Henrique Ângelo Duarte Alves – 23.1.8028

Link para o código fonte: https://github.com/08-Joao/AedsIII-MazeProject

#### Resolvendo o Problema do Labirinto

Para cada arquivo de labirinto abordado apresente o caminho do início até a saída e o tempo de execução em segundos para obter a resposta:

#### Maze3:

- Busca por Largura:
  - Caminho: (1, 0), (1, 1), (2, 1), (1, 2), (3, 1), (1, 3), (2, 3), (3, 3), (4, 3), (3, 4), (5, 3), (3, 5), (5, 2), (4, 5), (2, 5), (5, 1), (5, 5), (1, 5), (5, 6)
  - o Tempo de execução: 0.0003635999746620655
- Busca por Profundidade:
  - o Caminho: (1, 0), (1, 1), (1, 2), (1, 3), (2, 3), (3, 3), (3, 4), (3, 5), (2, 5), (1, 5), (4, 5), (5, 5), (5, 6)
  - o Tempo de Execução: 0.0002462000120431185

### Maze10:

- Busca por Largura:
  - Caminho: (1, 0), (1, 1), (2, 1), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5), (4, 5), (2, 5), (3, 6), (5, 5), (1, 5), (3, 7), (6, 5), (1, 6), (1, 4), (4, 7), (7, 5), (1, 7), (1, 3), (5, 7), (6, 7), (7, 7), (8, 7), (7, 8), (9, 7), (7, 9), (9, 6), (8, 9), (6, 9), (9, 5), (9, 9), (5, 9), (10, 5), (4, 9), (5, 10), (11, 5), (3, 9), (5, 11), (11, 6), (2, 9), (6, 11), (4, 11), (11, 7), (1, 9), (7, 11), (3, 11), (12, 7), (1, 10), (8, 11), (13, 7), (1, 11), (9, 11), (13, 6), (1, 12), (10, 11), (9, 12),(13, 5), (1, 13), (11, 11), (9, 13), (14, 5), (2, 13), (1, 14), (11, 12), (11, 10), (15, 5), (3, 13), (1, 15), (11, 13), (11, 9), (15, 6), (15, 4), (4, 13), (3, 14), (1, 16), (12, 9), (15, 7), (15, 3), (5, 13), (3, 15), (1, 17), (13, 9), (15, 8), (16, 3), (5, 14), (2, 17), (1, 18), (13, 10), (15, 9), (17, 3), (5, 15), (3, 17), (1, 19), (13, 11), (16, 9), (18, 3), (17, 2), (6, 15), (4, 17), (3, 18), (14, 11), (13, 12), (17, 9), (19, 3), (17, 1), (7, 15), (5, 17), (3, 19), (15, 11), (13, 13), (18, 9), (17, 8), (19, 4), (18, 1), (16, 1), (7, 14), (5, 18), (16, 11), (14, 13), (19, 9), (17, 7), (19, 5), (19, 1), (15, 1), (7, 13), (5, 19), (17, 11), (15, 13), (18, 5), (19, 6), (14, 1), (6, 19), (18, 11),(17, 5), (19, 7), (13, 1), (7, 19), (19, 11), (12, 1), (13, 2), (8, 19), (7, 18), (19, 12), (11, 1), (13, 3), (9, 19),(7, 17), (19, 13), (12, 3), (10, 19), (8, 17), (18, 13), (19, 14), (11, 3), (11, 19), (9, 17), (17, 13), (19, 15), (10, 3), (12, 19), (10, 17), (9, 16), (18, 15), (9, 3), (13, 19), (11, 17), (9, 15), (17, 15), (8, 3), (9, 2), (14, 19), (13, 18), (11, 16), (7, 3), (9, 1), (15, 19), (13, 17), (11, 15), (6, 3), (7, 2), (15, 18), (5, 3), (7, 1), (15, 17), (5, 2), (16, 17), (15, 16), (5, 1), (17, 17), (15, 15), (18, 17), (17, 18), (14, 15), (19, 17), (17, 19), (13, 15), (19, 18), (19, 19), (19, 20)
  - o Tempo de execução: 0.003825400024652481
- Busca por Profundidade:
  - Caminho: (1, 0), (1, 1), (2, 1), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5), (3, 6), (3, 7), (4, 7), (5, 7), (6, 7), (7, 7), (7, 8), (7, 9), (6, 9), (5, 9), (5, 10), (5, 11), (4, 11), (3, 11), (6, 11), (7, 11), (8, 11), (9, 11), (9, 12), (9, 13), (10, 11), (11, 11), (11, 10), (11, 9), (12, 9), (13, 9), (13, 10), (13, 11), (13, 12), (13, 13), (14, 13), (15, 13), (14, 11), (15, 11), (16, 11), (17, 11), (18, 11), (19, 11), (19, 12), (19, 13), (19, 14), (19, 15), (18, 15), (17, 15), (18, 13), (17, 13), (11, 12), (11, 13), (4, 9), (3, 9), (2, 9), (1, 9), (1, 10), (1, 11), (1, 12), (1, 13), (1, 14), (1, 15), (1, 16), (1, 17), (1, 18), (1, 19), (2, 17), (3, 17), (3, 18), (3, 19), (4, 17), (5, 17), (5, 18), (5, 19), (6, 19), (7, 19), (7, 18), (7, 17), (8, 17), (9, 17), (9, 16), (9, 15), (10, 17), (11, 17), (11, 16), (11, 15),

