Resolución de problemas de búsqueda

Memoria de Prácticas de Inteligencia Artificial

Primera entrega

20 de febrero de 2013

Autores:

Francisco Abel Cedrón Santaeufemia francisco.cedron@udc.es

Directorio de entrega: francisco.cedron

Resumen. Se desea obtener el menor numero de movimientos para que la pieza de un caballo de ajedrez se mueva por el tablero desde una casilla de inicio hasta una casilla de fin. El objetivo de esta práctica consiste en utilizar la inteligencia artificial para tratar de obtener una solución a este planteamiento, formulándolo como un problema de búsqueda. Para ello se implementarán distintos algoritmos de búsqueda (ciega e informada) de los cuales se evaluarán y se extraerán las conclusiones.

Índice

1.	Res	ultados	4
	1.1.	Ejemplos de ejecución	4
		1.1.1. Búsqueda empleando árboles	5
		1.1.2. Búsqueda empleando grafos	28
	1.2.	Caracterización de la calidad de las heurísticas empleadas	49
	1.3.	Comparación del rendimiento de los distintos métodos de búsqueda implementados	49
2.	Discusión 4		
	2.1.	Comparativa entre heurísticas	49
	2.2.	Ventajas e inconvenientes de los métodos de búsqueda	50
	2.3.	Heurística no admisible	52
3.	Apendices		70
	3.1.	Diagrama de clases	70
	3.2.	Ejecución	70

1. Resultados

En esta sección se hablará de los resultados obtenidos con el programa desarrollado en el cual están implementadas las siguientes estrategias

- Búsqueda ciega
 - Búsqueda en profundidad
 - Búsqueda en anchura
- Búsqueda informada
 - Algoritmo A*

en las cuales se ha implementado la búsqueda de la exploración de estados tanto en árbol como en grafo.

Debido a que el enunciado de la práctica solamente exige documentar uno de los métodos de búsqueda ciega se ha escogido mostrar los resultados obtenidos para la búsqueda en anchura debido a que la búsqueda en profundidad se limita en encontrar la solución de "casualidad".

1.1. Ejemplos de ejecución

En este apartado se muestra la traza completa para dos de las estrategias de búsqueda implementadas (búsqueda en anchura y A^*), mostrando además, a la finalización de ambos, el camino obtenido. El tablero que se emplea es de tamaño 10x10 y se escoge como casilla de inicio la (2, 2) mientras que la posición (4, 6) es la casilla a la que se quiere llegar. En la figura 1 se puede ver esta situación, donde la casilla con el caballo es la de comienzo y la que tiene la bandera a cuadros es la de finalización.

Para recordar las heurísticas empleadas son las que aparecen en las ecuaciones 1, 2 y 3 donde (x_i, y_i) es la posición donde se encuentra el caballo y (x_m, y_m) es la casilla a la que se quiere llegar.

$$h_0(n) = 0 (1)$$

$$h_1(n) = \lfloor \frac{|x_i - x_m| + |y_i - y_m|}{3} \rfloor \tag{2}$$

$$h_2(n) = \left\{ \begin{array}{cc} 0 & si & x_m = x_i \wedge y_m = y_i \\ max\left(\frac{||x_i - x_m| - 1|}{2}, \frac{||y_i - y_m| - 1|}{2}\right) & en \ otro \ caso \end{array} \right.$$
 (3)

1.1.1. Búsqueda empleando árboles

```
Búsqueda en anchura
             Empezando la busqueda. En anchura
              ______
              Fringe: [(2, 2)]
              ______
             Fringe: [(1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) ]
              ______
             Fringe: [(3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (3, 1) (2, 2) (0, 2) ]
              ______
              Fringe: [(4, 1), (4, 3), (3, 4), (1, 4), (0, 3), (0, 1), (3, 1), (2, 2), (0, 2), (5, 1), (4, 2), (2, 2), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1, 4), (1,
1)
               ______
              Fringe: [(4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6,
0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0)
              ______
              Fringe: [(3, 4) (1, 4) (0, 3) (0, 1) (3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2)
(2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2)
              Fringe: [(1, 4) (0, 3) (0, 1) (3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 1) (1, 1) (2, 2) (1, 1) (2, 2) (1, 1) (2, 2) (2, 2) (2, 2) (2, 2) (2, 2) (2, 2) (3, 2) (4, 2) (5, 2) (5, 2) (5, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2) (6, 2
(3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3)
(5, 5) (4, 6) (2, 6) (1, 5) (1, 3)
               ______
              Fringe: [(0, 3), (0, 1), (3, 1), (2, 2), (0, 2), (5, 1), (4, 2), (2, 2), (1, 1), (6, 0), (6, 2), (5, 3), (3, 1), (4, 2), (5, 3), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6, 2), (6,
(2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5)
(4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6)
              Fringe: [(0, 1) (3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2,
(2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6)
(2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5)
              Fringe: [(3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 2)
(0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6)
(1,5) (1,3) (0,2) (2,2) (3,3) (3,5) (2,6) (0,6) (1,1) (2,2) (2,4) (1,5) (2,0) (2,2) (1,5)
3)
              Fringe: [(2, 2), (0, 2), (5, 1), (4, 2), (2, 2), (1, 1), (6, 0), (6, 2), (5, 3), (3, 3), (2, 2), (2, 0), (3, 3), (2, 2), (3, 3), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4, 2), (4,
1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5)
(1,3) (0,2) (2,2) (3,3) (3,5) (2,6) (0,6) (1,1) (2,2) (2,4) (1,5) (2,0) (2,2) (1,3) (5,6)
```

```
0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0)
                  Fringe: [(0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5,
 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3)
 (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2)
(2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1)
                  Fringe: [(5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6,
(2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2)
 (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 4) (1, 5) (2, 0) (2, 2) (1, 3) (3, 5) (2, 0) (2, 2) (3, 3) (3, 5) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 4) (1, 5) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) 
3) (2, 3) (1, 2) (1, 0) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (1, 0) (2, 1) (2, 3)
 (1, 4)
                 Fringe: [(4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6,
4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2)
 (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 4) (1, 5) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) (2, 6) 
(3) (1, 2) (1, 0) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (1, 0) (2, 1) (2, 3) (1, 4)
 (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0)
                  Fringe: [(2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5,
(5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3)
 (2) (1, 0) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0)
 (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1)
                  Fringe: [(1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 4) (6, 2) (6, 4) (6, 5) (6, 4) (7, 5) (8, 4) (8, 5) (8, 4) (8, 5) (8, 4) (8, 5) (8, 4) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5) (8, 5
5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5)
 (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4, 4) (1, 4,
(0) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2)
 (6,3) (4,3) (3,2) (3,0) (3,0) (5,0) (6,1) (6,3) (5,4) (3,4) (2,3) (2,1) (1,0) (3,0) (4,3)
 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1)
                  Fringe: [(6,0),(6,2),(5,3),(3,3),(2,2),(2,0),(3,1),(5,1),(6,2),(6,4),(5,5),(3,5),(2,4),(5,5),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(6,2),(
(2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6)
 (0,6) (1,1) (2,2) (2,4) (1,5) (2,0) (2,2) (1,3) (5,0) (5,2) (4,3) (2,3) (1,2) (1,0) (1,1)
(0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3)
 (4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,1)
3) (3, 4) (1, 4) (0, 3) (0, 1) (3, 0) (3, 2) (2, 3) (0, 3)
```

Fringe: [(6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6)(1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (3, 0)0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3)(3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1) (1, 0) (3, 0) (4, 1) (4, 3) (3, 0) (4, 1) (4, 3) (3, 0) (4, 1) (4, 3) (3, 0) (4, 1) (4, 3)4) (1, 4) (0, 3) (0, 1) (3, 0) (3, 2) (2, 3) (0, 3) (8, 1) (7, 2) (5, 2) (4, 1)

Fringe: [(5,3)(3,3)(2,2)(2,0)(3,1)(5,1)(6,2)(6,4)(5,5)(3,5)(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)]

Fringe: [(3,3)(2,2)(2,0)(3,1)(5,1)(6,2)(6,4)(5,5)(3,5)(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)]

Fringe: [(2,2)(2,0)(3,1)(5,1)(6,2)(6,4)(5,5)(3,5)(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)]

Fringe: [(2,0)(3,1)(5,1)(6,2)(6,4)(5,5)(3,5)(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)

Fringe: [(3,1)(5,1)(6,2)(6,4)(5,5)(3,5)(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(4,1)(3,2)(1,2)(0,1)]

Fringe: [(5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 4) (2, 2) (3, 3) (5, 5) (4, 6) (2, 4) (5, 5) (6, 4) (6, 2) (6, 4) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 5) (6, 6

 $\begin{array}{l} 6) \; (1,\,5) \; (1,\,3) \; (0,\,2) \; (2,\,2) \; (3,\,3) \; (3,\,5) \; (2,\,6) \; (0,\,6) \; (1,\,1) \; (2,\,2) \; (2,\,4) \; (1,\,5) \; (2,\,0) \; (2,\,2) \\ (1,\,3) \; (5,\,0) \; (5,\,2) \; (4,\,3) \; (2,\,3) \; (1,\,2) \; (1,\,0) \; (1,\,0) \; (3,\,0) \; (4,\,1) \; (4,\,3) \; (3,\,4) \; (1,\,4) \; (0,\,3) \; (0,\,1) \\ (1,\,0) \; (2,\,1) \; (2,\,3) \; (1,\,4) \; (7,\,0) \; (7,\,2) \; (6,\,3) \; (4,\,3) \; (3,\,2) \; (3,\,0) \; (3,\,0) \; (5,\,0) \; (6,\,1) \; (6,\,3) \\ (5,\,4) \; (3,\,4) \; (2,\,3) \; (2,\,1) \; (1,\,0) \; (3,\,0) \; (4,\,1) \; (4,\,3) \; (3,\,4) \; (1,\,4) \; (0,\,3) \; (0,\,1) \; (3,\,0) \; (3,\,2) \; (2,\,3) \\ (0,\,3) \; (8,\,1) \; (7,\,2) \; (5,\,2) \; (4,\,1) \; (5,\,0) \; (7,\,0) \; (8,\,1) \; (8,\,3) \; (7,\,4) \; (5,\,4) \; (4,\,3) \; (4,\,1) \; (4,\,1) \\ (6,\,1) \; (7,\,2) \; (7,\,4) \; (6,\,5) \; (4,\,5) \; (3,\,4) \; (3,\,2) \; (2,\,1) \; (4,\,1) \; (5,\,2) \; (5,\,4) \; (4,\,5) \; (2,\,5) \; (1,\,4) \; (1,\,2) \; (1,\,0) \; (3,\,0) \; (4,\,1) \; (4,\,3) \; (3,\,4) \; (1,\,4) \; (0,\,3) \; (0,\,1) \; (4,\,1) \; (3,\,2) \; (1,\,2) \; (0,\,1) \; (5,\,0) \; (5,\,2) \\ (4,\,3) \; (2,\,3) \; (1,\,2) \; (1,\,0) \;] \end{array}$

Fringe: [(6, 2), (6, 4), (5, 5), (3, 5), (2, 4), (2, 2), (2, 2), (4, 2), (5, 3), (5, 5), (4, 6), (2, 6), (1, 5), (1, 3), (0, 2), (2, 2), (3, 3), (3, 5), (2, 6), (0, 6), (1, 1), (2, 2), (2, 4), (1, 5), (2, 0), (2, 2), (1, 3), (5, 0), (5, 2), (4, 3), (2, 3), (1, 2), (1, 0), (1, 0), (3, 0), (4, 1), (4, 3), (3, 4), (1, 4), (0, 3), (0, 1), (1, 0), (2, 1), (2, 3), (1, 4), (7, 0), (7, 2), (6, 3), (4, 3), (3, 2), (3, 0), (3, 0), (5, 0), (6, 1), (6, 3), (5, 4), (3, 4), (2, 3), (2, 1), (1, 0), (3, 0), (4, 1), (4, 3), (3, 4), (1, 4), (0, 3), (0, 1), (3, 0), (3, 2), (2, 3), (0, 3), (8, 1), (7, 2), (5, 2), (4, 1), (5, 0), (7, 0), (8, 1), (8, 3), (7, 4), (5, 4), (4, 3), (4, 1), (4, 1), (6, 1), (7, 2), (7, 4), (6, 5), (4, 5), (3, 4), (3, 2), (2, 1), (4, 1), (5, 2), (5, 4), (4, 5), (2, 5), (1, 4), (1, 2), (1, 0), (3, 0), (4, 1), (4, 3), (3, 4), (1, 4), (0, 3), (0, 1), (4, 1), (3, 2), (1, 2), (0, 1), (5, 0), (5, 2), (4, 3), (2, 3), (1, 2), (1, 0), (7, 0), (7, 2), (6, 3), (4, 3), (3, 2), (3, 0), (3, 0), (3, 0), (3, 0), (4, 1), (4, 1), (4, 2), (4, 3), (4,

Fringe: [(6,4)(5,5)(3,5)(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(4,1)(3,2)(1,2)(0,1)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)]

Fringe: [(5,5)(3,5)(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(4,1)(3,2)(1,2)(0,1)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(1,4)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(8,3)(8,5)(7,6)(5,6)(4,5)(4,3)]

Fringe: [(3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (3, 0) (3, 2) (2, 3) (0, 3) (8, 1) (7, 2) (5, 4)

(2, 3) (4, 3) (5, 4) (5, 6) (4, 7) (2, 7) (1, 6) (1, 4)

```
 \begin{array}{c} 2) \; (4,\,1) \; (5,\,0) \; (7,\,0) \; (8,\,1) \; (8,\,3) \; (7,\,4) \; (5,\,4) \; (4,\,3) \; (4,\,1) \; (4,\,1) \; (6,\,1) \; (7,\,2) \; (7,\,4) \; (6,\,5) \\ (4,\,5) \; (3,\,4) \; (3,\,2) \; (2,\,1) \; (4,\,1) \; (5,\,2) \; (5,\,4) \; (4,\,5) \; (2,\,5) \; (1,\,4) \; (1,\,2) \; (1,\,0) \; (3,\,0) \; (4,\,1) \; (4,\,3) \; (3,\,4) \; (1,\,4) \; (0,\,3) \; (0,\,1) \; (4,\,1) \; (3,\,2) \; (1,\,2) \; (0,\,1) \; (5,\,0) \; (5,\,2) \; (4,\,3) \; (2,\,3) \; (1,\,2) \; (1,\,0) \\ (7,\,0) \; (7,\,2) \; (6,\,3) \; (4,\,3) \; (3,\,2) \; (3,\,0) \; (5,\,0) \; (7,\,0) \; (8,\,1) \; (8,\,3) \; (7,\,4) \; (5,\,4) \; (4,\,3) \; (4,\,1) \; (5,\,2) \; (7,\,2) \; (8,\,3) \; (8,\,5) \; (7,\,6) \; (5,\,6) \; (4,\,5) \; (4,\,3) \; (4,\,3) \; (6,\,3) \; (7,\,4) \; (7,\,6) \; (6,\,7) \; (4,\,7) \; (3,\,6) \; (3,\,4) \; ]
```

Fringe: [(2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (3, 0) (3, 2) (2, 3) (0, 3) (8, 1) (7, 2) (5, 2) (4, 1) (5, 0) (7, 0) (8, 1) (8, 3) (7, 4) (5, 4) (4, 3) (4, 1) (4, 1) (6, 1) (7, 2) (7, 4) (6, 5) (4, 5) (3, 4) (3, 2) (2, 1) (4, 1) (5, 2) (5, 4) (4, 5) (2, 5) (1, 4) (1, 2) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (4, 1) (3, 2) (1, 2) (0, 1) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (5, 0) (7, 0) (8, 1) (8, 3) (7, 4) (5, 4) (4, 3) (4, 1) (5, 2) (7, 2) (8, 3) (8, 5) (7, 6) (5, 6) (4, 5) (4, 3) (4, 3) (4, 3) (6, 3) (7, 4) (7, 6) (6, 7) (4, 7) (3, 6) (3, 4)

