# Sample Program Traces

Below are the program traces for the 3 algorithms for input: “0 62”, denoting the vertices (1, 1) & (4, 4).

## BFS

Number of Vertices : 275

Number of Edges : 641

Start=(1, 1), Goal=(4, 4), Vertices: 0 and 62

iter=1, frontier=0, popped=0 (1, 1), depth=0

pushed 1 (1, 2)

pushed 20 (2, 1)

pushed 21 (2, 2)

iter=2, frontier=2, popped=1 (1, 2), depth=1

pushed 2 (1, 3)

pushed 22 (2, 3)

iter=3, frontier=3, popped=20 (2, 1), depth=1

pushed 40 (3, 1)

pushed 41 (3, 2)

iter=4, frontier=4, popped=21 (2, 2), depth=1

pushed 42 (3, 3)

iter=5, frontier=4, popped=2 (1, 3), depth=2

pushed 3 (1, 4)

pushed 23 (2, 4)

iter=6, frontier=5, popped=22 (2, 3), depth=2

pushed 43 (3, 4)

iter=7, frontier=5, popped=40 (3, 1), depth=2

pushed 59 (4, 1)

pushed 60 (4, 2)

iter=8, frontier=6, popped=41 (3, 2), depth=2

pushed 61 (4, 3)

iter=9, frontier=6, popped=42 (3, 3), depth=2

pushed 62 (4, 4)

iter=10, frontier=6, popped=3 (1, 4), depth=3

pushed 4 (1, 5)

pushed 24 (2, 5)

iter=11, frontier=7, popped=23 (2, 4), depth=3

pushed 44 (3, 5)

iter=12, frontier=7, popped=43 (3, 4), depth=3

pushed 63 (4, 5)

iter=13, frontier=7, popped=59 (4, 1), depth=3

pushed 75 (5, 1)

pushed 76 (5, 2)

iter=14, frontier=8, popped=60 (4, 2), depth=3

pushed 77 (5, 3)

iter=15, frontier=8, popped=61 (4, 3), depth=3

iter=16, frontier=7, popped=62 (4, 4), depth=3

---PATH---

Vertex : 0 (1, 1)

Vertex : 21 (2, 2)

Vertex : 42 (3, 3)

Vertex : 62 (4, 4)

------BFS------

Total Iterations : 16

Max Frontier Size : 9

Vertices Visited : 23 / 275

Path Length : 3

## DFS

Number of Vertices : 275

Number of Edges : 641

Start=(1, 1), Goal=(4, 4), Vertices: 0 and 62

iter=1, frontier=0, popped=0 (1, 1), depth=0

pushed 1 (1, 2)

pushed 20 (2, 1)

pushed 21 (2, 2)

iter=2, frontier=2, popped=21 (2, 2), depth=1

pushed 22 (2, 3)

pushed 41 (3, 2)

pushed 42 (3, 3)

iter=3, frontier=4, popped=42 (3, 3), depth=2

pushed 43 (3, 4)

pushed 61 (4, 3)

pushed 62 (4, 4)

iter=4, frontier=6, popped=62 (4, 4), depth=3

---PATH---

Vertex : 0 (1, 1)

Vertex : 21 (2, 2)

Vertex : 42 (3, 3)

Vertex : 62 (4, 4)

------DFS------

Total Iterations : 4

Max Frontier Size : 7

Vertices Visited : 10 / 275

Path Length : 3

## GBFS

Number of Vertices : 275

Number of Edges : 641

Start=(1, 1), Goal=(4, 4), Vertices: 0 and 62

iter=1, frontier=0, popped=0 (1, 1), depth=0, dist2goal=18

pushed 1 (1, 2)

pushed 20 (2, 1)

pushed 21 (2, 2)

iter=2, frontier=2, popped=21 (2, 2), depth=1, dist2goal=8

pushed 22 (2, 3)

pushed 41 (3, 2)

pushed 42 (3, 3)

iter=3, frontier=4, popped=42 (3, 3), depth=2, dist2goal=2

pushed 43 (3, 4)

pushed 61 (4, 3)

pushed 62 (4, 4)

iter=4, frontier=6, popped=62 (4, 4), depth=3, dist2goal=0

---PATH---

Vertex : 0 (1, 1)

Vertex : 21 (2, 2)

Vertex : 42 (3, 3)

Vertex : 62 (4, 4)

------GBFS------

Total Iterations : 4

Max Frontier Size : 7

Vertices Visited : 10 / 275

Path Length : 3