(8, 19), (9, 19), (10, 19), (11, 19), (12, 19), (13, 19), (13, 18), (13, 17), (14, 19), (15, 19), (15, 18), (15, 17), (15, 16), (15, 15), (14, 15), (13, 15), (16, 17), (17, 17), (17, 18), (17, 19), (18, 17), (19, 17), (19, 18), (19, 19), (19, 20)

Tempo de Execução: 0.001979400054551661

### Maze20:

# • Busca por Largura:

Caminho: (1, 0), (1, 1), (2, 1), (3, 1), (4, 1), (5, 1), (5, 2), (5, 3), (6, 3), (5, 4), (7, 3), (5, 5), (7, 2), (4, 5), (7, 2), (4, 5), (7, 2), (4, 5), (7, 2), (4, 5), (7, 2), (4, 5), (7, 2), (8, 1), (1, 1 1), (3, 5), (8, 1), (2, 5), (9, 1), (1, 5), (10, 1), (1, 6), (1, 4), (11, 1), (1, 7), (1, 3), (11, 2), (1, 8), (2, 3), (11, 3), (1, 9), (3, 3), (10, 3), (1, 10), (9, 3), (1, 11), (9, 4), (2, 11), (1, 12), (9, 5), (3, 11), (1, 13), (8, 5), (9, 6), (4, 11), (1, 14), (7, 5), (9, 7), (5, 11), (1, 15), (8, 7), (5, 12), (7, 7), (5, 13), (7, 8), (5, 14), (7, 9), (5, 15), (6, 9), (6, 15), (4, 15), (5, 9), (7, 15), (3, 15), (5, 8), (7, 14), (3, 16), (3, 14), (5, 7), (7, 13), (3, 17), (3, 13), (4, 7), (8, 13), (7, 12), (4, 17), (3, 7), (9, 13), (7, 11), (5, 17), (3, 8), (10, 13), (6, 17), (3, 9), (11, 13), (7, 17), (11, 14), (11, 15), (10, 15), (9, 15), (9, 16), (9, 17), (10, 17), (9, 18), (11, 17), (9, 19), (10, 19), (8, 19), (11, 19), (7, 19), (11, 20), (7, 20), (11, 21), (7, 21), (8, 21), (9, 21), (9, 22), (9, 23), (10, 23), (11, 23), (12, 23), (13, 23), (14, 23), (13, 24), (15, 23), (13, 25), (12, 25), (13, 26), (11, 25), (13, 27), (10, 25), (11, 26), (14, 27), (9, 25), (11, 27), (15, 27), (8, 25), (10, 27), (11, 28), (15, 26), (7, 25), (9, 27), (11, 29), (15, 25), (6, 25), (8, 27), (11, 30), (16, 25), (5, 25), (7, 27), (11, 31), (17, 25), (5, 26), (7, 28), (12, 31), (18, 25), (5, 27), (7, 29), (13, 31), (19, 25), (5, 28), (8, 29), (13, 30), (19, 26), (19, 24), (5, 29), (9, 29), (13, 29), (19, 27), (19, 23), (4, 29), (18, 27), (19, 28), (18, 23), (19, 22), (3, 29), (17, 27), (19, 29), (17, 23), (19, 21), (2, 29), (3, 30), (18, 29), (19, 30), (17, 22), (20, 21), (19, 20), (1, 29), (3, 31), (17, 29), (19, 31), (17, 21), (21, 21), (19, 19), (1, 30), (1, 28), (4, 31), (3, 32), (20, 31), (21, 22), (21, 20), (18, 19), (19, 18), (1, 31), (1, 27), (5, 31), (3, 33), (21, 31), (21, 23), (21, 19), (17, 19), (19, 17), (1, 32), (1, 26), (6, 31), (5, 32), (3, 34), (21, 30), (21, 24), (16, 19), (18, 17), (19, 16), (1, 33), (1, 25), (7, 31), (5, 33), (3, 35), (21, 29), (21, 25), (15, 19), (17, 17), (19, 15), (1, 34), (2, 25), (1, 24), (8, 31), (6, 33), (22, 29), (15, 20), (15, 18), (18, 15), (19, 14), (1, 35), (3, 25), (1, 23), (9, 31), (7, 33), (23, 