Fringe: [(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(4,1)(3,2)(1,2)(0,1)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(8,3)(8,5)(7,6)(5,6)(4,5)(4,3)(4,3)(6,3)(7,4)(7,6)(6,7)(4,7)(3,6)(3,4)(2,3)(4,3)(5,4)(5,6)(4,7)(2,7)(1,6)(1,4)(1,2)(3,2)(4,3)(4,5)(3,6)(1,6)(0,5)(0,3)]

Frings: [/2, 2) (4, 2) (5, 2) (5, 5) (4, 6) (2, 6) (1, 5) (1, 2) (0, 2) (2, 2) (2, 2) (2, 5) (2, 2)

```
Fringe: [(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(4,1)(3,2)(1,2)(0,1)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(8,3)(8,5)(7,6)(5,6)(4,5)(4,3)(4,3)(4,3)(6,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(8,3)(8,5)(7,6)(5,6)(4,7)(2,7)(1,6)(1,4)(1,2)(3,2)(4,3)(4,5)(3,6)(1,6)(0,5)(0,3)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(6,1)[]
```

Fringe: [(4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0,

```
 6) \ (1, 1) \ (2, 2) \ (2, 4) \ (1, 5) \ (2, 0) \ (2, 2) \ (1, 3) \ (5, 0) \ (5, 2) \ (4, 3) \ (2, 3) \ (1, 2) \ (1, 0) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (3, 4) \ (1, 4) \ (0, 3) \ (0, 1) \ (1, 0) \ (2, 1) \ (2, 3) \ (1, 4) \ (7, 0) \ (7, 2) \ (6, 3) \ (4, 3) \ (3, 2) \ (3, 0) \ (3, 0) \ (5, 0) \ (6, 1) \ (6, 3) \ (5, 4) \ (3, 4) \ (2, 3) \ (2, 1) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (3, 4) \ (1, 4) \ (0, 3) \ (0, 1) \ (3, 0) \ (3, 2) \ (2, 3) \ (0, 3) \ (8, 1) \ (7, 2) \ (5, 2) \ (4, 1) \ (5, 0) \ (7, 0) \ (8, 1) \ (8, 3) \ (7, 4) \ (5, 4) \ (4, 3) \ (4, 1) \ (4, 1) \ (6, 1) \ (7, 2) \ (7, 4) \ (6, 5) \ (4, 5) \ (3, 4) \ (3, 2) \ (2, 1) \ (4, 1) \ (5, 2) \ (5, 4) \ (4, 5) \ (2, 5) \ (1, 4) \ (1, 2) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (3, 4) \ (1, 4) \ (0, 3) \ (0, 1) \ (4, 1) \ (3, 2) \ (1, 2) \ (0, 1) \ (5, 0) \ (5, 2) \ (4, 3) \ (2, 3) \ (1, 2) \ (1, 0) \ (7, 0) \ (7, 2) \ (6, 3) \ (4, 3) \ (3, 2) \ (3, 0) \ (5, 0) \ (7, 0) \ (8, 1) \ (8, 3) \ (7, 4) \ (5, 4) \ (4, 3) \ (4, 1) \ (5, 2) \ (7, 2) \ (8, 3) \ (8, 5) \ (7, 6) \ (5, 6) \ (4, 5) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (5, 4) \ (5, 6) \ (4, 7) \ (2, 7) \ (1, 6) \ (1, 4) \ (1, 2) \ (3, 2) \ (4, 3) \ (4, 5) \ (3, 6) \ (1, 6) \ (0, 5) \ (0, 3) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (3, 4) \ (1, 4) \ (0, 3) \ (0, 1) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (3, 4) \ (1, 4) \ (0, 3) \ (0, 1) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (3, 4) \ (1, 4) \ (0, 3) \ (0, 1) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (3, 4) \ (1, 4) \ (0, 3) \ (0, 1) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (3, 4) \ (1, 4) \ (0, 3) \ (0, 1) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (3, 4) \ (1, 4) \ (0, 3) \ (0, 1) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (3, 4) \ (1, 4) \ (0, 3) \ (0, 1) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (3, 4) \ (1, 4) \ (0, 3) \ (0, 1) \ (1, 0) \ (3, 0) \ (4, 1) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4, 3) \ (4,
```

Fringe: [(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(4,1)(3,2)(1,2)(0,1)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(8,3)(8,5)(7,6)(5,6)(4,5)(4,3)(4,3)(4,3)(6,3)(7,4)(7,6)(6,7)(4,7)(3,6)(3,4)(2,3)(4,3)(5,4)(5,6)(4,7)(2,7)(1,6)(1,4)(1,2)(3,2)(4,3)(4,5)(3,6)(1,6)(0,5)(0,3)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)]

Fringe: [(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(4,1)(3,2)(1,2)(0,1)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(8,3)(8,5)(7,6)(5,6)(4,5)(4,3)(4,3)(6,3)(7,4)(7,6)(6,7)(4,7)(3,6)(3,4)(2,3)(4,3)(5,4)(5,6)(4,7)(2,7)(1,6)(1,4)(1,2)(3,2)(4,3)(4,5)(3,6)(1,6)(0,5)(0,3)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(1,0)(3,0)(4,1)(4,3)(3,4)(1,4)(0,3)(0,1)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)]

Fringe: [(4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (3, 0) (3, 2) (2, 3) (0, 3) (8, 1) (7, 2) (5, 2) (4, 1) (5, 0) (7, 0) (8, 1) (8, 3) (7, 4) (5, 4) (4, 3) (4, 1) (4, 1) (6, 1) (7, 2) (7, 4) (6, 5) (4, 5) (3, 4) (3, 2) (2, 1) (4, 1) (5, 2) (5, 4) (4, 5) (2, 5) (1, 4) (1, 2) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (4, 1) (3, 2) (1, 4) (1, 2) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (4, 1) (3, 2) (1, 4) (1, 2) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (4, 1) (3, 2) (1, 4) (1, 2) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (4, 1) (3, 2) (1, 4) (1, 2) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (4, 1) (3, 2) (1, 4

```
(0, 1) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (5, 0)
(7,0) (8,1) (8,3) (7,4) (5,4) (4,3) (4,1) (5,2) (7,2) (8,3) (8,5) (7,6) (5,6) (4,5) (4,5)
(3) (4, 3) (6, 3) (7, 4) (7, 6) (6, 7) (4, 7) (3, 6) (3, 4) (2, 3) (4, 3) (5, 4) (5, 6) (4, 7) (2, 7)
(1, 6) (1, 4) (1, 2) (3, 2) (4, 3) (4, 5) (3, 6) (1, 6) (0, 5) (0, 3) (1, 0) (3, 0) (4, 1) (4, 3) (3, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) (1, 6) 
4) (1, 4) (0, 3) (0, 1) (1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (3, 0) (5, 0) (6, 1)
(6, 3) (5, 4) (3, 4) (2, 3) (2, 1) (4, 1) (6, 1) (7, 2) (7, 4) (6, 5) (4, 5) (3, 4) (3, 2) (4, 3) (6, 5) (6, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) (1, 5) 
3) (7, 4) (7, 6) (6, 7) (4, 7) (3, 6) (3, 4)
          ****************
          ****************
         Busqueda: Arbol
         Estrategia: Anchura
         Nodos generados: 227
         Nodos expandidos: 34
         Factor de ramificacion: 14.541607856750488
         Profun: 2
         Coste: 2
         Solucion: (2,2) (3,4) (4,6)
         ***************
          *****************
         Algoritmo A* con la heurística h_0(\mathbf{n}) (ecuación 1)
         Empezando la busqueda. Con la heurística 0
         Fringe: [((2, 2), 0, 0)]
         Node selected: ((2, 2), 0, 0) Path: [((2, 2), 0, 0)] Successors: [((0, 1), 1, 0), ((0, 3), 1, 0)]
(0) ((1, 4), 1, 0) ((3, 4), 1, 0) ((4, 3), 1, 0) ((4, 1), 1, 0) ((3, 0), 1, 0) ((1, 0), 1, 0)
         _____
         Fringe: [((1,0),1,0),((3,0),1,0),((4,1),1,0),((4,3),1,0),((3,4),1,0),((1,4),1,0)]
((0, 3), 1, 0) ((0, 1), 1, 0)
         0) ((2, 2), 2, 0) ((3, 1), 2, 0)
         Fringe: [((3,0),1,0),((4,1),1,0),((4,3),1,0),((3,4),1,0),((1,4),1,0),((0,3),1,0)]
((0, 1), 1, 0) ((3, 1), 2, 0) ((2, 2), 2, 0) ((0, 2), 2, 0)
         Node selected: ((3, 0), 1, 0) Path: [((2, 2), 0, 0), ((3, 0), 1, 0)] Successors: [((1, 1), 2, 0), ((3, 0), 1, 0)]
(0) ((2, 2), 2, 0) ((4, 2), 2, 0) ((5, 1), 2, 0)
          _____
         Fringe: [(4, 1), 1, 0) ((4, 3), 1, 0) ((3, 4), 1, 0) ((1, 4), 1, 0) ((0, 3), 1, 0) ((0, 1), 1, 0)
((3, 1), 2, 0) ((2, 2), 2, 0) ((0, 2), 2, 0) ((5, 1), 2, 0) ((4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0)
0)
```

```
Node selected: ((4, 1), 1, 0) Path: [((2, 2), 0, 0), ((4, 1), 1, 0)] Successors: [((2, 0), 2, 0, 0), ((4, 1), 1, 0)] Successors: [((2, 0), 2, 0, 0), ((4, 1), 1, 0)]
(0) ((2, 2), 2, 0) ((3, 3), 2, 0) ((5, 3), 2, 0) ((6, 2), 2, 0) ((6, 0), 2, 0)
        ______
        Fringe: [(4, 3), 1, 0) ((3, 4), 1, 0) ((1, 4), 1, 0) ((0, 3), 1, 0) ((0, 1), 1, 0) ((3, 1), 2, 0)]
((2, 2), 2, 0) ((0, 2), 2, 0) ((5, 1), 2, 0) ((4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0) ((6, 0), 2, 0)
0) ((6, 2), 2, 0) ((5, 3), 2, 0) ((3, 3), 2, 0) ((2, 2), 2, 0) ((2, 0), 2, 0)
        Node selected: ((4, 3), 1, 0) Path: [((2, 2), 0, 0), ((4, 3), 1, 0)] Successors: [((2, 2), 2, 0, 0), ((4, 3), 1, 0)] Successors: [((2, 2), 2, 0, 0), ((4, 3), 1, 0)]
(0) ((2, 4), 2, 0) ((3, 5), 2, 0) ((5, 5), 2, 0) ((6, 4), 2, 0) ((6, 2), 2, 0) ((5, 1), 2, 0) ((3, 1), 2, 0)
[2, 0)
        Fringe: [((3, 4), 1, 0), ((1, 4), 1, 0), ((0, 3), 1, 0), ((0, 1), 1, 0), ((3, 1), 2, 0), ((2, 2), 2, 0)]
((0, 2), 2, 0) ((5, 1), 2, 0) ((4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0) ((6, 0), 2, 0) ((6, 2), 2, 0)
(0) ((5,3),2,0) ((3,3),2,0) ((2,2),2,0) ((2,0),2,0) ((3,1),2,0) ((5,1),2,0) ((6,2),3)
(2, 0) ((6, 4), 2, 0) ((5, 5), 2, 0) ((3, 5), 2, 0) ((2, 4), 2, 0) ((2, 2), 2, 0)
        Node selected: ((3, 4), 1, 0) Path: [((2, 2), 0, 0), ((3, 4), 1, 0)] Successors: [((1, 3), 2, 0), ((3, 4), 1, 0)] Successors: [((1, 3), 2, 0), ((3, 4), 1, 0)]
(0) ((1, 5), 2, 0) ((2, 6), 2, 0) ((4, 6), 2, 0) ((5, 5), 2, 0) ((5, 3), 2, 0) ((4, 2), 2, 0) ((2, 2), 2, 0)
[2, 0)
        Fringe: [((1, 4), 1, 0), ((0, 3), 1, 0), ((0, 1), 1, 0), ((3, 1), 2, 0), ((2, 2), 2, 0), ((0, 2), 2, 0)]
((5, 1), 2, 0) ((4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0) ((6, 0), 2, 0) ((6, 2), 2, 0) ((5, 3), 2, 0)
(0) ((3, 3), 2, 0) ((2, 2), 2, 0) ((2, 0), 2, 0) ((3, 1), 2, 0) ((5, 1), 2, 0) ((6, 2), 2, 0) ((6, 4), 2, 0)
(2, 0) ((5, 5), 2, 0) ((3, 5), 2, 0) ((2, 4), 2, 0) ((2, 2), 2, 0) ((2, 2), 2, 0) ((4, 2), 2, 0) ((5, 2), 2, 0)
(3), (2, 0), ((5, 5), (2, 0), ((4, 6), (2, 0), ((2, 6), (2, 0), ((1, 5), (2, 0), ((1, 3), (2, 0)))
        (0) ((2, 6), 2, 0) ((3, 5), 2, 0) ((3, 3), 2, 0) ((2, 2), 2, 0) ((0, 2), 2, 0)
       Fringe: [(0, 3), 1, 0) ((0, 1), 1, 0) ((3, 1), 2, 0) ((2, 2), 2, 0) ((0, 2), 2, 0) ((5, 1), 2, 0)
((4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0) ((6, 0), 2, 0) ((6, 2), 2, 0) ((5, 3), 2, 0) ((3, 3), 2, 0)
(0) ((2, 2), 2, 0) ((2, 0), 2, 0) ((3, 1), 2, 0) ((5, 1), 2, 0) ((6, 2), 2, 0) ((6, 4), 2, 0) ((5, 5), 2, 0)
(2, 0) ((3, 5), 2, 0) ((2, 4), 2, 0) ((2, 2), 2, 0) ((2, 2), 2, 0) ((4, 2), 2, 0) ((5, 3), 2, 0) ((5, 3), 2, 0)
(5), (4, 6), (4, 6), (5, 0), (6, 1, 2, 0), (6, 1, 2, 0), (6, 1, 2, 0), (6, 1, 2, 0), (6, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 2, 0), (1, 1, 
((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0)
        Node selected: ((0, 3), 1, 0) Path: [((2, 2), 0, 0), ((0, 3), 1, 0)] Successors: [((1, 5), 2, 0, 0), ((0, 3), 1, 0)]
0) ((2, 4), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0)
        ((2, 2), 2, 0) ((1, 1), 2, 0) ((6, 0), 2, 0) ((6, 2), 2, 0) ((5, 3), 2, 0) ((3, 3), 2, 0) ((2, 2), 2, 0)
((2,0), 2, 0) ((3, 1), 2, 0) ((5, 1), 2, 0) ((6, 2), 2, 0) ((6, 4), 2, 0) ((5, 5), 2, 0) ((3, 5), 2, 0)
(0) ((2, 4), 2, 0) ((2, 2), 2, 0) ((2, 2), 2, 0) ((4, 2), 2, 0) ((5, 3), 2, 0) ((5, 5), 2, 0) ((4, 6), 2, 0)
(2, 0) ((2, 6), 2, 0) ((1, 5), 2, 0) ((1, 3), 2, 0) ((0, 2), 2, 0) ((2, 2), 2, 0) ((3, 3), 2, 0) ((3, 3), 2, 0)
(5), (2, 0), (2, 6), (2, 0), (0, 6), (2, 0), (1, 1), (2, 0), (2, 2), (2, 2), (2, 4), (2, 0), (1, 5), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 4), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0)
        Node selected: ((0, 1), 1, 0) Path: [((2, 2), 0, 0), ((0, 1), 1, 0)] Successors: [((1, 3), 2, 0), ((0, 1), 1, 0)] Successors: [((1, 3), 2, 0), ((0, 1), 1, 0)]
0) ((2, 2), 2, 0) ((2, 0), 2, 0)
```

