State: (Missionaries on LB, Cannibals on LB, Boat on RB)

Missionaries to RB, "n" on RB, Boat on LB

\(<3 \, 3 \, y \, 0 \, 0 \, u> \quad \uparrow \quad \downarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow\)

\(<2 \, 2 \, n \, 1 \, 1 \, y> \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow\)

\(<3 \, 2 \, n \, 0 \, 1 \, y> \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow\)

\(<3 \, 2 \, y \, 0 \, 1 \, n> \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow\)

\(<3 \, 0 \, n \, 0 \, 3 \, y> \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow\)

\(<3 \, 1 \, y \, 0 \, 2 \, u> \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow\)
\[ |x_n - 2| + |y_n - 2| = d(w) \]

Manhattan distance on the grid.

\[
\begin{array}{c|c|c}
0 & 2 & 1,1 \\
1 & 1,2 \\
2 & 1,3 \\
3 & 1,4 \\
4 & 2,1 \\
0 & 2,2 \\
2 & 2,3 \\
2 & 2,4 \\
2 & 3,1 \\
1 & 3,2 \\
& 3,3 \\
\end{array}
\]

Purple squares show a situation in which DFS, HDFS, and BFS search different partitions of the state space.