29), (15, 21), (15, 17), (17, 15), (19, 13), (1, 36), (3, 26), (2, 23), (1, 22), (7, 34), (24, 29), (23, 30), (23, 28), (14, 21), (14, 17), (17, 14), (19, 12), (1, 37), (3, 27), (3, 23), (1, 21), (7, 35), (25, 29), (23, 31), (23, 27), (13, 21), (13, 17), (17, 13), (19, 11), (1, 38), (4, 23), (1, 20), (8, 35), (25, 28), (24, 31), (23, 32), (22, 27), (23, 26), (13, 18), (13, 16), (20, 11), (18, 11), (1, 39), (5, 23), (1, 19), (9, 35), (25, 27), (25, 31), (23, 33), (21, 27), (23, 25), (13, 19), (13, 15), (21, 11), (17, 11), (6, 23), (5, 22), (1, 18), (10, 35), (9, 36), (9, 34), (26, 31), (24, 33), (22, 33), (14, 15), (21, 12), (7, 23), (5, 21), (1, 17), (11, 35), (9, 37), (9, 33), (27, 31), (25, 33), (21, 33), (15, 15), (21, 13), (5, 20), (12, 35), (10, 37), (8, 37), (10, 33), (28, 31), (25, 34), (20, 33), (15, 14), (5, 19), (13, 35), (11, 37), (7, 37), (11, 33), (29, 31), (25, 35), (19, 33), (15, 13), (4, 19), (13, 34), (12, 37), (7, 38), (29, 30), (26, 35),(24, 35), (25, 36), (14, 13), (15, 12), (3, 19), (13, 33), (13, 37), (7, 39), (29, 29), (27, 35), (23, 35), (25, 37), (13, 13), (15, 11), (3, 20), (8, 39), (6, 39), (30, 29), (29, 28), (27, 34), (23, 36), (26, 37), (25, 38), (13, 12), (3, 21), (9, 39), (5, 39), (31, 29), (29, 27), (27, 33), (23, 37), (27, 37), (25, 39), (13, 11), (10, 39), (4, 39), (5, 38), (32, 29), (28, 27), (29, 26), (26, 39), (12, 11), (13, 10), (11, 39), (3, 39), (5, 37), (33, 29), (27, 27), (29, 25), (27, 39), (11, 11), (13, 9), (12, 39), (3, 38), (5, 36), (34, 29), (27, 28), (30, 25), (29, 24), (28, 39), (10, 11), (12, 9), (13, 39), (3, 37), (5, 35), (35, 29), (27, 29), (31, 25), (29, 23), (29, 39), (9, 11), (11, 9), (14, 39), (36, 29), (35, 30), (35, 28), (32, 25), (30, 23), (30, 39), (29, 38), (9, 10), (11, 8), (15, 39), (37, 29), (35, 31), (35, 27), (33, 25), (31, 23), (31, 39), (29, 37), (9, 9), (11, 7), (16, 39), (15, 38), (38, 29), (37, 28), (36, 31), (34, 31), (34, 25), (33, 26), (32, 23), (32, 39), (31, 38), (29, 36), (11, 6), (17, 39), (15, 37), (39, 29), (37, 27), (37, 31), (33, 31), (35, 25), (33, 27), (33, 23), (33, 39), (31, 37), (29, 35), (11, 5), (17, 38), (15, 36), (39, 28), (32, 31), (32, 27), (33, 22), (34, 39), (33, 38), (30, 35), (17, 37), (15, 35), (39, 27), (31, 31), (31, 27), (33, 21), (35, 39), (33, 37), (31, 35), (18, 37), (17, 36), (15, 34), (39, 26), (34, 21), (32, 21), (33, 20), (36, 39), (33, 36), (31, 34), (19, 37), (17, 35), (15, 33), (39, 25), (35, 21), (31, 21), (33, 19), (37, 39), (33, 35), (31, 33), (20, 37), (19, 38), (19, 36), (15, 32), (38, 25), (36, 21), (35, 22), (30, 21), (31,

