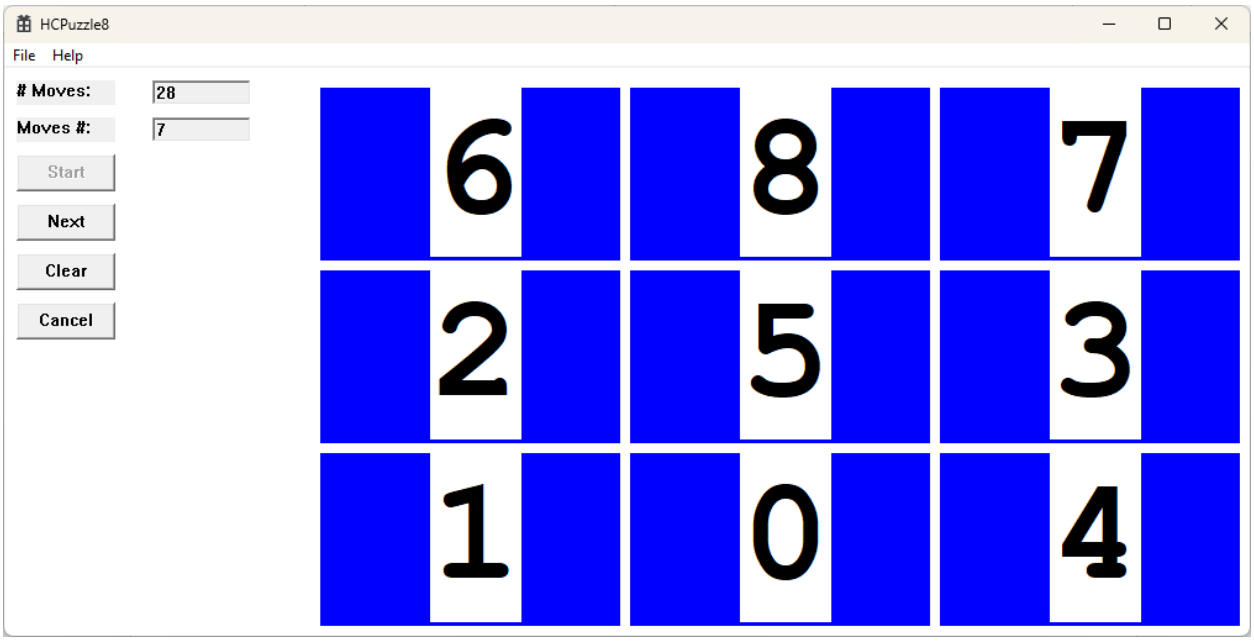
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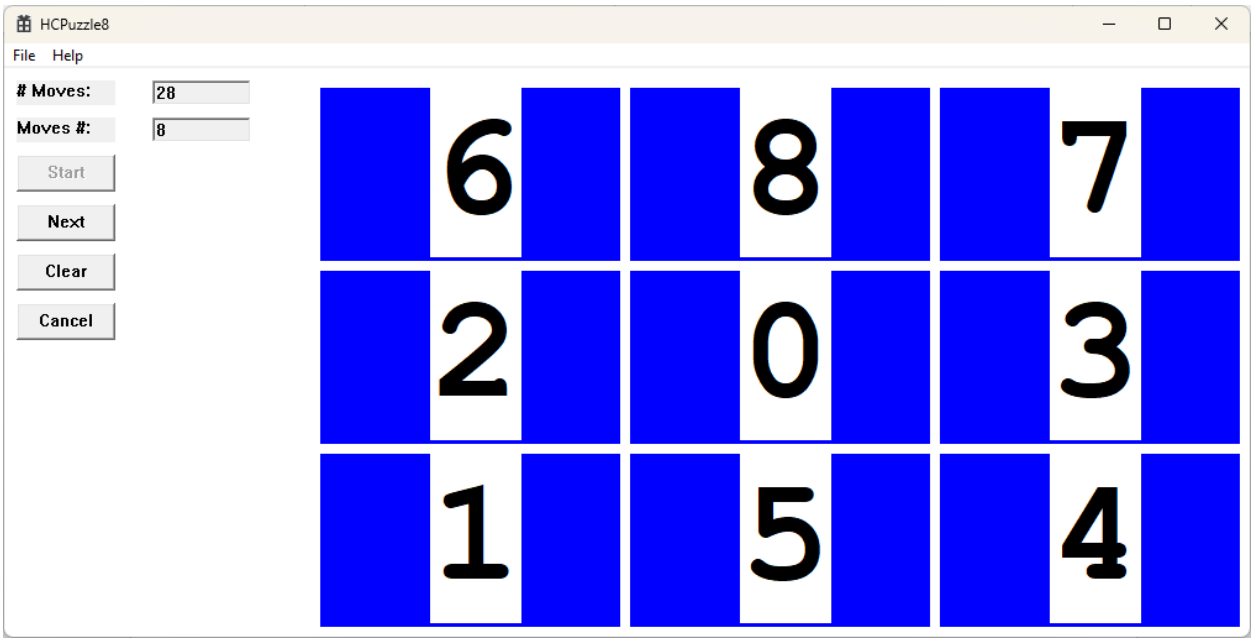
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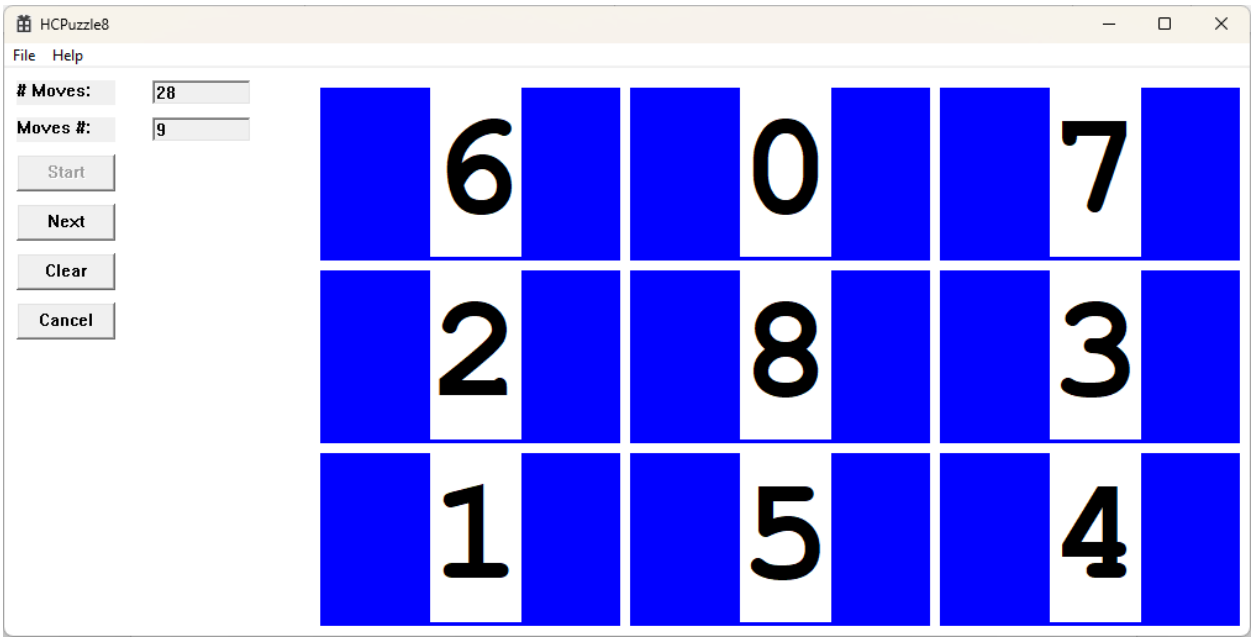