Fringe: $[((3,1),2,0)\ ((2,2),2,0)\ ((0,2),2,0)\ ((5,1),2,0)\ ((4,2),2,0)\ ((2,2),2,0)\ ((1,1),2,0)\ ((6,0),2,0)\ ((6,2),2,0)\ ((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),$

Node selected: ((3, 1), 2, 0) Path: [((2, 2), 0, 0) ((1, 0), 1, 0) ((3, 1), 2, 0)] Successors: [((1, 0), 3, 0) ((1, 2), 3, 0) ((2, 3), 3, 0) ((4, 3), 3, 0) ((5, 2), 3, 0) ((5, 0), 3, 0)]

Fringe: $[((2,2),2,0)\ ((0,2),2,0)\ ((5,1),2,0)\ ((4,2),2,0)\ ((2,2),2,0)\ ((1,1),2,0)\ ((6,0),2,0)\ ((6,2),2,0)\ ((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\]$

Node selected: ((2, 2), 2, 0) Path: [((2, 2), 0, 0), ((1, 0), 1, 0), ((2, 2), 2, 0)] Successors: [((0, 1), 3, 0), ((0, 3), 3, 0), ((1, 4), 3, 0), ((3, 4), 3, 0), ((4, 3), 3, 0), ((4, 1), 3, 0), ((3, 0), 3, 0), ((1, 0), 3, 0)]

Fringe: $[((0,2),2,0)\ ((5,1),2,0)\ ((4,2),2,0)\ ((2,2),2,0)\ ((1,1),2,0)\ ((6,0),2,0)\ ((6,2),2,0)\ ((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,3),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,3),3,2,0)\ ((2,3),2,0)\ ((2,2),2,0)\ ((2,3),3,0)\ ((2,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((3,0),3,0)\ ((4,1),3,0)\ ((4,3),3,0)\ ((3,4),3,0)\ ((1,4),3,0)\ ((0,3$

Node selected: ((0, 2), 2, 0) Path: [((2, 2), 0, 0) ((1, 0), 1, 0) ((0, 2), 2, 0)] Successors: [((1, 4), 3, 0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((1, 0), 3, 0)]

Fringe: $[((5,1),2,0)\ ((4,2),2,0)\ ((2,2),2,0)\ ((1,1),2,0)\ ((6,0),2,0)\ ((6,2),2,0)\ ((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((0,1),3,0)\ ((0,1),3,0)\ ((1,0),3,0)\ ((0,1),$

Node selected: ((5, 1), 2, 0) Path: [((2, 2), 0, 0), ((3, 0), 1, 0), ((5, 1), 2, 0)] Successors: [((3, 0), 3, 0), ((3, 2), 3, 0), ((4, 3), 3, 0), ((6, 3), 3, 0), ((7, 2), 3, 0), ((7, 0), 3, 0)]

Fringe: [(4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0) ((6, 0), 2, 0) ((6, 2), 2, 0) ((5, 3), 2, 0) ((3, 3), 2, 0) ((2, 2), 2, 0) ((2, 0), 2, 0) ((3, 1), 2, 0) ((5, 1), 2, 0) ((6, 2), 2, 0) ((6, 4), 2, 0) ((5, 5), 2, 0) ((3, 5), 2, 0) ((2, 4), 2, 0) ((2, 2), 2, 0) ((2, 2), 2, 0) ((4, 2), 2, 0) ((5, 3), 2, 0) ((5, 5), 2, 0) ((4, 6), 2, 0) ((2, 6), 2, 0) ((1, 5), 2, 0) ((1, 3), 2, 0) ((0, 2), 2, 0) ((2, 2), 2, 0) ((2, 4), 2, 0) ((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0) ((1, 1), 2, 0) ((2, 2), 2, 0) ((2, 4), 2, 0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((1, 0), 3, 0) ((1, 0), 3, 0) ((1, 0), 3, 0) ((2, 1), 3, 0) ((2, 3), 3, 0) ((1, 4), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0) ((3, 2), 3, 0) ((3, 0), 3,

Node selected: ((4, 2), 2, 0) Path: [((2, 2), 0, 0), ((3, 0), 1, 0), ((4, 2), 2, 0)] Successors: [((2, 1), 3, 0), ((2, 3), 3, 0), ((3, 4), 3, 0), ((5, 4), 3, 0), ((6, 3), 3, 0), ((6, 1), 3, 0), ((5, 0), 3, 0), ((3, 0), 3, 0)]

Fringe: $[((2,2),2,0)\ ((1,1),2,0)\ ((6,0),2,0)\ ((6,2),2,0)\ ((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((2,1),3,0)\ ((2,3),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((2,3),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((5,0),3,0)\ ((6,1),3,0)\ ((6,3),3,0)\ ((5,4),3,0)\ ((3,4),3,0)\ ((2,3),3,0)\ ((2,1),3,0)\ ((2,3),$

Node selected: ((2, 2), 2, 0) Path: [((2, 2), 0, 0) ((3, 0), 1, 0) ((2, 2), 2, 0)] Successors: [((0, 1), 3, 0) ((0, 3), 3, 0) ((1, 4), 3, 0) ((3, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((3, 0), 3, 0) ((1, 0), 3, 0)]

Fringe: $[((1,1),2,0)\ ((6,0),2,0)\ ((6,2),2,0)\ ((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((4,3),3,0)\ ((2,3),3,3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((3,0),3,0)\ ((4,1),3,0)\ ((4,3),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,0),3,0)\ ((5,0),3,0)\ ((6,1),3,0)\ ((6,3),3,0)\ ((5,4),3,0)\ ((3,4),3,0)\ ((2,3),3,0)\ ((2,3),3,0)\ ((2,1),3,0)\ ((3,4),3,0)\ ((2,3),3,0)\ ((3,4$

Node selected: ((1, 1), 2, 0) Path: [((2, 2), 0, 0) ((3, 0), 1, 0) ((1, 1), 2, 0)] Successors: [((0, 3), 3, 0) ((2, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0)]

Fringe: [(6,0), 2, 0) ((6,2), 2, 0) ((5,3), 2, 0) ((3,3), 2, 0) ((2,2), 2, 0) ((2,0), 2, 0)

 $\begin{array}{l} ((3,1),2,0) \; ((5,1),2,0) \; ((6,2),2,0) \; ((6,4),2,0) \; ((5,5),2,0) \; ((3,5),2,0) \; ((2,4),2,0) \\ ((2,2),2,0) \; ((2,2),2,0) \; ((4,2),2,0) \; ((5,3),2,0) \; ((5,5),2,0) \; ((4,6),2,0) \; ((2,6),2,0) \; ((1,5),2,0) \; ((1,3),2,0) \; ((0,2),2,0) \; ((2,2),2,0) \; ((3,3),2,0) \; ((3,5),2,0) \; ((2,6),2,0) \; ((0,6),2,0) \; ((1,1),2,0) \; ((2,2),2,0) \; ((2,4),2,0) \; ((1,5),2,0) \; ((2,0),2,0) \; ((2,2),2,0) \; ((1,3),2,0) \; ((5,0),3,0) \; ((5,2),3,0) \; ((4,3),3,0) \; ((2,3),3,0) \; ((1,2),3,0) \; ((1,0),3,0) \; ((1,0),3,0) \; ((3,0),3,0) \; ((4,1),3,0) \; ((4,3),3,0) \; ((3,4),3,0) \; ((1,4),3,3,0) \; ((1,$

Node selected: ((6, 0), 2, 0) Path: [((2, 2), 0, 0), ((4, 1), 1, 0), ((6, 0), 2, 0)] Successors: [((4, 1), 3, 0), ((5, 2), 3, 0), ((7, 2), 3, 0), ((8, 1), 3, 0)]

Fringe: $[((6,2),2,0)\ ((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,6),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((3,0),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((1,4),3,0)\ ((1,4),3,0)\ ((0,3),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((3,4),3,0)\ ((3,0$

Node selected: ((6, 2), 2, 0) Path: [((2, 2), 0, 0), ((4, 1), 1, 0), ((6, 2), 2, 0)] Successors: [((4, 1), 3, 0), ((4, 3), 3, 0), ((5, 4), 3, 0), ((7, 4), 3, 0), ((8, 3), 3, 0), ((8, 1), 3, 0), ((7, 0), 3, 0), ((5, 0), 3, 0)]

Fringe: $[((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,3),2,0)\ ((2,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((2,3),3,0)\ ((3,4),3,0)\ ((1,4),3,0)\ ((1,4),3,0)\ ((1,4),3,0)\ ((1,0),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((3,2),3,0)\ ((3,4),3,0)\ ((2,3),3,0)\ ((2,1),3,0)\ ((2,1),3,0)\ ((3,0),3,0)\ ((3,2),3,0)\ ((3,4),3,0)\ ((2,3),3,0)\ ((2,1),3,0)\ ((3,0),3,0)\ ((3,2),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,4),3,0)\$

Node selected: ((5, 3), 2, 0) Path: [((2, 2), 0, 0), ((4, 1), 1, 0), ((5, 3), 2, 0)] Successors:

[((3, 2), 3, 0) ((3, 4), 3, 0) ((4, 5), 3, 0) ((6, 5), 3, 0) ((7, 4), 3, 0) ((7, 2), 3, 0) ((6, 1), 3, 0) ((4, 1), 3, 0)]

Fringe: $[((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,3),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,0),3,0)\ ((5,0),3,0)\ ((6,1),3,0)\ ((6,3),3,0)\ ((3,4),3,0)\ ((4,1),$

Node selected: ((3, 3), 2, 0) Path: [((2, 2), 0, 0), ((4, 1), 1, 0), ((3, 3), 2, 0)] Successors: [((1, 2), 3, 0), ((1, 4), 3, 0), ((2, 5), 3, 0), ((4, 5), 3, 0), ((5, 4), 3, 0), ((5, 2), 3, 0), ((4, 1), 3, 0), ((2, 1), 3, 0)]

Fringe: [((2, 2), 2, 0), ((2, 0), 2, 0), ((3, 1), 2, 0), ((5, 1), 2, 0), ((6, 2), 2, 0), ((6, 4), 2, 0)]((5,5), 2, 0) ((3,5), 2, 0) ((2,4), 2, 0) ((2,2), 2, 0) ((2,2), 2, 0) ((4,2), 2, 0) ((5,3), 2, 0)(0) ((5,5), 2, 0) ((4,6), 2, 0) ((2,6), 2, 0) ((1,5), 2, 0) ((1,3), 2, 0) ((0,2), 2, 0) ((2,2), 2, 0)(2, 0) ((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0) ((1, 1), 2, 0) ((2, 2), 2, 0) ((2, 2), 2, 0)(4), (2), ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0)(0) ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((1, 0), 3, 0) ((2, 1), 3, 0)(3, 0) ((2, 3), 3, 0) ((1, 4), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 3, 3), 0)(5, 3, 0) (3, 0) (3, 0) (3, 0) (5, 0) (5, 0) (6, 1) (6, 1) (6, 3) (6, 3) (6, 4) (6, 4)((3, 4), 3, 0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0)(0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((3, 0), 3, 0) ((3, 2), 3, 0) ((2, 3), 3, 0)(3, 0) ((0, 3), 3, 0) ((8, 1), 3, 0) ((7, 2), 3, 0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 0), 3, 0) ((7, 2), 3, 0)(0), (3, 0), ((8, 1), 3, 0), ((8, 3), 3, 0), ((7, 4), 3, 0), ((5, 4), 3, 0), ((4, 3), 3, 0), ((4, 1), 3, 0)((4, 1), 3, 0) ((6, 1), 3, 0) ((7, 2), 3, 0) ((7, 4), 3, 0) ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0)(0) ((3, 2), 3, 0) ((2, 1), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0)(3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0)

Node selected: ((2, 2), 2, 0) Path: [((2, 2), 0, 0), ((4, 1), 1, 0), ((2, 2), 2, 0)] Successors: [((0, 1), 3, 0), ((0, 3), 3, 0), ((1, 4), 3, 0), ((3, 4), 3, 0), ((4, 3), 3, 0), ((4, 1), 3, 0), ((3, 0), 3, 0), ((1, 0), 3, 0)]

Fringe: $[((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((2,3),2,0)\ ((2,4),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,2,2),2,0)\ ((2,2$

 $\begin{array}{l} 5),\,2,\,0)\,\left((2,\,0),\,2,\,0)\,\left((2,\,2),\,2,\,0\right)\,\left((1,\,3),\,2,\,0\right)\,\left((5,\,0),\,3,\,0\right)\,\left((5,\,2),\,3,\,0\right)\,\left((4,\,3),\,3,\,0\right)\,\left((2,\,3),\,3,\,0\right)\,\left((1,\,2),\,3,\,0\right)\,\left((1,\,0),\,3,\,0\right)\,\left((1,\,0),\,3,\,0\right)\,\left((3,\,0),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,3),\,3,\,0\right)\,\left((3,\,4),\,3,\,0\right)\,\left((1,\,4),\,3,\,0\right)\,\left((0,\,3),\,3,\,0\right)\,\left((0,\,1),\,3,\,0\right)\,\left((1,\,0),\,3,\,0\right)\,\left((2,\,1),\,3,\,0\right)\,\left((2,\,3),\,3,\,0\right)\,\left((1,\,4),\,3,\,0\right)\,\left((7,\,0),\,3,\,0\right)\,\left((7,\,2),\,3,\,0\right)\,\left((6,\,3),\,3,\,0\right)\,\left((4,\,3),\,3,\,0\right)\,\left((3,\,2),\,3,\,0\right)\,\left((3,\,4),\,3,\,0\right)\,\left((2,\,3),\,3,\,0\right)\,\left((2,\,1),\,3,\,0\right)\,\left((1,\,0),\,3,\,0\right)\,\left((3,\,0),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,3),\,3,\,0\right)\,\left((3,\,4),\,3,\,0\right)\,\left((2,\,3),\,3,\,0\right)\,\left((2,\,1),\,3,\,0\right)\,\left((1,\,0),\,3,\,0\right)\,\left((3,\,0),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,3),\,3,\,0\right)\,\left((3,\,4),\,3,\,0\right)\,\left((3,\,2),\,3,\,0\right)\,\left((2,\,3),\,3,\,0\right)\,\left((2,\,3),\,3,\,0\right)\,\left((3,\,2),\,3,\,0\right)\,\left((2,\,3),\,3,\,0\right)\,\left((2,\,3),\,3,\,0\right)\,\left((3,\,2),\,3,\,0\right)\,\left((3,\,2),\,3,\,0\right)\,\left((3,\,2),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,1),\,3,\,0\right)\,\left((4,\,2),\,3,\,0\right)\,\left((1,\,2$

Node selected: ((2, 0), 2, 0) Path: [((2, 2), 0, 0), ((4, 1), 1, 0), ((2, 0), 2, 0)] Successors: [((0, 1), 3, 0), ((1, 2), 3, 0), ((3, 2), 3, 0), ((4, 1), 3, 0)]

