

## BFS Algorithm

Time Complexity :  $O(V + E)$ ,  $V$  = number of vertices in the graph,  $E$  = number of edges in the graph

Space Complexity :  $O(V + E)$

## Dijkstra Algorithm

Time Complexity :  $O(V^2)$ ,  $V$  = number of vertices in the graph

Space Complexity :  $O(V)$

	dnm	Map01	Map02	Map03	Map04	Map05	Map06	Map07	Map08	Map09	Map10	pisa	tokyo	triumph	vatican
BFS	1ms	87ms	103ms	340ms	55ms	61ms	54ms	71ms	75ms	214ms	305ms	69ms	137ms	183ms	380ms
Dijkstra	11ms	68ms	77ms	217ms	78ms	79ms	99ms	55ms	92ms	480ms	120ms	89ms	338ms	302ms	333ms

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Map is Map06.txt with X_SIZE 500 and Y_SIZE 500
*****

*****
Map is Map10.txt with X_SIZE 500 and Y_SIZE 500
*****

*****
Map is Map03.txt with X_SIZE 500 and Y_SIZE 500
*****

*****
Map is Map08.txt with X_SIZE 500 and Y_SIZE 500
*****

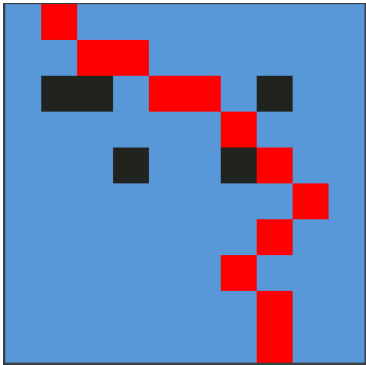
dnm.txt | bfs = 12 Nodes, elapsed time is 2 milliseconds | dijkstra = 12 Nodes, elapsed time is 8 milliseconds
Map08.txt | bfs = 641 Nodes, elapsed time is 59 milliseconds | dijkstra = 641 Nodes, elapsed time is 113 milliseconds
Map09.txt | bfs = 958 Nodes, elapsed time is 51 milliseconds | dijkstra = 958 Nodes, elapsed time is 64 milliseconds
Map06.txt | bfs = 507 Nodes, elapsed time is 209 milliseconds | dijkstra = 507 Nodes, elapsed time is 79 milliseconds
pisa.txt | bfs = 1643 Nodes, elapsed time is 316 milliseconds | dijkstra = 1643 Nodes, elapsed time is 398 milliseconds
Map03.txt | bfs = 761 Nodes, elapsed time is 52 milliseconds | dijkstra = 761 Nodes, elapsed time is 215 milliseconds
Map05.txt | bfs = 600 Nodes, elapsed time is 81 milliseconds | dijkstra = 600 Nodes, elapsed time is 174 milliseconds
Map10.txt | bfs = 479 Nodes, elapsed time is 66 milliseconds | dijkstra = 479 Nodes, elapsed time is 69 milliseconds
triumph.txt | bfs = 1060 Nodes, elapsed time is 239 milliseconds | dijkstra = 1060 Nodes, elapsed time is 177 milliseconds
Map07.txt | bfs = 710 Nodes, elapsed time is 63 milliseconds | dijkstra = 710 Nodes, elapsed time is 95 milliseconds
vatican.txt | bfs = 1413 Nodes, elapsed time is 253 milliseconds | dijkstra = 1413 Nodes, elapsed time is 297 milliseconds
Map02.txt | bfs = 667 Nodes, elapsed time is 82 milliseconds | dijkstra = 667 Nodes, elapsed time is 76 milliseconds
Map01.txt | bfs = 992 Nodes, elapsed time is 77 milliseconds | dijkstra = 992 Nodes, elapsed time is 95 milliseconds
Map04.txt | bfs = 674 Nodes, elapsed time is 79 milliseconds | dijkstra = 674 Nodes, elapsed time is 95 milliseconds
tokyo.txt | bfs = 891 Nodes, elapsed time is 67 milliseconds | dijkstra = 891 Nodes, elapsed time is 94 milliseconds

Process finished with exit code 0
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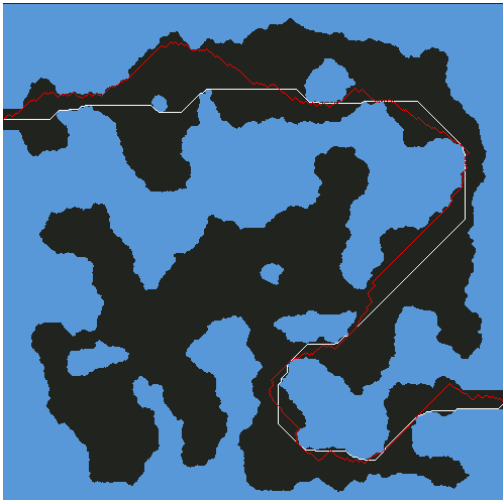
## Shortest Paths

(Red line = Dijkstra, White line = BFS)