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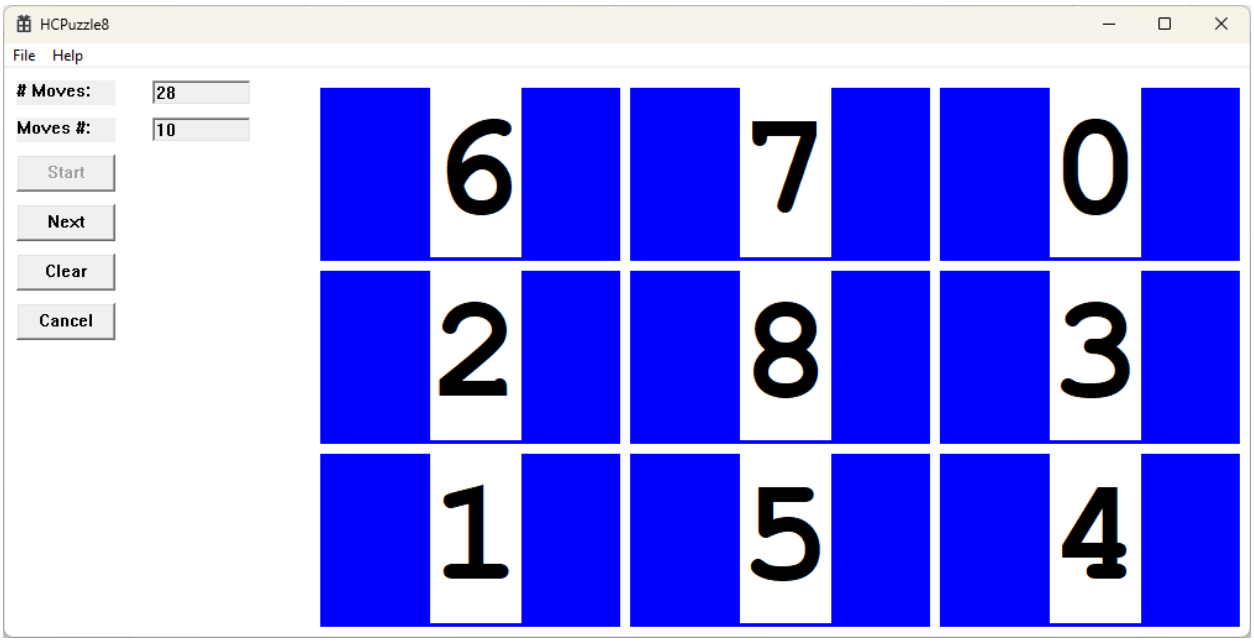
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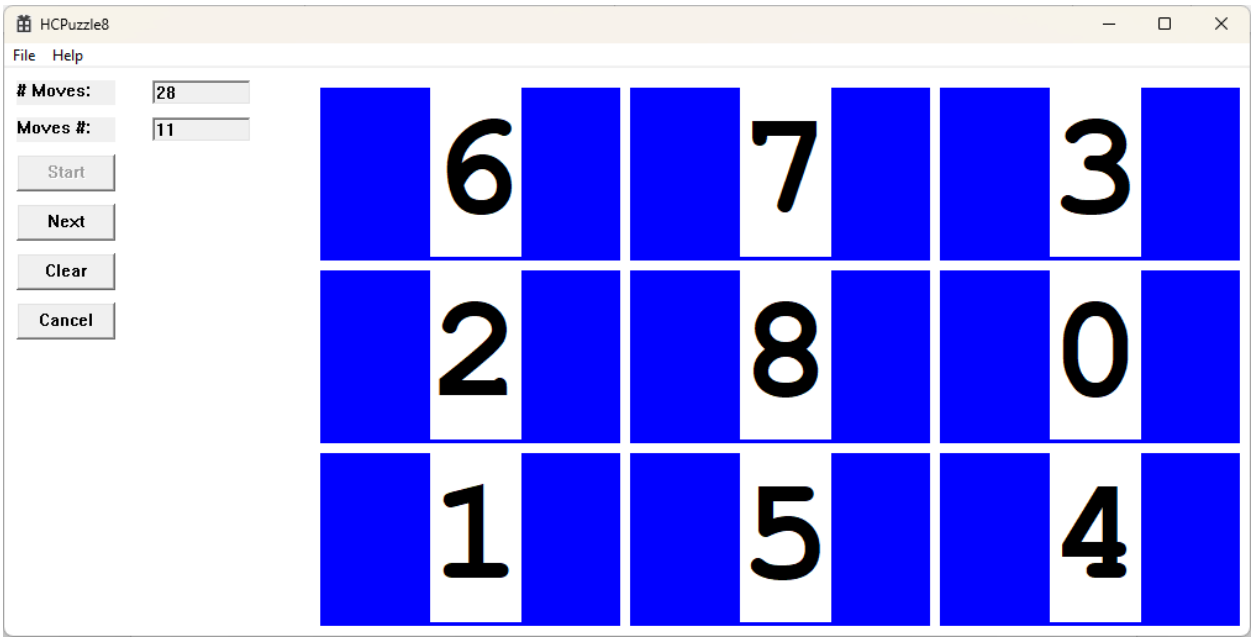
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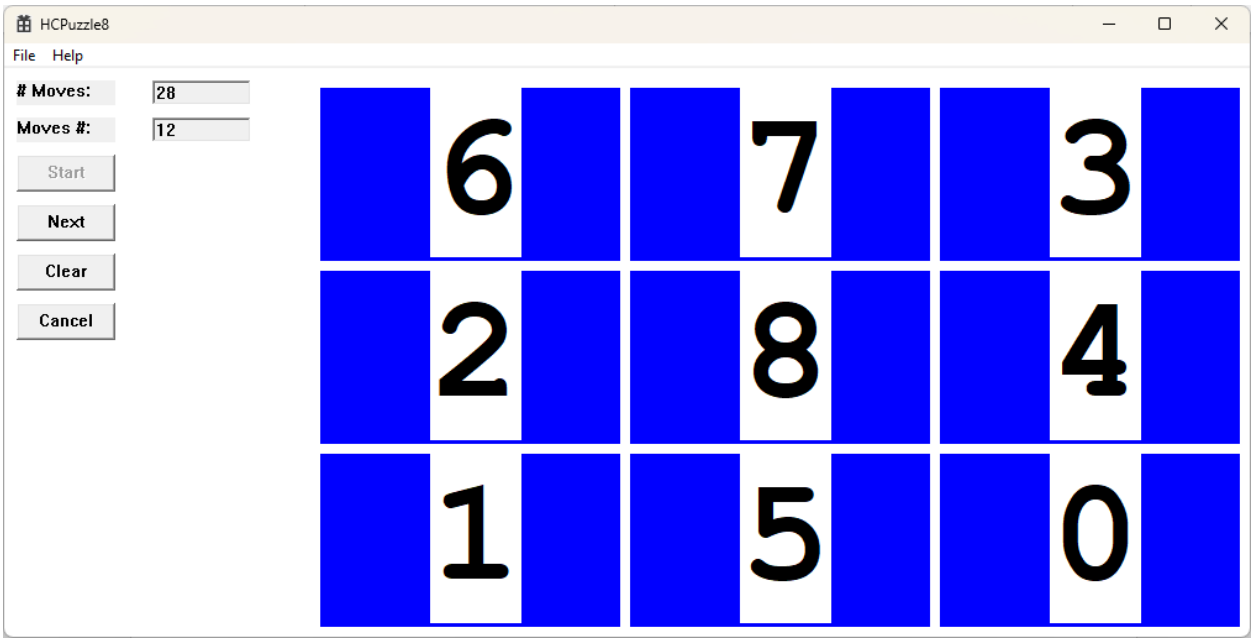