Fringe: [((3, 1), 2, 0), ((5, 1), 2, 0), ((6, 2), 2, 0), ((6, 4), 2, 0), ((5, 5), 2, 0), ((3, 5), 2, 0)]((2, 4), 2, 0) ((2, 2), 2, 0) ((2, 2), 2, 0) ((4, 2), 2, 0) ((5, 3), 2, 0) ((5, 5), 2, 0) ((4, 6), 2, 0)(0) ((2,6), 2, 0) ((1,5), 2, 0) ((1,3), 2, 0) ((0,2), 2, 0) ((2,2), 2, 0) ((3,3), 2, 0) ((3,5), 2, 0)(2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0) ((1, 1), 2, 0) ((2, 2), 2, 0) ((2, 4), 2, 0) ((1, 5), 2, 0) ((2, 4), 2, 0)(0), (2, 0), ((2, 2), (2, 0), ((1, 3), (2, 0), ((5, 0), (2, 0), ((5, 2), (2, 3), ((4, 3), (2, 3), ((2, 3), (2, 3), ((2, 3), (2, 3), ((2, 3), ((2, 3), (2, 3), ((2, 3)), ((2, 3), ((2, 3), ((2, 3)), ((2, 3), ((2, 3)), ((2, 3), ((2, 3)), ((2, 3), ((2, 3)), ((2, 3), ((2, 3)), ((2, 3), ((2, 3)), ((2, 3), ((2, 3)), ((1, 2), 3, 0) ((1, 0), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 3, 0)(0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((1, 0), 3, 0) ((2, 1), 3, 0) ((2, 3), 3, 0) ((1, 4), 3, 0)(3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0)(0), (3, 0), (5, 0), (3, 0), (6, 1), (6, 3), (6, 3), (6, 3), (6, 4)((2, 1), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0)(0) ((0,3),3,0) ((0,1),3,0) ((3,0),3,0) ((3,2),3,0) ((2,3),3,0) ((0,3),3,0) ((8,1),3,0)(3, 0) ((7, 2), 3, 0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 1), 3, 0)3), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((4, 1), 3, 0) ((6, 1), 3, 0)((7, 2), 3, 0) ((7, 4), 3, 0) ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0) ((2, 1), 3, 0)(0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0)(3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3, 0), 3, 0)(0, 1), (0,

Node selected: ((3, 1), 2, 0) Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((3, 1), 2, 0)] Successors: [((1, 0), 3, 0), ((1, 2), 3, 0), ((2, 3), 3, 0), ((4, 3), 3, 0), ((5, 2), 3, 0), ((5, 0), 3, 0)]

Fringe: [((5, 1), 2, 0), ((6, 2), 2, 0), ((6, 4), 2, 0), ((5, 5), 2, 0), ((3, 5), 2, 0), ((2, 4), 2, 0), ((3, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((4, 6), 2, 0), ((5, 6), 2, 0), ((5, 6), 2, 0), ((6, 6), 2, 2, 0), ((6, 6), 2, 2, 0), ((6, 6), 2, 2, 0), ((6, 6), 2, 2, 0), ((6, 6), 2, 2, 0), ((6, 6), 2, 2, 2, 0), ((6, 6), 2, 2, 2, 2, 2, 2), ((6, 6), 2, 2, 2, 2), ((6, 6), 2, 2, 2, 2), ((6, 6), 2, 2, 2, 2), ((6, 6), 2, 2, 2, 2), ((6, 6), 2, 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2, 2), ((6, 6), 2, 2

 $\begin{array}{c} \text{Timge. } [(0,1),2,0) \ ((0,2),2,0) \ ((0,4),2,2,0) \ ((0,4),2,0) \ ((0,5),2,0) \ ((0,5),2,0) \ ((2,4),2,0) \ ((2,2),2,0) \ ((2,2),2,0) \ ((2,6),2,0) \ ((2,6),2,0) \ ((1,3),2,0) \ ((1,3),2,0) \ ((0,2),2,0) \ ((2,2),2,0) \ ((2,2),2,0) \ ((3,3),2,0) \ ((3,5),2,0) \ ((2,6),2,0) \ ((0,6),2,0) \ ((1,1),2,0) \ ((2,2),2,0) \ ((2,4),2,0) \ ((1,5),2,0) \ ((2,0),2,0) \ ((2,2),2,0) \ ((2,4),2,0) \ ((1,5),2,0) \ ((2,0),2,0) \ ((2,2),2,0) \ ((2,3),3,0) \ ((2,3),3,0) \ ((1,2),3,0) \ ((1,0),3,0) \ ((1,0),3,0) \ ((3,0),3,0) \ ((4,1),3,0) \ ((4,3),3,0) \ ((4,3),3,0) \ ((3,4),3,0) \ ((1,4),3,0) \ ((1,4),3,0) \ ((3,0),3,0) \ ((3,0),3,0) \ ((3,0),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((2,3),3,0) \ ((2,1),3,0) \ ((1,0),3,0) \ ((3,0),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((2,3),3,0) \ ((2,1),3,0) \ ((1,0),3,0) \ ((3,0),3,0) \ ((3,2),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,3),3,0) \ ((3,3),3,0) \ ((3,3),3,0) \ ((3,3),3,0) \ ((3,3),3,0) \ ((3,4),3,$

 $3, 0) \ ((5, 2), 3, 0) \ ((4, 1), 3, 0) \ ((5, 0), 3, 0) \ ((7, 0), 3, 0) \ ((8, 1), 3, 0) \ ((8, 3), 3, 0) \ ((7, 4), 3, 0) \ ((5, 4), 3, 0) \ ((4, 3), 3, 0) \ ((4, 1), 3, 0) \ ((4, 1), 3, 0) \ ((6, 1), 3, 0) \ ((7, 2), 3, 0) \ ((7, 4), 3, 0) \ ((6, 5), 3, 0) \ ((4, 5), 3, 0) \ ((3, 4), 3, 0) \ ((3, 2), 3, 0) \ ((2, 1), 3, 0) \ ((4, 1), 3, 0) \ ((5, 2), 3, 0) \ ((5, 4), 3, 0) \ ((4, 5), 3, 0) \ ((2, 5), 3, 0) \ ((1, 4), 3, 0) \ ((1, 2), 3, 0) \ ((1, 0), 3, 0) \ ((3, 0), 3, 0) \ ((4, 1), 3, 0) \ ((4, 3), 3, 0) \ ((4, 1), 3, 0) \ ((3, 2), 3, 0) \ ((1, 2), 3, 0) \ ((5, 0), 3, 0) \ ((5, 2), 3, 0) \ ((4, 3), 3, 0) \ ((2, 3), 3, 0) \ ((1, 0), 3, 0) \ ((3, 0), 3, 0) \ ((5, 0), 3, 0$

Node selected: ((5, 1), 2, 0) Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((5, 1), 2, 0)] Successors: [((3, 0), 3, 0), ((3, 2), 3, 0), ((4, 3), 3, 0), ((6, 3), 3, 0), ((7, 2), 3, 0), ((7, 0), 3, 0)]

Fringe: [(6, 2), 2, 0) ((6, 4), 2, 0) ((5, 5), 2, 0) ((3, 5), 2, 0) ((2, 4), 2, 0) ((2, 2), 2, 0)((2, 2), 2, 0) ((4, 2), 2, 0) ((5, 3), 2, 0) ((5, 5), 2, 0) ((4, 6), 2, 0) ((2, 6), 2, 0) ((1, 5), 2, 0)0) ((1, 3), 2, 0) ((0, 2), 2, 0) ((2, 2), 2, 0) ((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0)(2, 0) ((1, 1), 2, 0) ((2, 2), 2, 0) ((2, 4), 2, 0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0)3), 2, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((1,0),3,0) ((3,0),3,0) ((4,1),3,0) ((4,3),3,0) ((3,4),3,0) ((1,4),3,0) ((0,3),3,0)(0) ((0, 1), 3, 0) ((1, 0), 3, 0) ((2, 1), 3, 0) ((2, 3), 3, 0) ((1, 4), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0)(6, 3), (6, 3), (3, 0), (4, 3), (3, 0), (3, 2), (3, 0), (3, 0), (3, 0), (3, 0), (3, 0), (6,(1), (3), (6), (3), (3), (3), (3), (4), ((3,0),3,0) ((4,1),3,0) ((4,3),3,0) ((3,4),3,0) ((1,4),3,0) ((0,3),3,0) ((0,1),3,0)(0) ((3,0), 3, 0) ((3, 2), 3, 0) ((2, 3), 3, 0) ((0, 3), 3, 0) ((8, 1), 3, 0) ((7, 2), 3, 0) ((5, 2), 3, 0)(3, 0) ((4, 1), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 4), 3, 0) ((5, 0), 3, 0)(4, 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((4, 1), 3, 0) ((6, 1), 3, 0) ((7, 2), 3, 0) ((7, 4), 3, 0)((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0) ((2, 1), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0)(0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((3, 0), 0)(4, 1), (4, 1), (4, 3), (4, 3), (4, 3), (4, 3), (6, 4), (6, 4), (6, 4), (6, 4), (7, 4), (10(1), (3, 0), (3, 2), (3, 0), ((1, 2), (1, 3), (1, 3), ((1, 2), (1, 3), ((1, 2), (1, 3), ((1, 2), ((1, 3)) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0)0) ((3, 2), 3, 0) ((3, 0), 3, 0)

Node selected: ((6, 2), 2, 0) Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((6, 2), 2, 0)] Successors: [((4, 1), 3, 0), ((4, 3), 3, 0), ((5, 4), 3, 0), ((7, 4), 3, 0), ((8, 3), 3, 0), ((8, 1), 3, 0), ((7, 0), 3, 0), ((5, 0), 3, 0)]

Fringe: $[((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((3,0),3,0)\ ((4,1),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,4),3,0)\ ((1,4),3,0)\ ((0,3),3,0)\ ((0,1),3,0)\ ((0,3),3,0)\ ((1,4),3,0)\ ((3,2),3,0)\ ((3,4),3,0)\ ((3,0),3,0)\ ((5,0),3,0)\ ((5,0),3,0)\ ((6,1),3,0)\ ((6,3),3,0)\ ((4,3),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((2,3),3,0)\ ((2,1),3,0)\ ((5,0),3,0)\ ((3,0),3,0)\ ((4,1),3,0)\ ((4,3),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,2),3,0)\ ((5,2),3,0)\ ((4,1),3,0)\ ((5,0),3,0)\ ((5,4),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((5,2),3,0)\ ((5,4),3,0)\ ((4,5),3,0)\ ((3,4),3,0)\ ((3,2),3,0)\ ((2,1),3,0)\ ((4,1),3,0)\ ((5,2),3,0)\ ((5,4),3,0)\ ((5,4),3,0)\ ((4,5),3,0)\ ((3,4),3,0)\ ((3,2),3,0)\ ((2,1),3,0)\ ((4,1),3,0)\ ((5,2),3,0)\ ((5,4),3,0)\ ((5,4),3,0)\ ((4,5),3,0)\ ((3,4),3,0)\ ((3,2),3,0)\ ((2,1),3,0)\ ((4,1),3,0)\ ((5,2),3,0)\ ((5,4),$

 $0) \ ((4,5),3,0) \ ((2,5),3,0) \ ((1,4),3,0) \ ((1,2),3,0) \ ((1,0),3,0) \ ((3,0),3,0) \ ((4,1),3,0) \ ((4,1),3,0) \ ((4,3),3,0) \ ((3,4),3,0) \ ((1,4),3,0) \ ((0,3),3,0) \ ((0,1),3,0) \ ((4,1),3,0) \ ((3,2),3,0) \ ((1,2),3,0) \ ((1,0),3,0) \ ((7,0),3,0) \ ((7,2),3,0) \ ((6,3),3,0) \ ((4,3),3,0) \ ((3,2),3,0) \ ((3,0),3,0) \ ((5,0),3,0) \ ((7,0),3,0) \ ((8,1),3,0) \ ((8,3),3,0) \ ((7,4),3,0) \ ((5,4),3,0) \ ((4,3),3,0) \ ((4,1),3,0) \]$

Node selected: ((6, 4), 2, 0) Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((6, 4), 2, 0)] Successors: [((4, 3), 3, 0), ((4, 5), 3, 0), ((5, 6), 3, 0), ((7, 6), 3, 0), ((8, 5), 3, 0), ((8, 3), 3, 0), ((7, 2), 3, 0), ((5, 2), 3, 0)]

Fringe: [((5,5), 2, 0), ((3,5), 2, 0), ((2,4), 2, 0), ((2,2), 2, 0), ((2,2), 2, 0), ((4,2), 2, 0)]((5,3), 2, 0) ((5,5), 2, 0) ((4,6), 2, 0) ((2,6), 2, 0) ((1,5), 2, 0) ((1,3), 2, 0) ((0,2), 2, 0)(0) ((2, 2), 2, 0) ((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0) ((1, 1), 2, 0) ((2, 2), 2, 0)(2, 0) ((2, 4), 2, 0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 0), 3, 0)(2), (3), (4), ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((1, 0), 3, 0)(0) ((2, 1), 3, 0) ((2, 3), 3, 0) ((1, 4), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0)(3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0) ((6, 3), 3, 0) ((5, 0), 3, 0)(4), (3), (3), (3), (4), ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((3, 0), 3, 0) ((3, 2), 3, 0)(0) ((2, 3), 3, 0) ((0, 3), 3, 0) ((8, 1), 3, 0) ((7, 2), 3, 0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 0), 0)(3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 3), 3, 0)(4, 1), (4, 1), (4, 1), (6, 1), (6, 1), (7, 2), (7, 2), (7, 4), (7, 4), (8, 0)((3, 4), 3, 0) ((3, 2), 3, 0) ((2, 1), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0)(0) ((2,5), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0)(3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((4, 1), 3, 0) ((3, 2), 3, 0) ((1, 4), 3, 0)(2), (3), (0), (0), (1), (0), (1), (0), (1), ((1, 0), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0)(0) ((5,0),3,0) ((7,0),3,0) ((8,1),3,0) ((8,3),3,0) ((7,4),3,0) ((5,4),3,0) ((4,3),3,0)(3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((7, 2), 3, 0) ((8, 3), 3, 0) ((8, 5), 3, 0) ((7, 6), 3, 0) ((5, 5), 3, 0)(6), (4, 5), (4, 5), (4, 3), (4, 3), (4, 3)

Node selected: ((5,5),2,0) Path: [((2,2),0,0) ((4,3),1,0) ((5,5),2,0)] Successors: [((3,4),3,0) ((3,6),3,0) ((4,7),3,0) ((6,7),3,0) ((7,6),3,0) ((7,4),3,0) ((6,3),3,0) ((4,3),3,0)]

Fringe: $[((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((3,0),3,0)\ ((4,1),3,0)\ ((4,3),3,0)\ ((3,4),3,0)\ ((1,4),3,0)\ ((0,3),3,0)\ ((0,1),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((2,1),3,0)\ ((3,0),$

1), 3, 0) ((6, 1), 3, 0) ((7, 2), 3, 0) ((7, 4), 3, 0) ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0) ((2, 1), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((4, 1), 3, 0) ((3, 2), 3, 0) ((1, 2), 3, 0) ((0, 1), 3, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((8, 3), 3, 0) ((8, 5), 3, 0) ((7, 6), 3, 0) ((5, 6), 3, 0) ((4, 5), 3, 0) ((4, 7), 3, 0) ((3, 6), 3, 0) ((3, 4), 3, 0)]

Node selected: ((3, 5), 2, 0) Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((3, 5), 2, 0)] Successors: [((1, 4), 3, 0), ((1, 6), 3, 0), ((2, 7), 3, 0), ((4, 7), 3, 0), ((5, 6), 3, 0), ((5, 4), 3, 0), ((4, 3), 3, 0), ((2, 3), 3, 0)]