20), (34, 19), (33, 18), (38, 39), (33, 34), (30, 33), (21, 37), (19, 39), (19, 35), (15, 31), (37, 25), (37, 21), (35, 23), (29, 21), (31, 19), (35, 19), (33, 17), (39, 39), (33, 33), (29, 33), (21, 38), (21, 36), (16, 31), (15, 30), (37, 20), (31, 18), (35, 18), (33, 16), (39, 40)

Tempo de execução: 0.007434000028297305

### Busca por Profundidade:

- Caminho: (1, 0), (1, 1), (2, 1), (3, 1), (4, 1), (5, 1), (5, 2), (5, 3), (5, 4), (5, 5), (4, 5), (3, 5), (2, 5), (1, 5 4), (1, 3), (2, 3), (3, 3), (1, 6), (1, 7), (1, 8), (1, 9), (1, 10), (1, 11), (1, 12), (1, 13), (1, 14), (1, 15), (2, 11), (3, 11), (4, 11), (5, 11), (5, 12), (5, 13), (5, 14), (5, 15), (4, 15), (3, 15), (3, 14), (3, 13), (3, 16), (3, 17), (4, 11), (4, 11), (5, 11), (5, 12), (5, 12), (5, 13), (5, 14), (5, 15), (6, 15), (17), (5, 17), (6, 17), (7, 17), (6, 15), (7, 15), (7, 14), (7, 13), (7, 12), (7, 11), (8, 13), (9, 13), (10, 13), (11, 13), (11, 14), (11, 15), (10, 15), (9, 15), (9, 16), (9, 17), (9, 18), (9, 19), (8, 19), (7, 19), (7, 20), (7, 21), (8, 21), (9, 21), (9, 22), (9, 23), (10, 23), (11, 23), (12, 23), (13, 23), (13, 24), (13, 25), (13, 26), (13, 27), (14, 27), (15, 27), (15, 26), (15, 25), (16, 25), (17, 25), (18, 25), (19, 25), (19, 24), (19, 23), (19, 22), (19, 21), (19, 20), (19, 19), (19, 18), (19, 17), (19, 16), (19, 15), (19, 14), (19, 13), (19, 12), (19, 11), (18, 11), (17, 11), (20, 11), (21, 11), (21, 12), (21, 13), (18, 15), (17, 15), (17, 14), (17, 13), (18, 17), (17, 17), (18, 17), (18, 18), (18,19), (17, 19), (16, 19), (15, 19), (15, 18), (15, 17), (14, 17), (13, 17), (13, 16), (13, 15), (14, 15), (15, 15), (15, 14), (15, 13), (15, 12), (15, 11), (14, 13), (13, 13), (13, 12), (13, 11), (13, 10), (13, 9), (12, 9), (11, 9), (11, 8), (11, 7), (11, 6), (11, 5), (12, 11), (11, 11), (10, 11), (9, 11), (9, 10), (9, 9), (13, 18), (13, 19), (15, 20), (15, 21), (14, 21), (13, 21), (20, 21), (21, 21), (21, 20), (21, 19), (21, 22), (21, 23), (21, 24), (21, 25), (18, 23), (17, 23), (17, 22), (17, 21), (19, 26), (19, 27), (19, 28), (19, 29), (19, 30), (19, 31), (20, 31), (21, 31), (21, 30), (21, 29), (22, 29), (23, 29), (23, 28), (23, 27), (23, 26), (23, 25), (22, 27), (21, 27), (23, 30), (23, 31), (23, 32), (23, 33), (22, 33), (21, 33), (20, 33), (19, 33), (24, 33), (25, 33), (25, 34), (25, 35), (25, 36), (25, 37), (25, 38), (25, 39), (26, 39), (27, 39), (28, 39), (29, 39), (29, 38), (29, 37), (29, 36), (29, 35), (30, 35), (31, 35), (31, 34), (31, 33), (30, 33), (29, 33), (30, 39), (31, 39), (31, 38), (31, 37), (32, 39), (33, 39), (33, 38), (33, 37), (33, 36), (33, 35), (33, 34), (33, 33), (34, 33), (35, 33), (35, 34), (35, 35), (35, 36), (35, 37), (34, 39), (35, 39), (36, 39), (37, 39), (38, 39), (39, 39), (39, 38), (39, 37), (39, 36), (39, 35), (39, 34), (39, 33), (39, 32), (39, 31), (38, 33), (37, 33), (38, 37), (37, 37), (37, 36), (37, 35), (39, 40)
- Tempo de Execução: 0.005680999951437116