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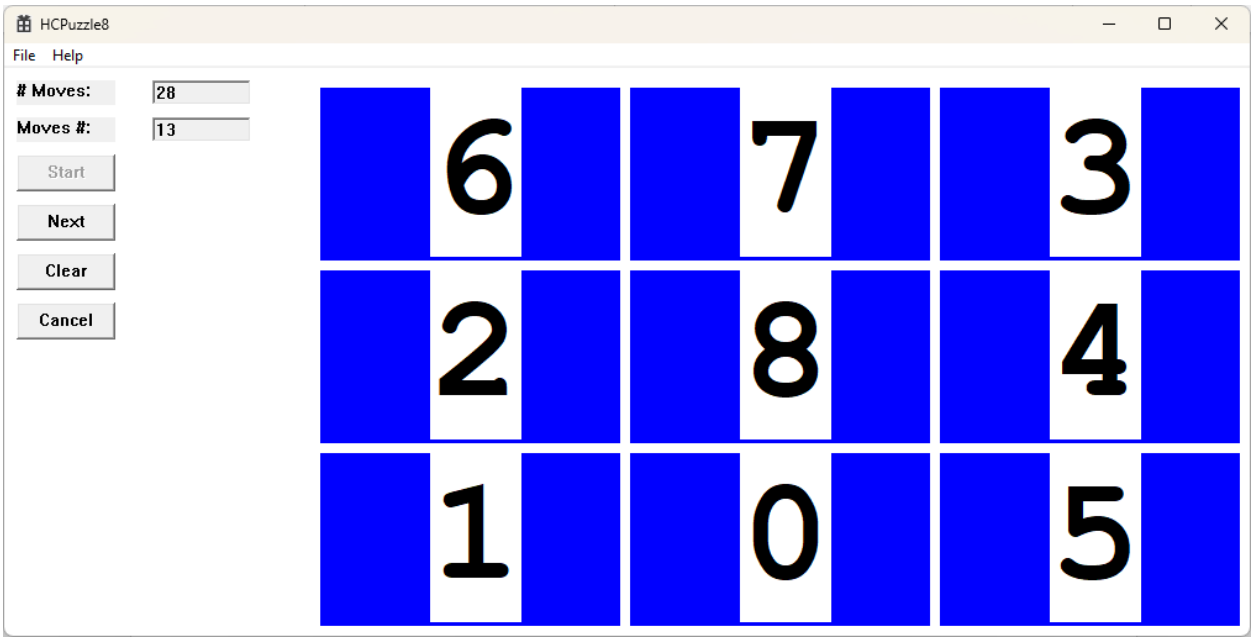
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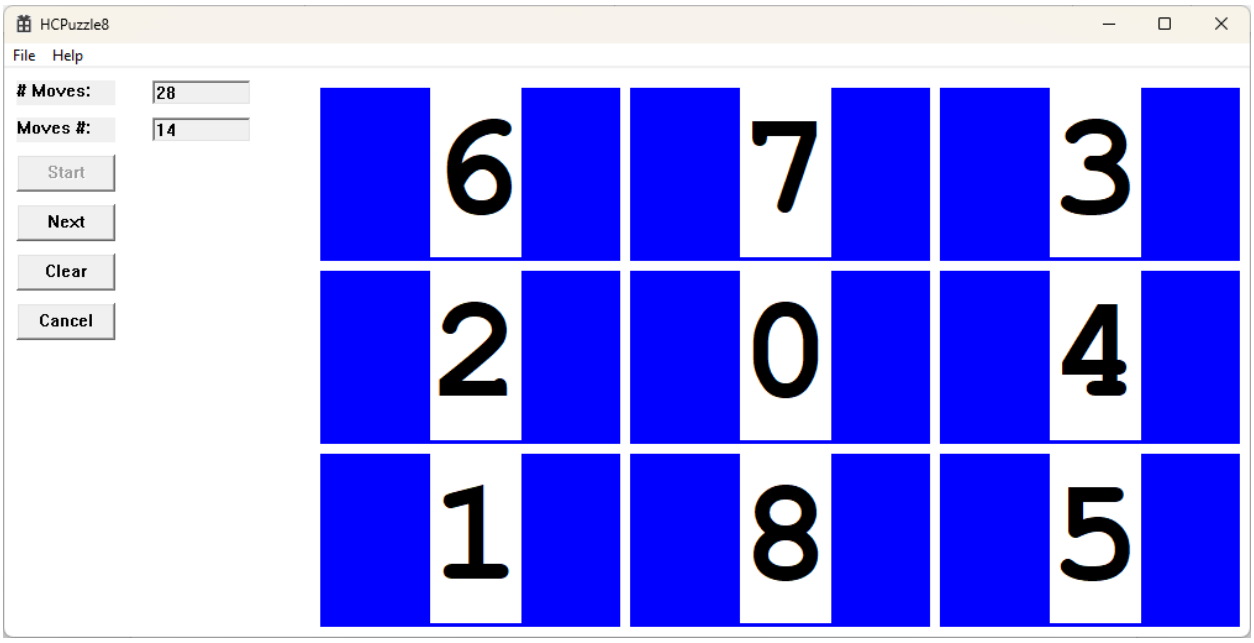
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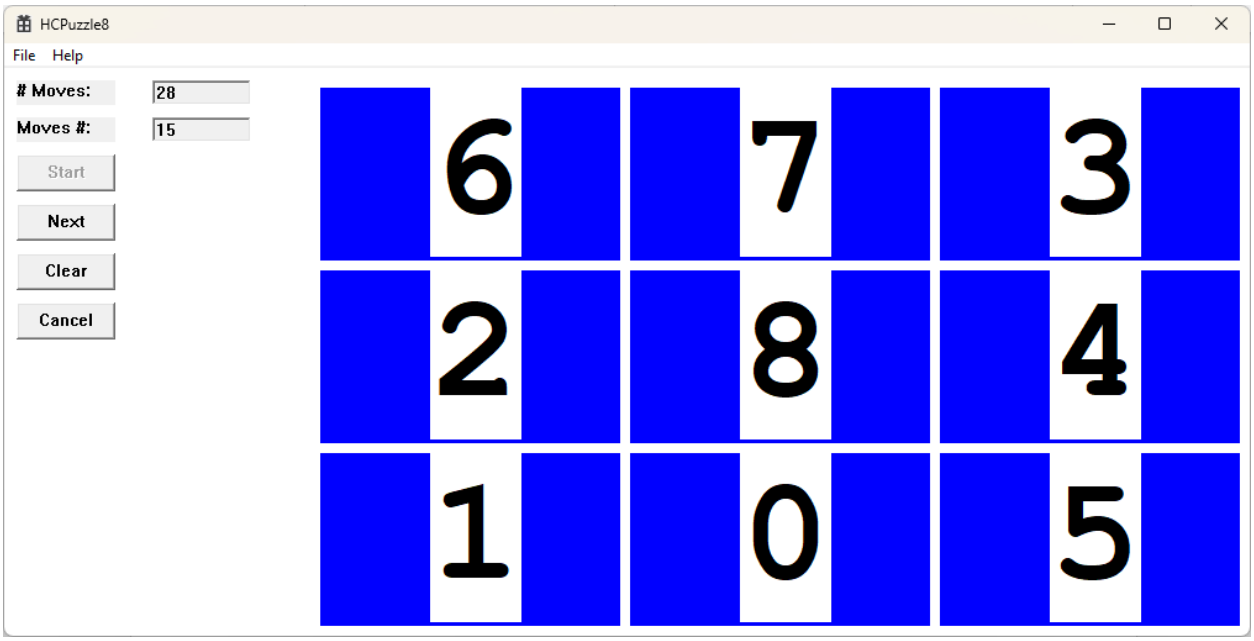