Fringe: [(2, 4), 2, 0), ((2, 2), 2, 0), ((2, 2), 2, 0), ((4, 2), 2, 0), ((5, 3), 2, 0), ((5, 5), 2, 0), ((5,((4, 6), 2, 0) ((2, 6), 2, 0) ((1, 5), 2, 0) ((1, 3), 2, 0) ((0, 2), 2, 0) ((2, 2), 2, 0) ((3, 3), 2, 0)(0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0) ((1, 1), 2, 0) ((2, 2), 2, 0) ((2, 4), 2, 0) ((1, 5), 2, 0)(2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 2), 3, 0)(3), (3), (1), ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((1, 0), 3, 0) ((2, 1), 3, 0) ((2, 3), 3, 0)(0) ((1, 4), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0)(3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0) ((6, 3), 3, 0) ((5, 4), 3, 0) ((3, 4), 3, 0) ((2, 4), 3, 0)(3), (3), (2), (1), (3), (1), ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((3, 0), 3, 0) ((3, 2), 3, 0) ((2, 3), 3, 0) ((0, 3), 3, 0)(8, 1), 3, 0) ((7, 2), 3, 0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 0)(6, 3), (8, 3), (7, 4), (7,(1), (3, 0), (7, 2), (7, 3), (7, 4)((2, 1), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0)(0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0)(3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((4, 1), 3, 0) ((3, 2), 3, 0) ((1, 2), 3, 0) ((0, 1), 3, 0) ((5, 1), 1)(0), ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0)(0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0)(3, 0) ((7, 2), 3, 0) ((8, 3), 3, 0) ((8, 5), 3, 0) ((7, 6), 3, 0) ((5, 6), 3, 0) ((4, 5), 3, 0) ((4, 5), 3, 0)(4, 3), (4, 3), (4, 3), (6, 3), (6, 3), (7, 4), (7, 4), (7, 6), (7, 6), (7, 6), (8, 7), (10, 10)((3, 6), 3, 0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((4, 3), 3, 0) ((5, 4), 3, 0) ((5, 6), 3, 0) ((4, 7), 3, 0)(0) ((2,7),3,0) ((1,6),3,0) ((1,4),3,0)

Node selected: ((2, 4), 2, 0) Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((2, 4), 2, 0)] Successors: [((0, 3), 3, 0), ((0, 5), 3, 0), ((1, 6), 3, 0), ((3, 6), 3, 0), ((4, 5), 3, 0), ((4, 3), 3, 0), ((3, 2), 3, 0), ((1, 2), 3, 0)]

Fringe: [((2, 2), 2, 0), ((2, 2), 2, 0), ((4, 2), 2, 0), ((5, 3), 2, 0), ((5, 5), 2, 0), ((4, 6), 2, 0), ((2, 6), 2, 0), ((1, 5), 2, 0), ((1, 3), 2, 0), ((0, 2), 2, 0), ((2, 2), 2, 0), ((3, 3), 2, 0), ((3, 5), 2, 0), ((2, 6), 2, 0), ((0, 6), 2, 0), ((1, 1), 2, 0), ((2, 2), 2, 0), ((2, 4), 2, 0), ((1, 5), 2, 0), ((2, 0), 2, 0), ((2, 2), 2, 0), ((1, 3), 2, 0), ((5, 0), 3, 0), ((5, 2), 3, 0), ((4, 3), 3, 0), ((2, 3), 3, 0), ((1, 2), 3, 0), ((1, 0), 3, 0), ((1

(0) ((7,0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0)(3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0) ((6, 3), 3, 0) ((5, 4), 3, 0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((2, 3), 3, 0)(1), (3, 0), (1, 0), (3, 0), (3, 0), (3, 0), (4, 1), (4, 3)((0,3),3,0) ((0,1),3,0) ((3,0),3,0) ((3,2),3,0) ((2,3),3,0) ((0,3),3,0) ((8,1),3,0)(0) ((7, 2), 3, 0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0)(3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((4, 1), 3, 0) ((6, 1), 3, 0) ((7, 4), 3, 0)(2), (3, 0), ((7, 4), 3, 0), ((6, 5), 3, 0), ((4, 5), 3, 0), ((3, 4), 3, 0), ((3, 2), 3, 0), ((2, 1), 3, 0)((4, 1), 3, 0) ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0)(0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 0)(5, 0) ((0, 1), 3, 0) ((4, 1), 3, 0) ((3, 2), 3, 0) ((1, 2), 3, 0) ((0, 1), 3, 0) ((5, 0), 3, 0) ((5, 0), 3, 0)(2), (3), (4), ((6,3),3,0) ((4,3),3,0) ((3,2),3,0) ((3,0),3,0) ((5,0),3,0) ((7,0),3,0) ((8,1),3,0)(0) ((8, 3), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((7, 2), 3, 0)(4, 3), (8, 3), (8, 5), (8, 5), (7, 6), (7, 6), (8, 7), (10, 10)(3), (4), (3), (4), ((3, 4), 3, 0) ((2, 3), 3, 0) ((4, 3), 3, 0) ((5, 4), 3, 0) ((5, 6), 3, 0) ((4, 7), 3, 0) ((2, 7), 3, 0)(0) ((1, 6), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((3, 2), 3, 0) ((4, 3), 3, 0) ((4, 5), 3, 0) ((3, 6), 3, 0)(3, 0) ((1, 6), 3, 0) ((0, 5), 3, 0) ((0, 3), 3, 0)

Node selected: ((2, 2), 2, 0) Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((2, 2), 2, 0)] Successors: [((0, 1), 3, 0), ((0, 3), 3, 0), ((1, 4), 3, 0), ((3, 4), 3, 0), ((4, 3), 3, 0), ((4, 1), 3, 0), ((3, 0), 3, 0), ((1, 0), 3, 0)]

Fringe: [((2, 2), 2, 0), ((4, 2), 2, 0), ((5, 3), 2, 0), ((5, 5), 2, 0), ((4, 6), 2, 0), ((2, 6), 2, 0)]((1, 5), 2, 0) ((1, 3), 2, 0) ((0, 2), 2, 0) ((2, 2), 2, 0) ((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0)(0) ((0, 6), 2, 0) ((1, 1), 2, 0) ((2, 2), 2, 0) ((2, 4), 2, 0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0)(2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 2), 3, 0)(0), (1, 0), (1, 0), (3, 0), (3, 0), (4, 1), (4, 1), (4, 3)((0, 3), 3, 0) ((0, 1), 3, 0) ((1, 0), 3, 0) ((2, 1), 3, 0) ((2, 3), 3, 0) ((1, 4), 3, 0) ((7, 0), 3, 0)(0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0)(3, 0) ((6, 1), 3, 0) ((6, 3), 3, 0) ((5, 4), 3, 0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((1, 3, 0), 0)(0), (3, 0), (3, 0), (4, 1), (4, 1), (4, 3)((0, 1), 3, 0) ((3, 0), 3, 0) ((3, 2), 3, 0) ((2, 3), 3, 0) ((0, 3), 3, 0) ((8, 1), 3, 0) ((7, 2), 3, 0)(0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 4), 3, 0)(5, 4), (5, 4), (4, 3), (4, 3), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (5, 4), (6, 1), (6, 1), (7, 2), (7, 2), (7, 2), (7, 2), (8, 2), (10, 2),(4), ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0)(0) ((3,0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0)(3, 0) ((4, 1), 3, 0) ((3, 2), 3, 0) ((1, 2), 3, 0) ((0, 1), 3, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 1), 3, 0)(3), (3), (2), (3), (3), (1), ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0)(0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((7, 2), 3, 0) ((8, 3), 3, 0)(3, 0) ((8, 5), 3, 0) ((7, 6), 3, 0) ((5, 6), 3, 0) ((4, 5), 3, 0) ((4, 3), 3, 0) ((4, 3), 3, 0) ((6, 5), 3, 0)(3), (3), (7), (4), (4), (5), (6), ((2,3),3,0) ((4,3),3,0) ((5,4),3,0) ((5,6),3,0) ((4,7),3,0) ((2,7),3,0) ((1,6),3,0)(0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((3, 2), 3, 0) ((4, 3), 3, 0) ((4, 5), 3, 0) ((3, 6), 3, 0) ((1, 6), 3, 0)(3, 0) ((0, 5), 3, 0) ((0, 3), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 0), 3, 0)(4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0)

Node selected: ((2, 2), 2, 0) Path: [((2, 2), 0, 0) ((3, 4), 1, 0) ((2, 2), 2, 0)] Successors: [((0, 1), 3, 0) ((0, 3), 3, 0) ((1, 4), 3, 0) ((3, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((3, 0), 3, 0) ((1, 0), 3, 0)]

Fringe: [(4, 2), 2, 0) ((5, 3), 2, 0) ((5, 5), 2, 0) ((4, 6), 2, 0) ((2, 6), 2, 0) ((1, 5), 2, 0)((1, 3), 2, 0) ((0, 2), 2, 0) ((2, 2), 2, 0) ((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0)(0) ((1, 1), 2, 0) ((2, 2), 2, 0) ((2, 4), 2, 0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0)(2, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((1, 0), 3, 0)(0), (3, 0), (3, 0), (4, 1), (4, 1), (4, 3)((0, 1), 3, 0) ((1, 0), 3, 0) ((2, 1), 3, 0) ((2, 3), 3, 0) ((1, 4), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0)0) ((6,3),3,0) ((4,3),3,0) ((3,2),3,0) ((3,0),3,0) ((3,0),3,0) ((5,0),3,0) ((6,1),3,0)(3, 0) ((6, 3), 3, 0) ((5, 4), 3, 0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((1, 0), 3, 0) ((3, 4), 3, 0)(0), (3), (4), ((3,0),3,0) ((3,2),3,0) ((2,3),3,0) ((0,3),3,0) ((8,1),3,0) ((7,2),3,0) ((5,2),3,0)(0) ((4, 1), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0)(4, 3), (4, 3), (4, 1), (4,5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0) ((2, 1), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0)((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0)(0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((4, 1), 3, 0)(3, 0) ((3, 2), 3, 0) ((1, 2), 3, 0) ((0, 1), 3, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 3, 0), ((3), (3), (1), ((3, 2), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 4), 3, 0)(0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((7, 2), 3, 0) ((8, 3), 3, 0) ((8, 5), 3, 0)(3, 0) ((7, 6), 3, 0) ((5, 6), 3, 0) ((4, 5), 3, 0) ((4, 3), 3, 0) ((4, 3), 3, 0) ((6, 3), 3, 0) ((7, 6), 3, 0)(4, 3, 0) ((7, 6), 3, 0) ((6, 7), 3, 0) ((4, 7), 3, 0) ((3, 6), 3, 0) ((3, 4), 3, 0) ((2, 3), 3, 0)((4, 3), 3, 0) ((5, 4), 3, 0) ((5, 6), 3, 0) ((4, 7), 3, 0) ((2, 7), 3, 0) ((1, 6), 3, 0) ((1, 4), 3, 0)(0) ((1, 2), 3, 0) ((3, 2), 3, 0) ((4, 3), 3, 0) ((4, 5), 3, 0) ((3, 6), 3, 0) ((1, 6), 3, 0) ((0, 5), 3, 0)(3, 0) ((0, 3), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 0), 3, 0)(4), ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0)

Node selected: ((4, 2), 2, 0) Path: [((2, 2), 0, 0), ((3, 4), 1, 0), ((4, 2), 2, 0)] Successors: [((2, 1), 3, 0), ((2, 3), 3, 0), ((3, 4), 3, 0), ((5, 4), 3, 0), ((6, 3), 3, 0), ((6, 1), 3, 0), ((5, 0), 3, 0), ((3, 0), 3, 0)]

Fringe: [((5,3),2,0),((5,5),2,0),((4,6),2,0),((2,6),2,0),((1,5),2,0),((1,3),2,0),((0,2),2,0),((2,2),2,0),((3,3),2,0),((3,5),2,0),((2,6),2,0),((0,6),2,0),((1,1),2,0),((2,2),2,0),((2,4),2,0),((1,5),2,0),((2,0),2,0),((2,2),2,0),((1,3),2,0),((5,0),3,0),((5,2),3,0),((4,3),3,0),((2,3),3,0),((1,2),3,0),((1,0),

 $((4,5),3,0) \ ((2,5),3,0) \ ((1,4),3,0) \ ((1,2),3,0) \ ((1,0),3,0) \ ((3,0),3,0) \ ((4,1),3,0) \ ((4,3),3,0) \ ((3,4),3,0) \ ((1,4),3,0) \ ((0,3),3,0) \ ((0,1),3,0) \ ((4,1),3,0) \ ((3,2),3,0) \ ((1,2),3,0) \ ((0,1),3,0) \ ((5,0),3,0) \ ((5,2),3,0) \ ((4,3),3,0) \ ((2,3),3,0) \ ((1,2),3,0) \ ((1,0),3,0) \ ((7,0),3,0) \ ((7,2),3,0) \ ((6,3),3,0) \ ((4,3),3,0) \ ((3,2),3,0) \ ((3,0),3,0) \ ((5,0),3,0) \ ((7,0),3,0) \ ((8,1),3,0) \ ((8,3),3,0) \ ((7,4),3,0) \ ((5,4),3,0) \ ((4,3),3,0) \ ((4,5),3,0) \ ((4,3),3,0) \ ((4,3),3,0) \ ((6,3),3,0) \ ((6,3),3,0) \ ((7,4),3,0) \ ((7,6),3,0) \ ((5,6),3,0) \ ((4,7),3,0) \ ((3,6),3,0) \ ((3,4),3,0) \ ((2,3),3,0) \ ((4,3),3,0) \ ((5,4),3,0) \ ((5,6),3,0) \ ((4,5),3,0) \ ((2,7),3,0) \ ((1,6),3,0) \ ((1,4),3,0) \ ((1,2),3,0) \ ((3,2),3,0) \ ((4,3),3,0) \ ((4,5),3,0) \ ((3,6),3,0) \ ((1,6),3,0) \ ((1,4),3,0) \ ((1,2),3,3,0) \ ((3,2),3,0) \ ((3,0),3,0) \ ((3,0),3,0) \ ((3,0),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((5,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((3,4),3,0) \ ((5,4),3,0) \ ((3,4),3,0)$

Node selected: ((5,3), 2, 0) Path: [((2,2), 0, 0) ((3,4), 1, 0) ((5,3), 2, 0)] Successors: [((3,2), 3, 0) ((3,4), 3, 0) ((4,5), 3, 0) ((6,5), 3, 0) ((7,4), 3, 0) ((7,2), 3, 0) ((6,1), 3, 0) ((4,1), 3, 0)]