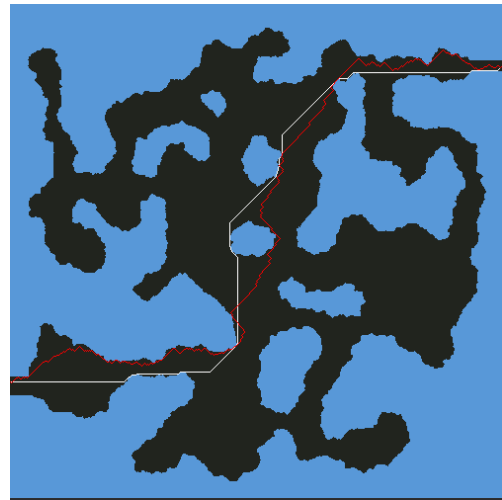
dnm



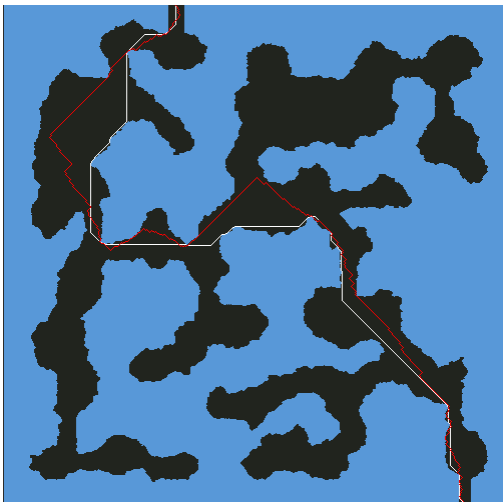
Map01



Map02



Map03

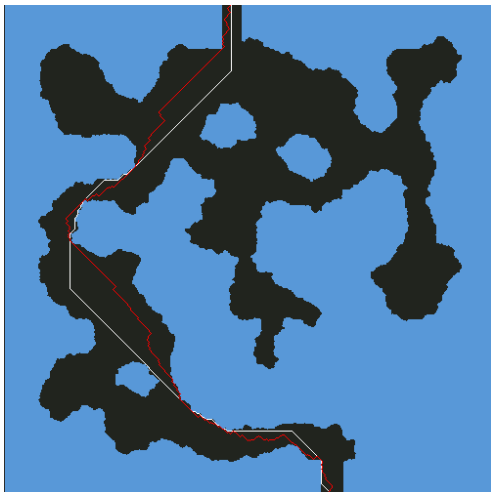


Map04

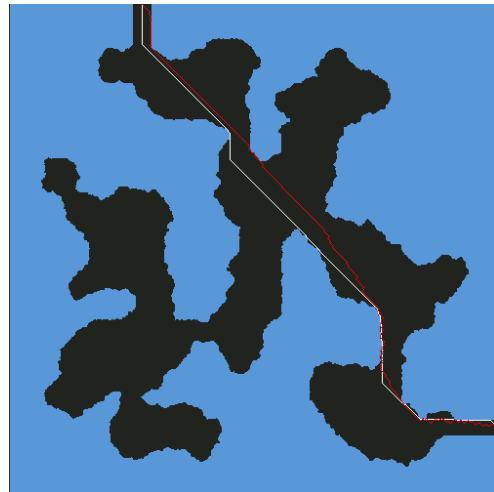


(Red line = Dijkstra, White line = BFS)