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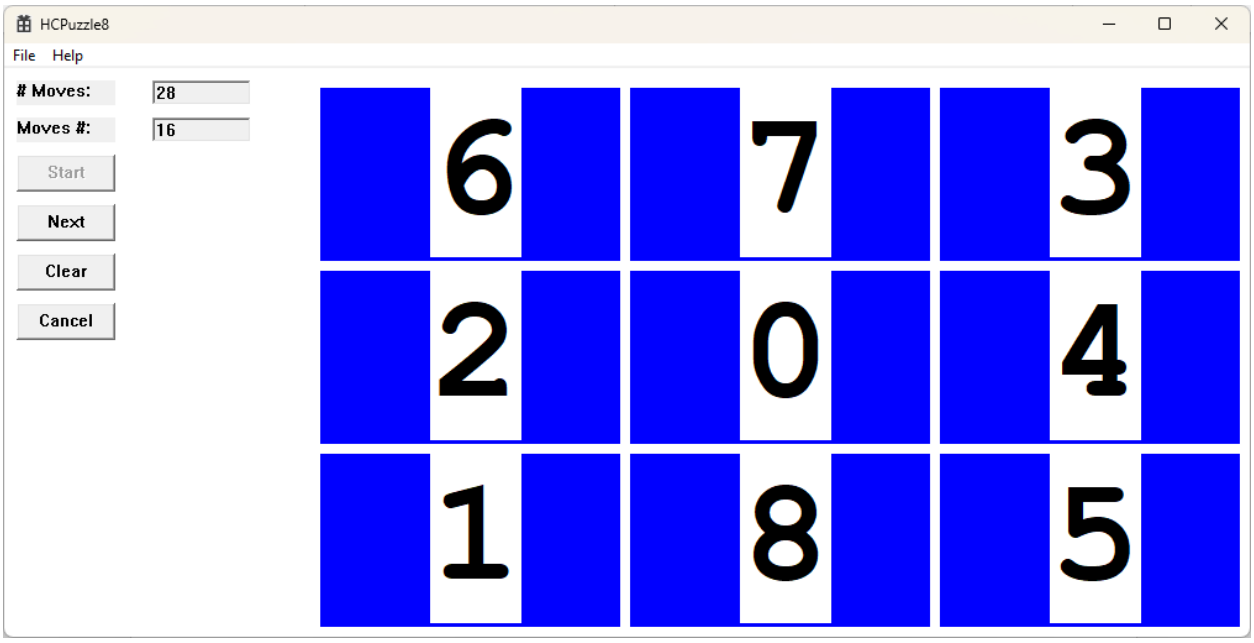
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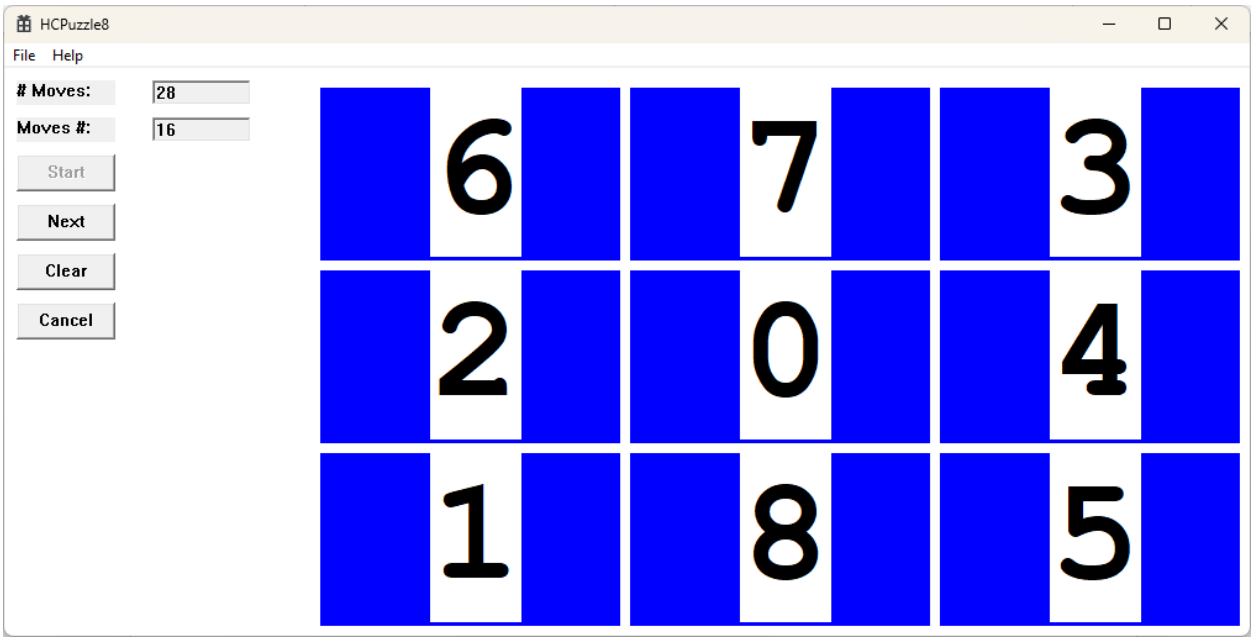
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