Fringe: [((5,5), 2, 0), ((4,6), 2, 0), ((2,6), 2, 0), ((1,5), 2, 0), ((1,3), 2, 0), ((0,2), 2, 0)]((2, 2), 2, 0) ((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0) ((1, 1), 2, 0) ((2, 2), 2, 0)(0) ((2, 4), 2, 0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 2), 2, 0)(3, 0) ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 0), 3, 0)(1), (3), (4), (3), (3), (3), (4), ((2, 1), 3, 0) ((2, 3), 3, 0) ((1, 4), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0)(3, 2), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0) ((6, 3), 3, 0) ((5, 4), 3, 0)(3, 0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 1), 3, 0)(3), (3), (3), (3), (4), ((2, 3), 3, 0) ((0, 3), 3, 0) ((8, 1), 3, 0) ((7, 2), 3, 0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 0), 3, 0)(0) ((7,0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0)(3, 0) ((4, 1), 3, 0) ((6, 1), 3, 0) ((7, 2), 3, 0) ((7, 4), 3, 0) ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 5), 3, 0)(4), (3), (3), (3), (3), (2), (3), (4), (4), (4), (4), (5), (5), (5), (5), (5), (6), ((2,5), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0)(0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((4, 1), 3, 0) ((3, 2), 3, 0) ((1, 2), 3, 0)(0, 1), (0,(0), ((5,0),3,0) ((7,0),3,0) ((8,1),3,0) ((8,3),3,0) ((7,4),3,0) ((5,4),3,0) ((4,3),3,0)(0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((7, 2), 3, 0) ((8, 3), 3, 0) ((8, 5), 3, 0) ((7, 6), 3, 0) ((5, 6), 3, 0)(3, 0) ((4, 5), 3, 0) ((4, 3), 3, 0) ((4, 3), 3, 0) ((6, 3), 3, 0) ((7, 4), 3, 0) ((7, 6), 3, 0) ((6, 3), 3, 0) ((7, 4), 3, 0) ((7, 6), 3, 0) ((6, 3), 3, 0) ((7, 4), 3, 0) ((7, 6), 3, 0) ((6, 3), 3, 0) ((7, 4), 3, 0) ((7, 6), 3, 0) ((6, 3), 3, 0) ((6, 3), 3, 0) ((7, 4), 3, 0) ((7, 6), 3, 0) ((6, 3), 3,7), 3, 0) ((4, 7), 3, 0) ((3, 6), 3, 0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((4, 3), 3, 0) ((5, 4), 3, 0)((5, 6), 3, 0) ((4, 7), 3, 0) ((2, 7), 3, 0) ((1, 6), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((3, 2), 3, 0)(0) ((4, 3), 3, 0) ((4, 5), 3, 0) ((3, 6), 3, 0) ((1, 6), 3, 0) ((0, 5), 3, 0) ((0, 3), 3, 0) ((1, 0), 0)(3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 3), 3, 0)(1), (3, 0), ((1, 0), 3, 0), ((3, 0), 3, 0), ((4, 1), 3, 0), ((4, 3), 3, 0), ((3, 4), 3, 0), ((1, 4), 3, 0)((0, 3), 3, 0) ((0, 1), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0) ((6, 3), 3, 0) ((5, 4), 3, 0)(0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((4, 1), 3, 0) ((6, 1), 3, 0) ((7, 2), 3, 0) ((7, 4), 3, 0)(3, 0) ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0)

Node selected: ((5, 5), 2, 0) Path: [((2, 2), 0, 0), ((3, 4), 1, 0), ((5, 5), 2, 0)] Successors:

[((3, 4), 3, 0) ((3, 6), 3, 0) ((4, 7), 3, 0) ((6, 7), 3, 0) ((7, 6), 3, 0) ((7, 4), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0)]

Fringe: [(4, 6), 2, 0) ((2, 6), 2, 0) ((1, 5), 2, 0) ((1, 3), 2, 0) ((0, 2), 2, 0) ((2, 2), 2, 0)]((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0) ((1, 1), 2, 0) ((2, 2), 2, 0) ((2, 4), 2, 0)(0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 2, 0)(3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 1), 3, 0)(3), (3), (3), (3), (4), ((2, 3), 3, 0) ((1, 4), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0)(0) ((3,0), 3, 0) ((3,0), 3, 0) ((5,0), 3, 0) ((6,1), 3, 0) ((6,3), 3, 0) ((5,4), 3, 0) ((3,4), 3, 0)(3, 0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 0), 3, 0)(4), (3), (1), (4), ((0, 3), 3, 0) ((8, 1), 3, 0) ((7, 2), 3, 0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0)(0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((4, 1), 3, 0)(3, 0) ((6, 1), 3, 0) ((7, 2), 3, 0) ((7, 4), 3, 0) ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 4), 3, 0)(2), (3), (2), (4), (4), (4), (4), (4), (5), (5), (5), (5), (5), (6), ((1, 4), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0) ((4, 1), 3, 0) ((4, 3), 3, 0) ((3, 4), 3, 0)0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((4, 1), 3, 0) ((3, 2), 3, 0) ((1, 2), 3, 0) ((0, 1), 3, 0)(3, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((7, 0), 3, 0)(0), ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0)(0) ((5, 2), 3, 0) ((7, 2), 3, 0) ((8, 3), 3, 0) ((8, 5), 3, 0) ((7, 6), 3, 0) ((5, 6), 3, 0) ((4, 5), 3, 0)(4, 3), (4, 3), (4, 3), (4, 3), (6, 3), (6, 3), (7, 4), (7, 4), (7, 6), (7, 6), (7, 6), (8, 7), (10, 10)7), 3, 0) ((3, 6), 3, 0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((4, 3), 3, 0) ((5, 4), 3, 0) ((5, 6), 3, 0)((4, 7), 3, 0) ((2, 7), 3, 0) ((1, 6), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((3, 2), 3, 0) ((4, 3), 3, 0)(0) ((4, 5), 3, 0) ((3, 6), 3, 0) ((1, 6), 3, 0) ((0, 5), 3, 0) ((0, 3), 3, 0) ((1, 0), 3, 0) ((3, 0), 3, 0)(4, 1), 3, 0) (4, 3), 3, 0) ((3, 4), 3, 0) ((1, 4), 3, 0) ((0, 3), 3, 0) ((0, 1), 3, 0) ((1, 4), 3, 0)(0), (3, 0), (3, 0), (4, 1), (4, 1), (4, 3)((0, 1), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0) ((6, 3), 3, 0) ((5, 4), 3, 0) ((3, 4), 3, 0)(0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((4, 1), 3, 0) ((6, 1), 3, 0) ((7, 2), 3, 0) ((7, 4), 3, 0) ((6, 5), 3, 0)(3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0) ((4, 3), 3, 0) ((6, 3), 3, 0) ((7, 4), 3, 0) ((7, 4), 3, 0)(6), (6),

Node selected: ((4, 6), 2, 0) Path: [((2, 2), 0, 0), ((3, 4), 1, 0), ((4, 6), 2, 0)]

Busqueda: Arbol Estrategia: A*

Nodos generados: 227 Nodos expandidos: 34

Factor de ramificacion: 14.541607856750488

Profun: 2 Coste: 2

Solucion: (2,2) (3,4) (4,6)

Algoritmo A* con la heurística $h_1(n)$ (ecuación 2)

Empezando la busqueda.

Fringe: [((2, 2), 0, 2)]

Node selected: ((2, 2), 0, 2) Path: [((2, 2), 0, 2)] Successors: [((0, 1), 1, 3), ((0, 3), 1, 2), ((1, 4), 1, 1), ((3, 4), 1, 1), ((4, 3), 1, 1), ((4, 1), 1, 1), ((3, 0), 1, 2), ((1, 0), 1, 3)]

Fringe: [((4, 1), 1, 1), ((4, 3), 1, 1), ((3, 4), 1, 1), ((1, 4), 1, 1), ((3, 0), 1, 2), ((0, 3), 1, 2), ((1, 0), 1, 3), ((0, 1), 1, 3)]

Node selected: ((4, 1), 1, 1) Path: [((2, 2), 0, 2) ((4, 1), 1, 1)] Successors: [((2, 0), 2, 2) ((2, 2), 2, 2) ((3, 3), 2, 1) ((5, 3), 2, 1) ((6, 2), 2, 2) ((6, 0), 2, 2)]

Fringe: [(4, 3), 1, 1) ((3, 4), 1, 1) ((1, 4), 1, 1) ((3, 0), 1, 2) ((0, 3), 1, 2) ((5, 3), 2, 1) ((3, 3), 2, 1) ((1, 0), 1, 3) ((0, 1), 1, 3) ((6, 0), 2, 2) ((6, 2), 2, 2) ((2, 2), 2, 2) ((2, 0), 2, 2)]

Node selected: ((4, 3), 1, 1) Path: [((2, 2), 0, 2), ((4, 3), 1, 1)] Successors: [((2, 2), 2, 2), ((2, 4), 2, 1), ((3, 5), 2, 0), ((5, 5), 2, 0), ((6, 4), 2, 1), ((6, 2), 2, 2), ((5, 1), 2, 2), ((3, 1), 2, 2)]

Fringe: [((3, 4), 1, 1), ((1, 4), 1, 1), ((5, 5), 2, 0), ((3, 5), 2, 0), ((3, 0), 1, 2), ((0, 3), 1, 2), ((5, 3), 2, 1), ((3, 3), 2, 1), ((6, 4), 2, 1), ((2, 4), 2, 1), ((1, 0), 1, 3), ((0, 1), 1, 3), ((6, 0), 2, 2), ((6, 2), 2, 2), ((2, 2), 2, 2), ((2, 0), 2, 2), ((3, 1), 2, 2), ((5, 1), 2, 2), ((6, 2), 2, 2), ((2, 2), 2, 2), ((2, 2), 2, 2), ((2, 2), 2, 2), ((2, 2), 2, 2), ((2, 2), 2, 2), ((3, 2), 2), ((3, 2), 2), ((3, 2), 2), ((4, 2), 2), ((5, 2), 2), ((6, 2), 2, 2), ((

Node selected: ((3, 4), 1, 1) Path: [((2, 2), 0, 2) ((3, 4), 1, 1)] Successors: [((1, 3), 2, 2) ((1, 5), 2, 1) ((2, 6), 2, 0) ((4, 6), 2, 0) ((5, 5), 2, 0) ((5, 3), 2, 1) ((4, 2), 2, 1) ((2, 2), 2, 2)]

Fringe: $[((1,4),1,1)\ ((5,5),2,0)\ ((3,5),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((3,0),1,2)\ ((0,3),1,2)\ ((5,3),2,1)\ ((3,3),2,1)\ ((6,4),2,1)\ ((2,4),2,1)\ ((4,2),2,1)\ ((5,3),2,1)\ ((1,5),2,1)\ ((1,0),1,3)\ ((0,1),1,3)\ ((6,0),2,2)\ ((6,2),2,2)\ ((2,2),$

Node selected: ((1, 4), 1, 1) Path: [((2, 2), 0, 2) ((1, 4), 1, 1)] Successors: [((0, 6), 2, 1) ((2, 6), 2, 0) ((3, 5), 2, 0) ((3, 3), 2, 1) ((2, 2), 2, 2) ((0, 2), 2, 2)]

Node selected: ((5,5), 2, 0) Path: [((2,2), 0, 2) ((4,3), 1, 1) ((5,5), 2, 0)] Successors: [((3,4), 3, 1) ((3,6), 3, 0) ((4,7), 3, 0) ((6,7), 3, 1) ((7,6), 3, 1) ((7,4), 3, 1) ((6,3), 3, 1) ((4,3), 3, 1)]

Fringe: $[((3,5),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((3,0),1,2)\ ((0,3),1,2)\ ((5,3),2,1)\ ((3,3),2,1)\ ((6,4),2,1)\ ((2,4),2,1)\ ((4,2),2,1)\ ((5,3),2,1)\ ((1,5),2,1)\ ((3,3),2,1)\ ((0,6),2,1)\ ((4,7),3,0)\ ((3,6),3,0)\ ((1,0),1,3)\ ((0,1),1,3)\ ((6,0),2,2)\ ((6,2),2,2)\ ((2,2),2,2)\ ((2,0),2,2)\ ((3,1),2,2)\ ((5,1),2,2)\ ((6,2),2,2)\ ((2,2),2,2)\ ((1,3),2,2)\ ((0,2),2,2)\ ((2,2),2,2)\ ((4,3),3,1)\ ((6,3),3,1)\ ((7,4),3,1)\ ((7,6),3,1)\ ((6,7),3,1)\ ((3,4),3,1)\]$

Node selected: ((3, 5), 2, 0) Path: [((2, 2), 0, 2), ((4, 3), 1, 1), ((3, 5), 2, 0)] Successors: [((1, 4), 3, 1), ((1, 6), 3, 1), ((2, 7), 3, 1), ((4, 7), 3, 0), ((5, 6), 3, 0), ((5, 4), 3, 1), ((4, 3), 3, 1), ((2, 3), 3, 1)]

Node selected: ((5,5), 2, 0) Path: [((2,2), 0, 2) ((3,4), 1, 1) ((5,5), 2, 0)] Successors: [((3,4), 3, 1) ((3,6), 3, 0) ((4,7), 3, 0) ((6,7), 3, 1) ((7,6), 3, 1) ((7,4), 3, 1) ((6,3), 3, 1) ((4,3), 3, 1)]

Fringe: [(4,6),2,0) ((2,6),2,0) ((3,5),2,0) ((2,6),2,0) ((3,0),1,2) ((0,3),1,2) ((5,3),2,1) ((3,3),2,1) ((6,4),2,1) ((2,4),2,1) ((4,2),2,1) ((5,3),2,1) ((1,5),2,1) ((3,3),2,1) ((0,6),2,1) ((4,7),3,0) ((3,6),3,0) ((5,6),3,0) ((4,7),3,0) ((4,7),3,0) ((3,6),3,0) ((1,0),1,3) ((0,1),1,3) ((6,0),2,2) ((6,2),2,2) ((2,2)

Node selected: ((4, 6), 2, 0) Path: [((2, 2), 0, 2), ((3, 4), 1, 1), ((4, 6), 2, 0)]

Busqueda: Arbol Estrategia: A*

Nodos generados: 61 Nodos expandidos: 8

Factor de ramificacion: 7.262085914611816

Profun: 2 Coste: 2

Solucion: (2,2) (3,4) (4,6)

```
***************
   ***************
   Algoritmo A* con la heurística h_2(n) (ecuación 3)
   Empezando la busqueda.
   Fringe: [((2, 2), 0, 2)]
   Node selected: ((2, 2), 0, 2) Path: [((2, 2), 0, 2)] Successors: [((0, 1), 1, 3), ((0, 3), 1, 3)]
(1, 4), 1, 2) ((3, 4), 1, 1) ((4, 3), 1, 2) ((4, 1), 1, 3) ((3, 0), 1, 3) ((1, 0), 1, 3)
   _____
   Fringe: [((3, 4), 1, 1), ((4, 3), 1, 2), ((1, 4), 1, 2), ((0, 3), 1, 2), ((1, 0), 1, 3), ((3, 0), 1, 3)]
((4, 1), 1, 3) ((0, 1), 1, 3)
   Node selected: ((3, 4), 1, 1) Path: [((2, 2), 0, 2), ((3, 4), 1, 1)] Successors: [((1, 3), 2, 1), ((3, 4), 1, 1)] Successors: [((1, 3), 2, 1), ((3, 4), 1, 1)]
(1, 5), 2, 2) ((2, 6), 2, 1) ((4, 6), 2, 0) ((5, 5), 2, 1) ((5, 3), 2, 2) ((4, 2), 2, 2) ((2, 2), 2)
[2, 2)
   Fringe: [(4, 6), 2, 0) ((4, 3), 1, 2) ((1, 4), 1, 2) ((0, 3), 1, 2) ((5, 5), 2, 1) ((2, 6), 2, 1)
((1, 0), 1, 3) ((3, 0), 1, 3) ((4, 1), 1, 3) ((0, 1), 1, 3) ((2, 2), 2, 2) ((4, 2), 2, 2) ((5, 3), 2, 3)
(1, 5), 2, 2) ((1, 3), 2, 2)
   Node selected: ((4, 6), 2, 0) Path: [((2, 2), 0, 2), ((3, 4), 1, 1), ((4, 6), 2, 0)]
   *************
   ****************
   Busqueda: Arbol
   Estrategia: A*
   Nodos generados: 17
   Nodos expandidos: 2
   Factor de ramificacion: 3.5311241149902344
   Profun: 2
   Coste: 2
   Solucion: (2,2) (3,4) (4,6)
   ***************
   ****************
```