### Maze30:

# • Busca por Largura:

Caminho: (1, 0), (1, 1), (2, 1), (1, 2), (3, 1), (1, 3), (2, 3), (1, 4), (3, 3), (1, 5), (4, 3), (2, 5), (5, 3), (3, 5), (4, 5), (3, 6), (5, 5), (3, 7), (4, 7), (5, 7), (5, 8), (5, 9), (6, 9), (4, 9), (7, 9), (3, 9), (3, 10), (3, 11), (4, 11), (3, 12), (5, 11), (3, 13), (6, 11), (4, 13), (2, 13), (7, 11), (5, 13), (1, 13), (8, 11), (6, 13), (5, 14), (1, 14), (1, 12), (9, 11), (7, 13), (5, 15), (1, 15), (1, 11), (10, 11), (9, 12), (7, 14), (2, 15), (1, 10), (11, 11), (9, 13), (7, 15), (3, 15), (1, 9), (11, 10), (10, 13), (9, 14), (1, 8), (11, 9), (11, 13), (9, 15), (1, 7), (12, 9), (11, 8), (12, 13), (11, 14), (13, 9), (11, 7), (13, 13), (11, 15), (14, 9), (12, 7), (13, 12), (12, 15), (15, 9), (13, 7), (13, 11), (13, 15), (16, 9), (15, 10), (14, 7), (17, 9), (15, 11), (15, 7), (17, 10), (17, 8), (15, 12), (17, 11), (17, 7), (15, 13), (17, 6), (16, 13), (15, 14), (17, 5), (17, 13), (15, 15), (18, 5), (16, 5), (16, 15), (19, 5), (15, 5), (17, 15), (19, 6), (19, 4), (17, 16), (19, 7), (19, 3), (17, 17), (20, 3), (18, 3), (16, 17), (17, 18), (21, 3), (17, 18), (17, 18), (18, 18), (3), (15, 17), (17, 19), (16, 3), (17, 2), (14, 17), (16, 19), (15, 3), (17, 1), (13, 17), (15, 19), (14, 3), (18, 1), (16, 1), (13, 18), (15, 20), (13, 3), (19, 1), (15, 1), (13, 19), (15, 21), (12, 3), (20, 1), (14, 1), (12, 19), (13, 20), (15, 22), (11, 3), (21, 1), (13, 1), (11, 19), (13, 21), (15, 23), (11, 4), (22, 1), (12, 1), (10, 19), (11, 20), (11, 18), (13, 22), (16, 23), (11, 5), (23, 1), (11, 1), (9, 19), (11, 21), (11, 17), (13, 23), (17, 23), (12, 5), (10, 5), (24, 1), (23, 2), (10, 1), (10, 21), (11, 22), (18, 23), (13, 5), (9, 5), (25, 1), (23, 3), (9, 1), (9, 21), (11, 23), (19, 23), (8, 5), (24, 3), (23, 4), (9, 2), (8, 21), (9, 22), (11, 24), (20, 23), (19, 22), (7, 5), (25, 3), (23, 5), (9, 3), (7, 21), (9, 23), (11, 25), (21, 23), (19, 21), (7, 6), (22, 5), (8, 3), (7, 22), (7, 20), (10,

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Tempo de execução: 0.026123999967239797

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o Tempo de Execução: 0.025220400071702898

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Tempo de execução: 0.029803037992678583

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