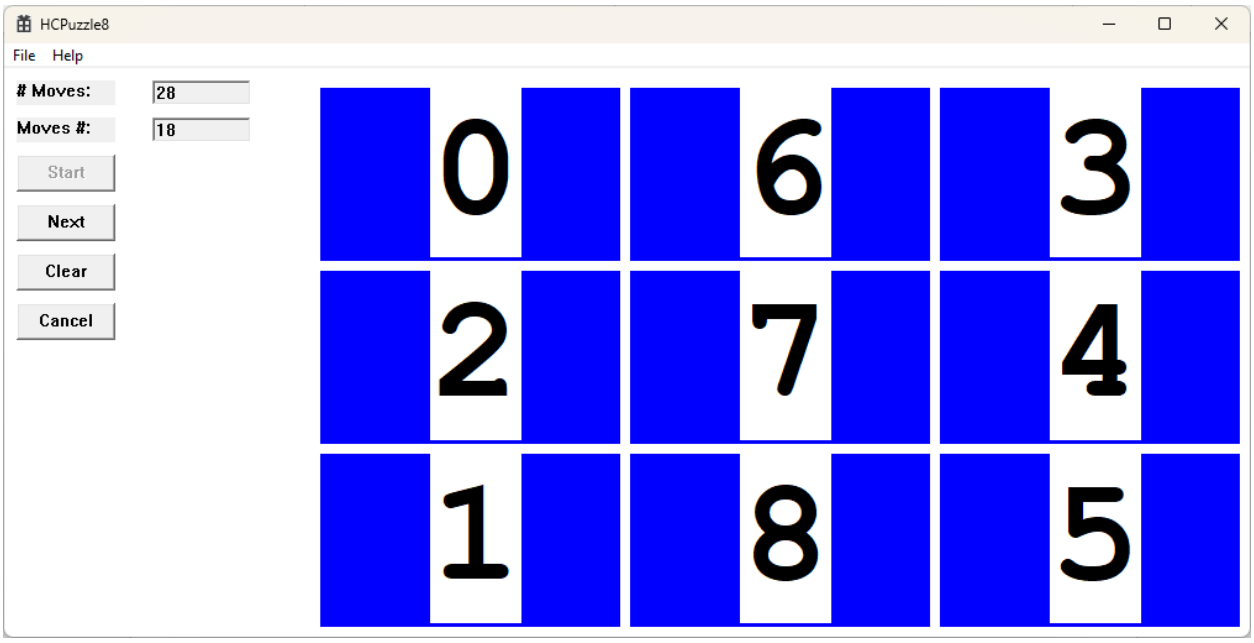
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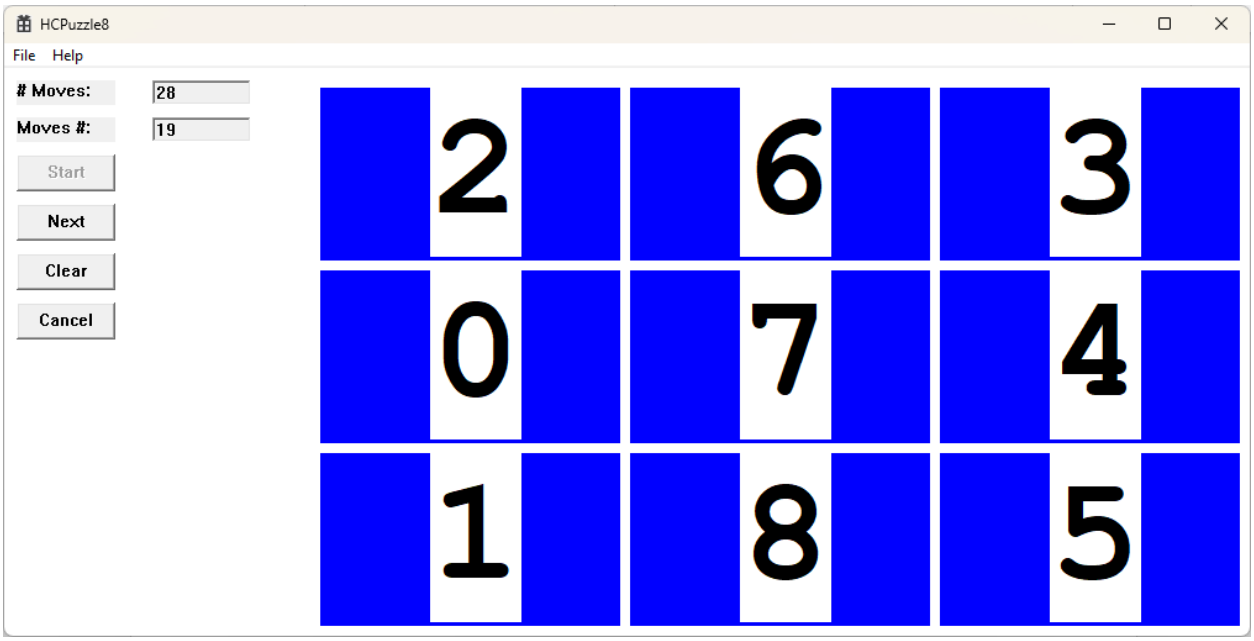
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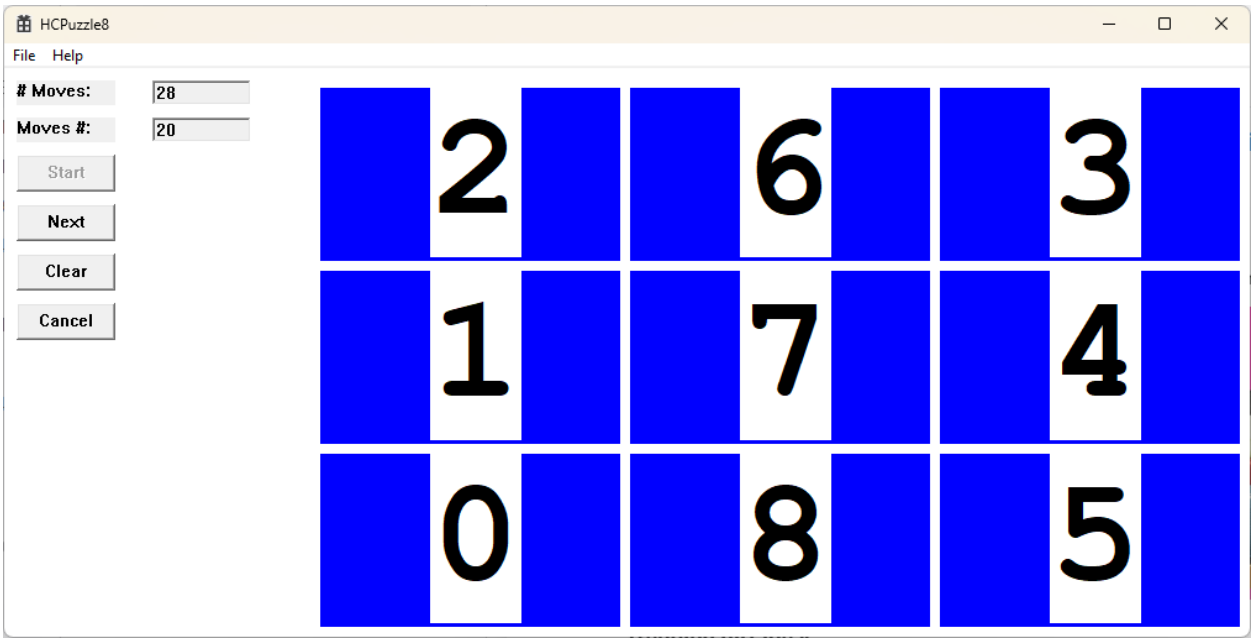