1.1.2. Búsqueda empleando grafos

```
Búsqueda en anchura
        Empezando la busqueda.
        ______
Fringe: [(2, 2)]
Fringe: [(1, 0) (3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) ]
               Fringe: [(3, 0) (4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (3, 1) (2, 2) (0, 2) ]
         _____
Fringe: [(4, 1) (4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) ]
                    -----
Fringe: [(4, 3) (3, 4) (1, 4) (0, 3) (0, 1) (3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0)
(6, 2) (5, 3) (3, 3) (2, 2) (2, 0)
         _____
Fringe: [(3, 4) (1, 4) (0, 3) (0, 1) (3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2)
(5,3)(3,3)(2,2)(2,0)(3,1)(5,1)(6,2)(6,4)(5,5)(3,5)(2,4)(2,2)
Fringe: [(1, 4) (0, 3) (0, 1) (3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3)
(3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 4) (6, 4) (6, 4) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) 
5) (4, 6) (2, 6) (1, 5) (1, 3)
         _____
Fringe: [(0, 3) (0, 1) (3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3)
(2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 4) (6, 2) (6, 4) (6, 2) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 4) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) (6, 5) 
(6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6)
Fringe: [(0, 1) (3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2)
6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5)
Fringe: [(3, 1) (2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0)
(3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 4, 5)
(5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3)
                 ______
Fringe: [(2, 2) (0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1)
(5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 5)
3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0)
(5, 2) (4, 3) (2, 3) (1, 2) (1, 0)
Fringe: [(0, 2) (5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1)
(6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 4)
(2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2)
```

```
(4, 3) (2, 3) (1, 2) (1, 0)
```

Fringe: [(5, 1) (4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (2, 1) (2, 3) (1, 4)]

Fringe: [(4, 2) (2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0)]

Fringe: [(2, 2) (1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1)]

Fringe: [(1, 1) (6, 0) (6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1)]

Fringe: [(6,0)(6,2)(5,3)(3,3)(2,2)(2,0)(3,1)(5,1)(6,2)(6,4)(5,5)(3,5)(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(3,0)(3,2)(2,3)(0,3)]

Fringe: [(6, 2) (5, 3) (3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1) (3, 0) (3, 2) (2, 3) (0, 3) (8, 1) (7, 2) (5, 2) (4, 1)]

Fringe: [(5,3)(3,3)(2,2)(2,0)(3,1)(5,1)(6,2)(6,4)(5,5)(3,5)(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)]

Fringe: [(3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2)

Fringe: [(3, 3) (2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (2, 1) (2, 3) (1, 4)

```
 \begin{array}{c} (7,0) \ (7,2) \ (6,3) \ (4,3) \ (3,2) \ (3,0) \ (3,0) \ (5,0) \ (6,1) \ (6,3) \ (5,4) \ (3,4) \ (2,3) \ (2,1) \ (3,0) \ (3,2) \ (2,3) \ (0,3) \ (8,1) \ (7,2) \ (5,2) \ (4,1) \ (5,0) \ (7,0) \ (8,1) \ (8,3) \ (7,4) \ (5,4) \ (4,3) \ (4,1) \ (4,1) \ (6,1) \ (7,2) \ (7,4) \ (6,5) \ (4,5) \ (3,4) \ (3,2) \ ]
```

Fringe: [(2, 2) (2, 0) (3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1) (3, 0) (3, 2) (2, 3) (0, 3) (8, 1) (7, 2) (5, 2) (4, 1) (5, 0) (7, 0) (8, 1) (8, 3) (7, 4) (5, 4) (4, 3) (4, 1) (4, 1) (6, 1) (7, 2) (7, 4) (6, 5) (4, 5) (3, 4) (3, 2) (2, 1) (4, 1) (5, 2) (5, 4) (4, 5) (2, 5) (1, 4) (1, 2)]

Fringe: [(2,0)(3,1)(5,1)(6,2)(6,4)(5,5)(3,5)(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)]

Fringe: [(3, 1) (5, 1) (6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1) (3, 0) (3, 2) (2, 3) (0, 3) (8, 1) (7, 2) (5, 2) (4, 1) (5, 0) (7, 0) (8, 1) (8, 3) (7, 4) (5, 4) (4, 3) (4, 1) (4, 1) (6, 1) (7, 2) (7, 4) (6, 5) (4, 5) (3, 4) (3, 2) (2, 1) (4, 1) (5, 2) (5, 4) (4, 5) (2, 5) (1, 4) (1, 2) (4, 1) (3, 2) (1, 2) (0, 1)]

Fringe: [(5,1) (6,2) (6,4) (5,5) (3,5) (2,4) (2,2) (2,2) (4,2) (5,3) (5,5) (4,6) (2,6) (1,5) (1,3) (0,2) (2,2) (3,3) (3,5) (2,6) (0,6) (1,1) (2,2) (2,4) (1,5) (2,0) (2,2) (1,3) (5,0) (5,2) (4,3) (2,3) (1,2) (1,0) (1,0) (2,1) (2,3) (1,4) (7,0) (7,2) (6,3) (4,3) (3,2) (3,0) (3,0) (5,0) (6,1) (6,3) (5,4) (3,4) (2,3) (2,1) (3,0) (3,2) (2,3) (0,3) (8,1) (7,2) (5,2) (4,1) (5,0) (7,0) (8,1) (8,3) (7,4) (5,4) (4,3) (4,1) (4,1) (6,1) (7,2) (7,4) (6,5) (4,5) (3,4) (3,2) (2,1) (4,1) (5,2) (5,4) (4,5) (2,5) (1,4) (1,2) (4,1) (3,2) (1,2) (0,1) (5,0) (5,2) (4,3) (2,3) (1,2) (1,0)]

Fringe: [(6, 2) (6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1) (3, 0) (3, 2) (2, 3) (0, 3) (8, 1) (7, 2) (5, 2) (4, 1) (5, 0) (7, 0) (8, 1) (8, 3) (7, 4) (5, 4) (4, 3) (4, 1) (4, 1) (6, 1) (7, 2) (7, 4) (6, 5) (4, 5) (3, 4) (3, 2) (2, 1) (4, 1) (5, 2) (5, 4) (4, 5) (2, 5) (1, 4) (1, 2) (4, 1) (3, 2) (1, 2) (0, 1) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0)]

Fringe: [(6, 4) (5, 5) (3, 5) (2, 4) (2, 2) (2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0)

```
 \begin{array}{c} (3,0) \ (5,0) \ (6,1) \ (6,3) \ (5,4) \ (3,4) \ (2,3) \ (2,1) \ (3,0) \ (3,2) \ (2,3) \ (0,3) \ (8,1) \ (7,2) \ (5,2) \ (4,1) \ (5,0) \ (7,0) \ (8,1) \ (8,3) \ (7,4) \ (5,4) \ (4,3) \ (4,1) \ (4,1) \ (6,1) \ (7,2) \ (7,4) \ (6,5) \ (4,5) \ (3,4) \ (3,2) \ (2,1) \ (4,1) \ (5,2) \ (5,4) \ (4,5) \ (2,5) \ (1,4) \ (1,2) \ (4,1) \ (3,2) \ (1,2) \ (0,1) \ (5,0) \ (5,2) \ (4,3) \ (2,3) \ (1,2) \ (1,0) \ (7,0) \ (7,2) \ (6,3) \ (4,3) \ (3,2) \ (3,0) \ (5,0) \ (7,0) \ (8,1) \ (8,3) \ (7,4) \ (5,4) \ (4,3) \ (4,1) \ ]
```

Fringe: [(3,5)(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(4,1)(3,2)(1,2)(0,1)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(8,3)(8,5)(7,6)(5,6)(4,5)(4,3)(4,3)(6,3)(7,4)(7,6)(6,7)(4,7)(3,6)(3,4)]

Fringe: [(2,4)(2,2)(2,2)(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(4,1)(3,2)(1,2)(0,1)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(8,3)(8,5)(7,6)(5,6)(4,5)(4,3)(4,3)(6,3)(7,4)(7,6)(6,7)(4,7)(3,6)(3,4)(2,3)(4,3)(5,4)(5,6)(4,7)(2,7)(1,6)(1,4)]

Fringe: [(2, 2), (2, 2), (4, 2), (5, 3), (5, 5), (4, 6), (2, 6), (1, 5), (1, 3), (0, 2), (2, 2), (3, 3), (3, 5), (2, 6), (0, 6), (1, 1), (2, 2), (2, 4), (1, 5), (2, 0), (2, 2), (1, 3), (5, 0), (5, 2), (4, 3), (2, 3), (1, 2), (1, 0), (1, 0), (2, 1), (2, 3), (1, 4), (7, 0), (7, 2), (6, 3), (4, 3), (3, 2), (3, 0), (3, 0), (5, 0), (6, 1), (6, 3), (5, 4), (3, 4), (2, 3), (2, 1), (3, 0), (3, 2), (2, 3), (0, 3), (8, 1), (7, 2), (5, 2), (4, 1), (5, 0), (7, 0), (8, 1), (8, 3), (7, 4), (5, 4), (4, 3), (4, 1), (4, 1), (6, 1), (7, 2), (7, 4), (6, 5), (4, 5), (3, 4), (3, 2), (2, 1), (4, 1), (5, 2), (5, 4), (4, 5), (2, 5), (1, 4), (1, 2), (4, 1), (3, 2), (1, 2), (0, 1), (5, 0), (5, 2), (4, 3), (2, 3), (1, 2), (1, 0), (7, 0), (7, 2), (6, 3), (4, 3), (3, 2), (3, 0), (5, 0), (7, 0), (8, 1), (8, 3), (7, 4), (5, 4), (4, 3), (4, 1), (5, 2), (7, 2), (8, 3), (8, 5), (7, 6), (5, 6), (4, 5), (4, 3), (4, 3), (6, 3), (7, 4), (7, 6), (6, 7), (4, 7), (3, 6), (3, 4), (2, 3), (4, 3), (5, 4), (5, 6), (4, 7), (2, 7), (1, 6), (1, 4), (1, 2), (3, 2), (4, 3), (4, 5), (3, 6), (1, 6), (0, 5), (0, 3),]

Fringe: [(2, 2) (4, 2) (5, 3) (5, 5) (4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6)

 $\begin{array}{c} (0,6) \ (1,1) \ (2,2) \ (2,4) \ (1,5) \ (2,0) \ (2,2) \ (1,3) \ (5,0) \ (5,2) \ (4,3) \ (2,3) \ (1,2) \ (1,0) \ (1,0) \ (2,1) \ (2,3) \ (1,4) \ (7,0) \ (7,2) \ (6,3) \ (4,3) \ (3,2) \ (3,0) \ (3,0) \ (5,0) \ (6,1) \ (6,3) \ (5,4) \ (3,4) \ (2,3) \ (2,1) \ (3,0) \ (3,2) \ (2,3) \ (0,3) \ (8,1) \ (7,2) \ (5,2) \ (4,1) \ (5,0) \ (7,0) \ (8,1) \ (8,3) \ (7,4) \ (5,4) \ (4,3) \ (4,1) \ (4,1) \ (6,1) \ (7,2) \ (7,4) \ (6,5) \ (4,5) \ (3,4) \ (3,2) \ (2,1) \ (4,1) \ (5,2) \ (5,4) \ (4,5) \ (2,5) \ (1,4) \ (1,2) \ (4,1) \ (3,2) \ (1,2) \ (0,1) \ (5,0) \ (5,2) \ (4,3) \ (2,3) \ (1,2) \ (1,0) \ (7,0) \ (7,2) \ (6,3) \ (4,3) \ (3,2) \ (3,0) \ (5,0) \ (7,0) \ (8,1) \ (8,3) \ (7,4) \ (5,4) \ (4,3) \ (4,1) \ (5,2) \ (7,2) \ (8,3) \ (8,5) \ (7,6) \ (5,6) \ (4,5) \ (4,3) \ (4,3) \ (6,3) \ (7,4) \ (7,6) \ (6,7) \ (4,7) \ (3,6) \ (3,4) \ (2,3) \ (4,3) \ (5,4) \ (5,6) \ (4,7) \ (2,7) \ (1,6) \ (1,4) \ (1,2) \ (3,2) \ (4,3) \ (4,5) \ (3,6) \ (1,6) \ (0,5) \ (0,3) \] \end{array}$

Fringe: [(4,2)(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(4,1)(3,2)(1,2)(0,1)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(8,3)(8,5)(7,6)(5,6)(4,5)(4,3)(4,3)(6,3)(7,4)(7,6)(6,7)(4,7)(3,6)(3,4)(2,3)(4,3)(5,4)(5,6)(4,7)(2,7)(1,6)(1,4)(1,2)(3,2)(4,3)(4,5)(3,6)(1,6)(0,5)(0,3)]

Fringe: [(5,3)(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(4,1)(3,2)(1,2)(0,1)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(8,3)(8,5)(7,6)(5,6)(4,5)(4,3)(4,3)(6,3)(7,4)(7,6)(6,7)(4,7)(3,6)(3,4)(2,3)(4,3)(5,4)(5,6)(4,7)(2,7)(1,6)(1,4)(1,2)(3,2)(4,3)(4,5)(3,6)(1,6)(0,5)(0,3)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)]

Fringe: [(5,5)(4,6)(2,6)(1,5)(1,3)(0,2)(2,2)(3,3)(3,5)(2,6)(0,6)(1,1)(2,2)(2,4)(1,5)(2,0)(2,2)(1,3)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(1,0)(2,1)(2,3)(1,4)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(3,0)(3,2)(2,3)(0,3)(8,1)(7,2)(5,2)(4,1)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)(2,1)(4,1)(5,2)(5,4)(4,5)(2,5)(1,4)(1,2)(4,1)(3,2)(1,2)(0,1)(5,0)(5,2)(4,3)(2,3)(1,2)(1,0)(7,0)(7,2)(6,3)(4,3)(3,2)(3,0)(5,0)(7,0)(8,1)(8,3)(7,4)(5,4)(4,3)(4,1)(5,2)(7,2)(8,3)(8,5)(7,6)(5,6)(4,5)(4,3)(4,3)(6,3)(7,4)(7,6)(6,7)(4,7)(3,6)(3,4)(2,3)(4,3)(5,4)(5,6)(4,7)(2,7)(1,6)(1,4)(1,2)(3,2)(4,3)(4,5)(3,6)(1,6)(0,5)(0,3)(3,0)(5,0)(6,1)(6,3)(5,4)(3,4)(2,3)(2,1)(4,1)(6,1)(7,2)(7,4)(6,5)(4,5)(3,4)(3,2)]