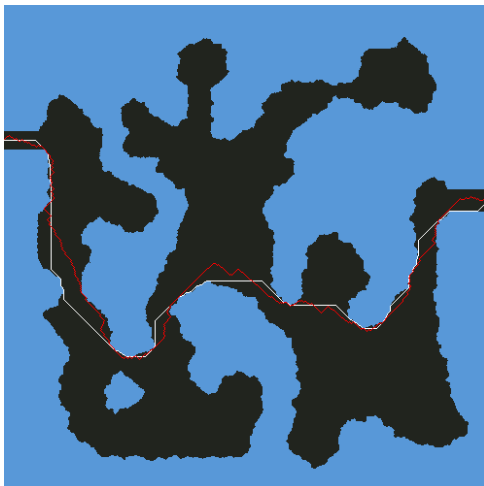
Map05



Map06



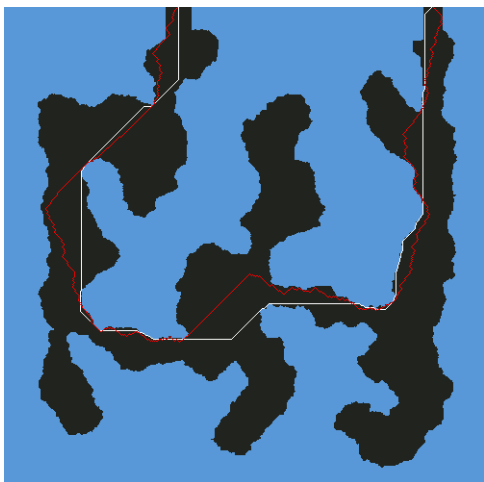
Map07



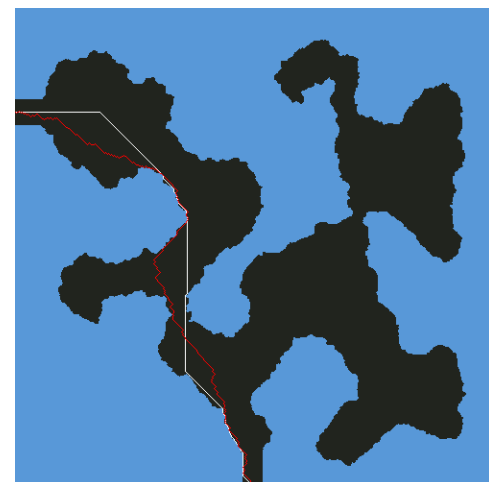
Map08



Map09



Map10



(Red line = Dijkstra, White line = BFS)

Pisa



(Red line = Dijkstra, White line = BFS)

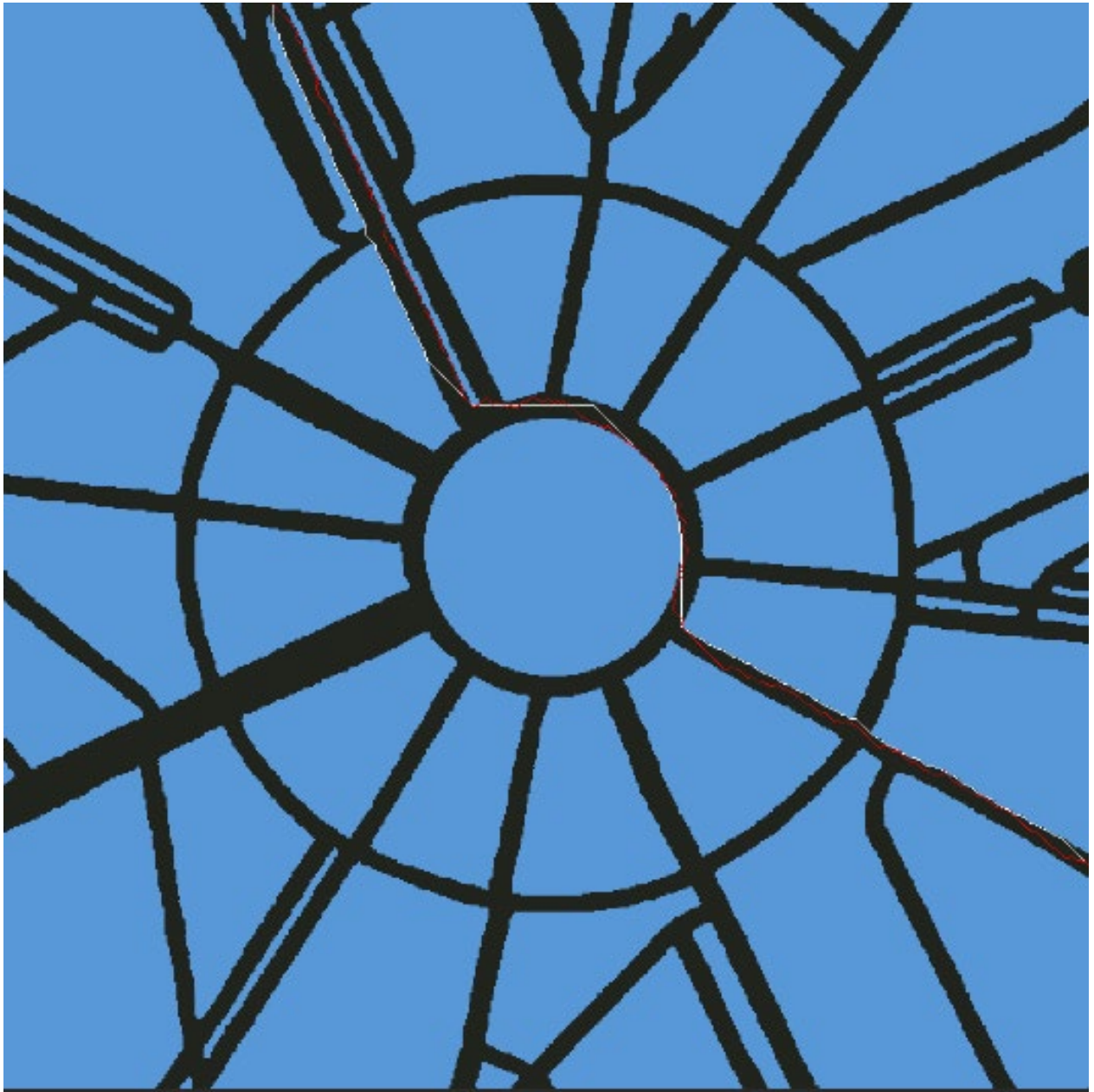
Tokyo





(Red line = Dijkstra, White line = BFS)

Triumph



(Red line = Dijkstra, White line = BFS)

Vatican