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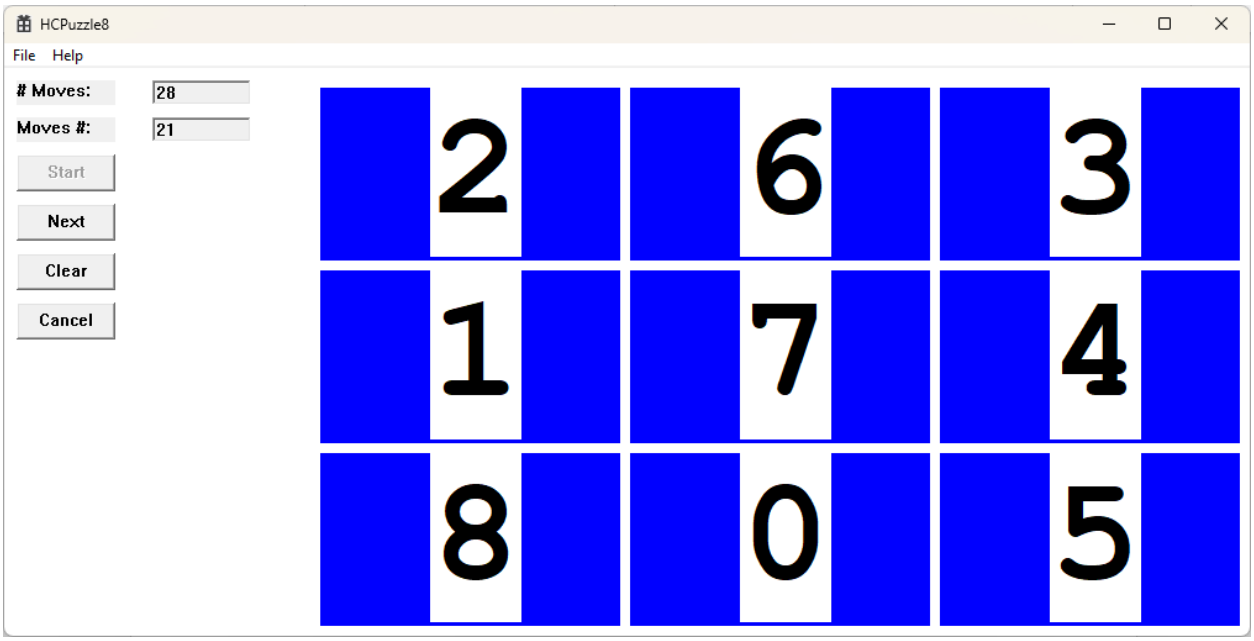
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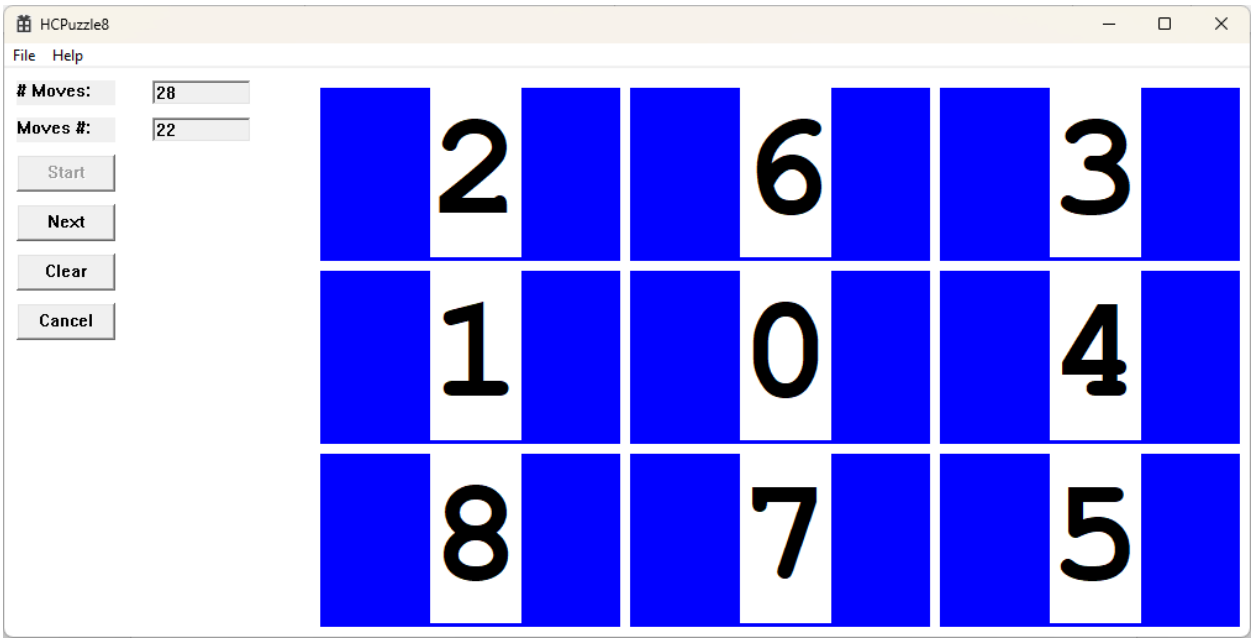
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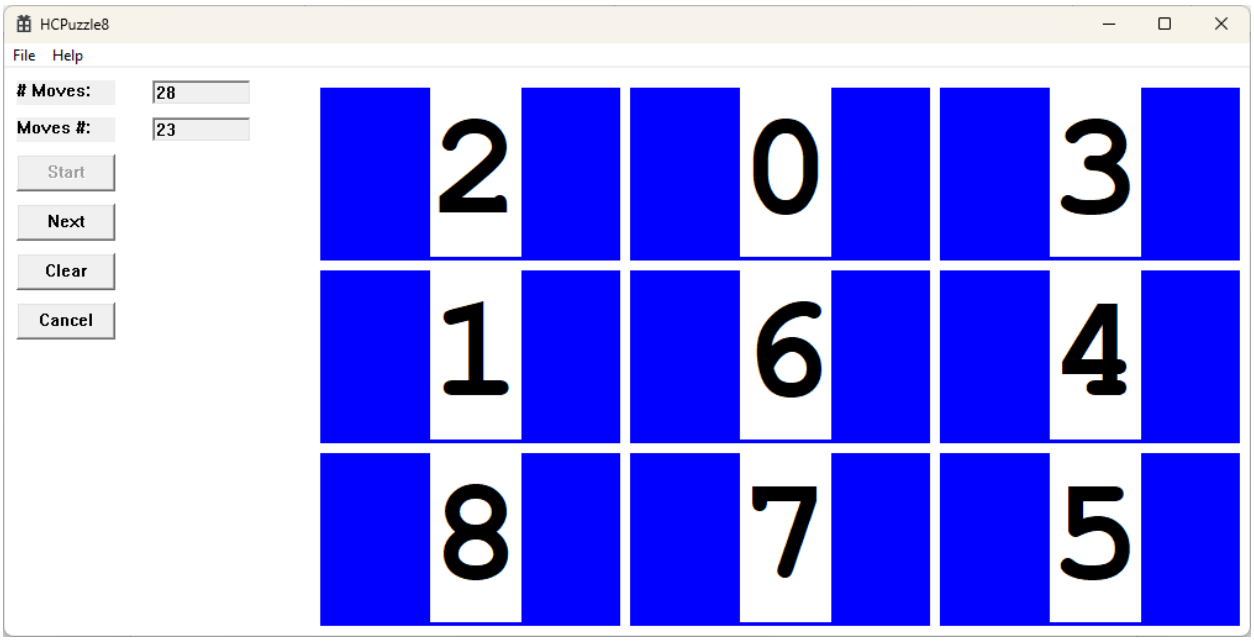
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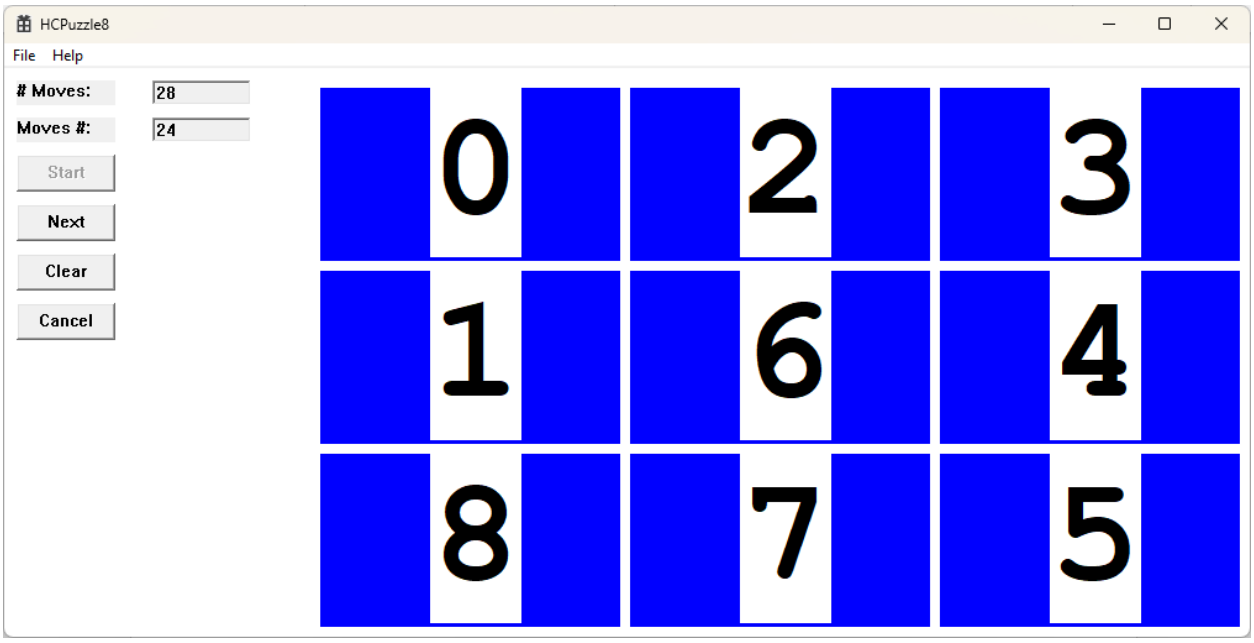
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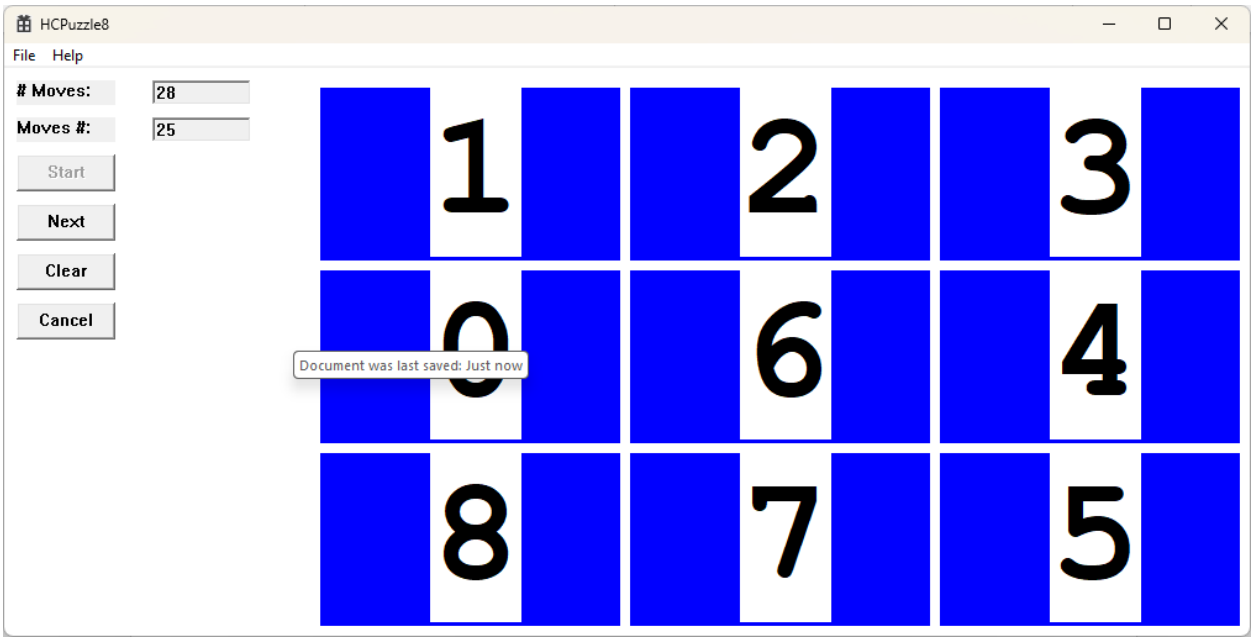
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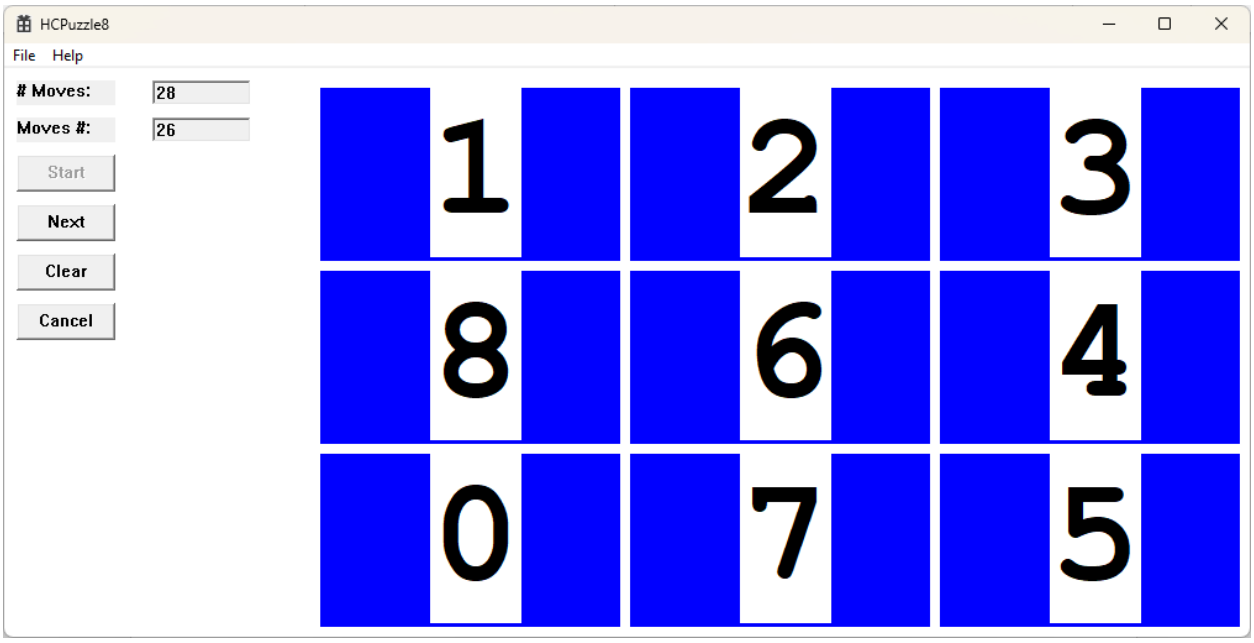
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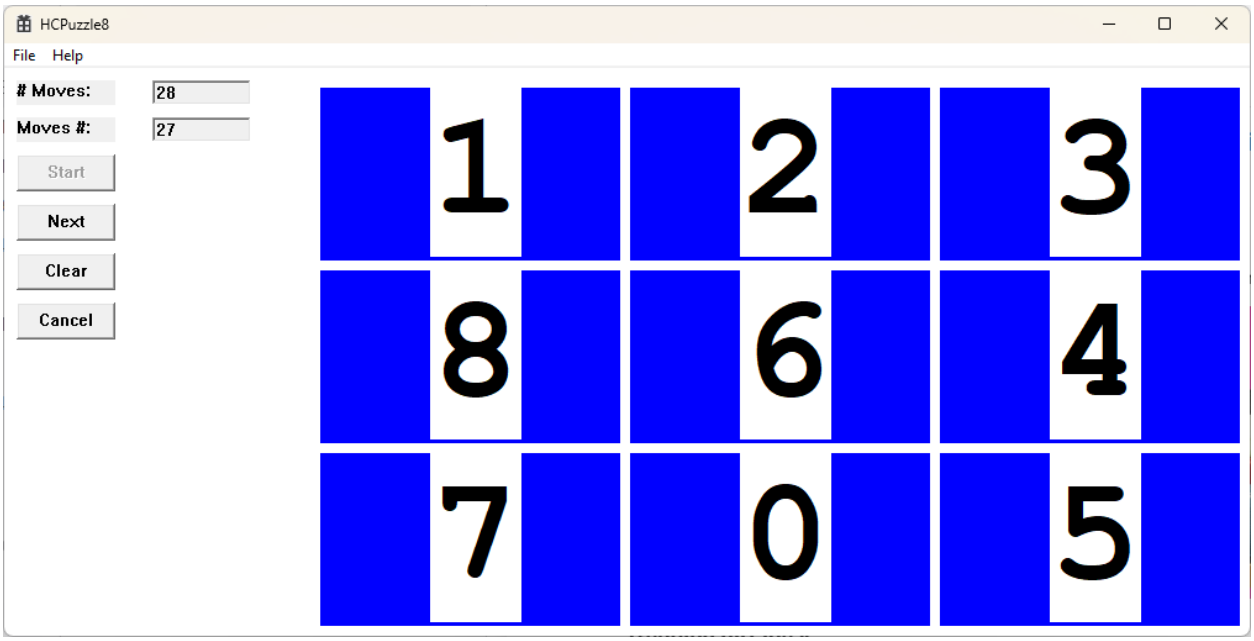
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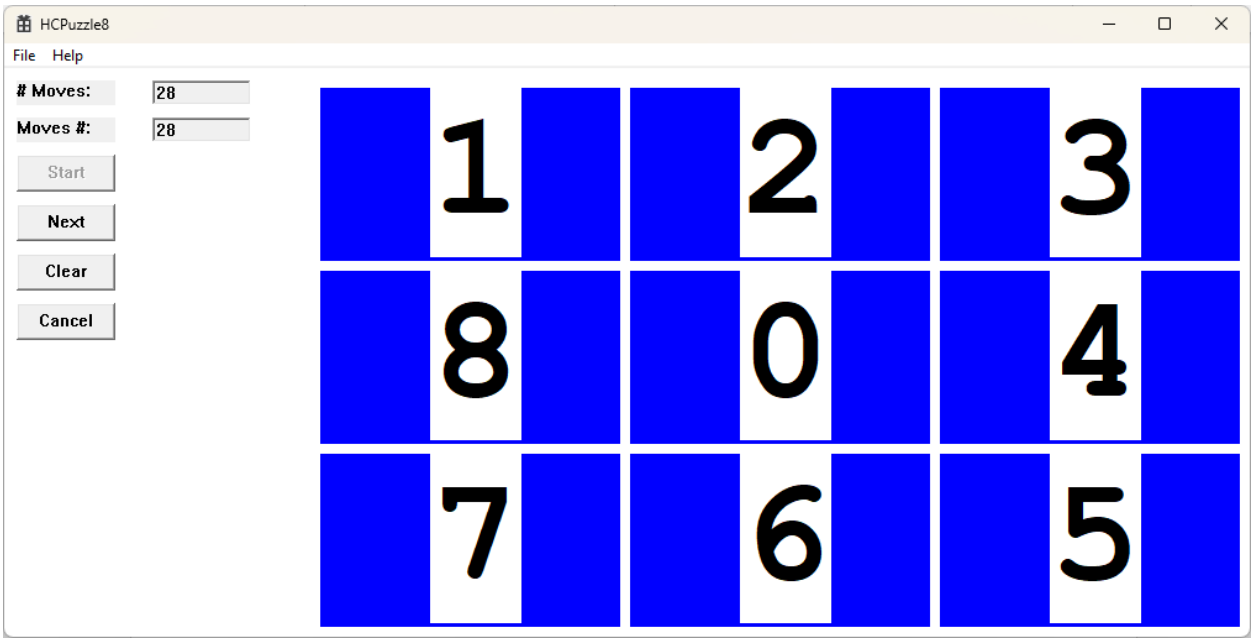
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