Fringe: [(4, 6) (2, 6) (1, 5) (1, 3) (0, 2) (2, 2) (3, 3) (3, 5) (2, 6) (0, 6) (1, 1) (2, 2) (2, 4) (1, 5) (2, 0) (2, 2) (1, 3) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (1, 0) (2, 1) (2, 3) (1, 4) (7, 0) (7, 2) (6, 3) (4, 3) (3, 2) (3, 0) (3, 0) (5, 0) (6, 1) (6, 3) (5, 4) (3, 4) (2, 3) (2, 1) (3, 0)

```
(3, 2) (2, 3) (0, 3) (8, 1) (7, 2) (5, 2) (4, 1) (5, 0) (7, 0) (8, 1) (8, 3) (7, 4) (5, 4) (4, 3) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4, 4) (4, 4,
1) (4, 1) (6, 1) (7, 2) (7, 4) (6, 5) (4, 5) (3, 4) (3, 2) (2, 1) (4, 1) (5, 2) (5, 4) (4, 5) (2, 5)
(1, 4) (1, 2) (4, 1) (3, 2) (1, 2) (0, 1) (5, 0) (5, 2) (4, 3) (2, 3) (1, 2) (1, 0) (7, 0) (7, 2) (6, 4)
(4, 3) (4, 3) (3, 2) (3, 0) (5, 0) (7, 0) (8, 1) (8, 3) (7, 4) (5, 4) (4, 3) (4, 1) (5, 2) (7, 2) (8, 3)
(8,5) (7,6) (5,6) (4,5) (4,3) (4,3) (6,3) (7,4) (7,6) (6,7) (4,7) (3,6) (3,4) (2,3) (4,5)
(5, 4) (5, 6) (4, 7) (2, 7) (1, 6) (1, 4) (1, 2) (3, 2) (4, 3) (4, 5) (3, 6) (1, 6) (0, 5) (0, 3)
(3,0) (5,0) (6,1) (6,3) (5,4) (3,4) (2,3) (2,1) (4,1) (6,1) (7,2) (7,4) (6,5) (4,5) (3,4)
4) (3, 2) ]
       ***************
       ******************
      Busqueda: Grafo
      Estrategia: Anchura
      Nodos generados: 179
      Nodos expandidos: 28
      Factor de ramificacion: 12.851029396057129
      Profun: 2
      Coste: 2
      Solucion: (2,2) (3,4) (4,6)
       ***************
       ***************
      Algoritmo A* con la heurística h_0(\mathbf{n}) (ecuación 1)
      Empezando la busqueda.
       _____
      Fringe: [((2, 2), 0, 0)]
      Node selected: ((2, 2), 0, 0)
      Path: [((2, 2), 0, 0)]
      Successors: [(0, 1), 1, 0) ((0, 3), 1, 0) ((1, 4), 1, 0) ((3, 4), 1, 0) ((4, 3), 1, 0) ((4, 1), 1, 0)]
(1, 0) ((3, 0), 1, 0) ((1, 0), 1, 0)
       ______
      Fringe: [((1,0),1,0),((3,0),1,0),((4,1),1,0),((4,3),1,0),((3,4),1,0),((1,4),1,0)]
((0, 3), 1, 0) ((0, 1), 1, 0)
      Node selected: ((1, 0), 1, 0)
      Path: [((2, 2), 0, 0), ((1, 0), 1, 0)]
      Successors: [((0, 2), 2, 0), ((2, 2), 2, 0), ((3, 1), 2, 0)]
      Fringe: [((3,0), 1, 0), ((4,1), 1, 0), ((4,3), 1, 0), ((3,4), 1, 0), ((1,4), 1, 0), ((0,3), 1, 0)]
((0, 1), 1, 0) ((3, 1), 2, 0) ((2, 2), 2, 0) ((0, 2), 2, 0)
      Node selected: ((3, 0), 1, 0)
      Path: [((2, 2), 0, 0), ((3, 0), 1, 0)]
```

```
Successors: [((1, 1), 2, 0), ((2, 2), 2, 0), ((4, 2), 2, 0), ((5, 1), 2, 0)]
              Fringe: [(4, 1), 1, 0) ((4, 3), 1, 0) ((3, 4), 1, 0) ((1, 4), 1, 0) ((0, 3), 1, 0) ((0, 1), 1, 0)
 ((3, 1), 2, 0) ((2, 2), 2, 0) ((0, 2), 2, 0) ((5, 1), 2, 0) ((4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0)
0)
              Node selected: ((4, 1), 1, 0)
              Path: [((2, 2), 0, 0), ((4, 1), 1, 0)]
              Successors: [((2,0), 2, 0), ((2,2), 2, 0), ((3,3), 2, 0), ((5,3), 2, 0), ((6,2), 2, 0), ((6,0), 0)]
[2, 0)
              Fringe: [((4, 3), 1, 0), ((3, 4), 1, 0), ((1, 4), 1, 0), ((0, 3), 1, 0), ((0, 1), 1, 0), ((3, 1), 2, 0)]
 ((2, 2), 2, 0) ((0, 2), 2, 0) ((5, 1), 2, 0) ((4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0) ((6, 0), 2, 0)
(6, 2), 2, 0) ((5, 3), 2, 0) ((3, 3), 2, 0) ((2, 2), 2, 0) ((2, 0), 2, 0)
              Node selected: ((4, 3), 1, 0)
              Path: [((2, 2), 0, 0), ((4, 3), 1, 0)]
              Successors: [((2, 2), 2, 0), ((2, 4), 2, 0), ((3, 5), 2, 0), ((5, 5), 2, 0), ((6, 4), 2, 0), ((6, 2), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0), ((6, 4), 2, 0),
(2, 0) ((5, 1), 2, 0) ((3, 1), 2, 0)
              Fringe: [((3, 4), 1, 0), ((1, 4), 1, 0), ((0, 3), 1, 0), ((0, 1), 1, 0), ((3, 1), 2, 0), ((2, 2), 2, 0)]
 ((0, 2), 2, 0) ((5, 1), 2, 0) ((4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0) ((6, 0), 2, 0) ((6, 2), 2, 0)
(0) ((5,3), 2, 0) ((3,3), 2, 0) ((2,2), 2, 0) ((2,0), 2, 0) ((3,1), 2, 0) ((5,1), 2, 0) ((6,2), 2, 0)
(2, 0) ((6, 4), 2, 0) ((5, 5), 2, 0) ((3, 5), 2, 0) ((2, 4), 2, 0) ((2, 2), 2, 0)
              Node selected: ((3, 4), 1, 0)
              Path: [((2, 2), 0, 0), ((3, 4), 1, 0)]
              Successors: [((1, 3), 2, 0), ((1, 5), 2, 0), ((2, 6), 2, 0), ((4, 6), 2, 0), ((5, 5), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0), ((5, 3), 2, 0),
(2, 0) ((4, 2), 2, 0) ((2, 2), 2, 0)
               ______
              Fringe: [((1, 4), 1, 0), ((0, 3), 1, 0), ((0, 1), 1, 0), ((3, 1), 2, 0), ((2, 2), 2, 0), ((0, 2), 2, 0)]
 ((5, 1), 2, 0) ((4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0) ((6, 0), 2, 0) ((6, 2), 2, 0) ((5, 3), 2, 0)
(0) ((3, 3), 2, 0) ((2, 2), 2, 0) ((2, 0), 2, 0) ((3, 1), 2, 0) ((5, 1), 2, 0) ((6, 2), 2, 0) ((6, 4), 2, 0)
(2, 0) ((5, 5), 2, 0) ((3, 5), 2, 0) ((2, 4), 2, 0) ((2, 2), 2, 0) ((2, 2), 2, 0) ((4, 2), 2, 0) ((5, 2), 2, 0)
(3), 2, 0) ((5, 5), 2, 0) ((4, 6), 2, 0) ((2, 6), 2, 0) ((1, 5), 2, 0) ((1, 3), 2, 0)
              Node selected: ((1, 4), 1, 0)
              Path: [((2, 2), 0, 0), ((1, 4), 1, 0)]
              Successors: [(0, 6), 2, 0), ((2, 6), 2, 0), ((3, 5), 2, 0), ((3, 3), 2, 0), ((2, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), ((0, 2), 2, 0), 
[2, 0)
               ______
              Fringe: [(0, 3), 1, 0) ((0, 1), 1, 0) ((3, 1), 2, 0) ((2, 2), 2, 0) ((0, 2), 2, 0) ((5, 1), 2, 0)
 ((4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0) ((6, 0), 2, 0) ((6, 2), 2, 0) ((5, 3), 2, 0) ((3, 3), 2, 0)
(0) ((2, 2), 2, 0) ((2, 0), 2, 0) ((3, 1), 2, 0) ((5, 1), 2, 0) ((6, 2), 2, 0) ((6, 4), 2, 0) ((5, 5), 2, 0)
(2, 0) ((3, 5), 2, 0) ((2, 4), 2, 0) ((2, 2), 2, 0) ((2, 2), 2, 0) ((4, 2), 2, 0) ((5, 3), 2, 0) ((5, 3), 2, 0)
(5), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6), (4, 6)
```

((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0)

```
Node selected: ((0, 3), 1, 0)
Path: [((2, 2), 0, 0) ((0, 3), 1, 0)]
Successors: [((1, 5), 2, 0) ((2, 4), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0)]
```

Fringe: [((0, 1), 1, 0), ((3, 1), 2, 0), ((2, 2), 2, 0), ((0, 2), 2, 0), ((5, 1), 2, 0), ((4, 2), 2, 0), ((2, 2), 2, 0), ((1, 1), 2, 0), ((6, 0), 2, 0), ((6, 2), 2, 0), ((5, 3), 2, 0), ((3, 3), 2, 0), ((2, 2), 2, 0), ((2, 0), 2, 0), ((3, 1), 2, 0), ((5, 1), 2, 0), ((6, 2), 2, 0), ((6, 4), 2, 0), ((5, 5), 2, 0), ((3, 5), 2, 0), ((2, 4), 2, 0), ((2, 2), 2, 0), ((2, 2), 2, 0), ((4, 2), 2, 0), ((5, 3), 2, 0), ((5, 5), 2, 0), ((4, 6), 2, 0), ((2, 6), 2, 0), ((1, 5), 2, 0), ((1, 3), 2, 0), ((2, 2), 2, 0), ((2, 2), 2, 0), ((3, 3), 2, 0), ((3, 5), 2, 0), ((2, 6), 2, 0), ((0, 6), 2, 0), ((1, 1), 2, 0), ((2, 2), 2, 0), ((2, 4), 2, 0), ((1, 5), 2, 0), ((1

Path: [((2, 2), 0, 0) ((0, 1), 1, 0)]

Successors: [((1, 3), 2, 0) ((2, 2), 2, 0) ((2, 0), 2, 0)]

Fringe: $[((3,1),2,0)\ ((2,2),2,0)\ ((0,2),2,0)\ ((5,1),2,0)\ ((4,2),2,0)\ ((2,2),2,0)\ ((1,1),2,0)\ ((6,0),2,0)\ ((6,2),2,0)\ ((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),$

Node selected: ((3, 1), 2, 0)

Path: [((2, 2), 0, 0), ((1, 0), 1, 0), ((3, 1), 2, 0)]

Successors: [((1, 0), 3, 0), ((1, 2), 3, 0), ((2, 3), 3, 0), ((4, 3), 3, 0), ((5, 2), 3, 0), ((5, 0), 3, 0)]

Fringe: $[((2,2),2,0)\ ((0,2),2,0)\ ((5,1),2,0)\ ((4,2),2,0)\ ((2,2),2,0)\ ((1,1),2,0)\ ((6,0),2,0)\ ((6,2),2,0)\ ((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,3),2,0)\ ((2,3),2,0)\ ((2,3),2,0)\ ((2,6),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\]$

Node selected: ((2, 2), 2, 0)

Path: [((2, 2), 0, 0), ((1, 0), 1, 0), ((2, 2), 2, 0)]

Successors: []

Fringe: [((0, 2), 2, 0), ((5, 1), 2, 0), ((4, 2), 2, 0), ((2, 2), 2, 0), ((1, 1), 2, 0), ((6, 0), 2, 0), ((6, 2), 2, 0), ((5, 3), 2, 0), ((3, 3), 2, 0), ((2, 2), 2, 0), ((2, 0), 2, 0), ((3, 1), 2, 0), ((5, 1), 2, 0), ((6, 2), 2, 0), ((6, 4), 2, 0), ((5, 5), 2, 0), ((3, 5), 2, 0), ((2, 4), 2, 0), ((2, 2), 2, 0), ((2, 2), 2, 0), ((4, 2), 2, 0), ((5, 3), 2, 0), ((5, 5), 2, 0), ((4, 6), 2, 0), ((2, 6), 2, 0), ((1, 5), 2, 0), ((1, 3), 2, 0), ((2, 2), 2, 0), ((2, 4), 2, 0), ((3, 3), 2, 0), ((3, 5), 2, 0), ((2, 6), 2, 0), ((0, 6), 2, 0), ((1, 1), 2, 0), ((2, 2), 2, 0), ((2, 4), 2, 0), ((1, 5), 2, 0), ((2, 0), 2, 0), ((2, 2), 2, 0), ((1, 3), 2, 0), ((2, 0), 2, 0), ((2, 0), 2, 0), ((1, 3), 2, 0), ((2, 0), 2, 0), ((2

```
(0) ((5,0), 3, 0) ((5,2), 3, 0) ((4,3), 3, 0) ((2,3), 3, 0) ((1,2), 3, 0) ((1,0), 3, 0)
                  Node selected: ((0, 2), 2, 0)
                 Path: [((2, 2), 0, 0), ((1, 0), 1, 0), ((0, 2), 2, 0)]
                  Successors: [((1, 4), 3, 0), ((2, 3), 3, 0), ((2, 1), 3, 0), ((1, 0), 3, 0)]
                  ______
                  Fringe: [((5, 1), 2, 0), ((4, 2), 2, 0), ((2, 2), 2, 0), ((1, 1), 2, 0), ((6, 0), 2, 0), ((6, 2), 2, 0)]
((5, 3), 2, 0) ((3, 3), 2, 0) ((2, 2), 2, 0) ((2, 0), 2, 0) ((3, 1), 2, 0) ((5, 1), 2, 0) ((6, 2), 2, 0)
(6, 4), 2, 0) ((5, 5), 2, 0) ((3, 5), 2, 0) ((2, 4), 2, 0) ((2, 2), 2, 0) ((2, 2), 2, 0) ((4, 2), 2, 0)
(2, 0) ((5, 3), 2, 0) ((5, 5), 2, 0) ((4, 6), 2, 0) ((2, 6), 2, 0) ((1, 5), 2, 0) ((1, 3), 2, 0) ((0, 5), 2, 0)
(2), (2), (2), (3), (3), (3), (3), (3), (3), (4), (4), (4), (5), (4), (5), (5), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), 
((2, 2), 2, 0) ((2, 4), 2, 0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0)
0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((1, 0), 3, 0) ((2, 1), 3, 0)
(3, 0) ((2, 3), 3, 0) ((1, 4), 3, 0)
                  Node selected: ((5, 1), 2, 0)
                 Path: [((2, 2), 0, 0), ((3, 0), 1, 0), ((5, 1), 2, 0)]
                 Successors: [((3,0), 3, 0), ((3,2), 3, 0), ((4,3), 3, 0), ((6,3), 3, 0), ((7,2), 3, 0), ((7,0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0), ((7,0), 3, 0)
[3, 0)
                  Fringe: [(4, 2), 2, 0) ((2, 2), 2, 0) ((1, 1), 2, 0) ((6, 0), 2, 0) ((6, 2), 2, 0) ((5, 3), 2, 0)
((3, 3), 2, 0) ((2, 2), 2, 0) ((2, 0), 2, 0) ((3, 1), 2, 0) ((5, 1), 2, 0) ((6, 2), 2, 0) ((6, 4), 2, 0)
(0) ((5,5), 2, 0) ((3,5), 2, 0) ((2,4), 2, 0) ((2,2), 2, 0) ((2,2), 2, 0) ((4,2), 2, 0) ((5,3), 2, 0)
(2, 0) ((5, 5), 2, 0) ((4, 6), 2, 0) ((2, 6), 2, 0) ((1, 5), 2, 0) ((1, 3), 2, 0) ((0, 2), 2, 0) ((2, 6), 2, 0)
(2), (2), (3), (3), (3), (3), (3), (3), (4), (4), (5), (4), (5), (5), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), 
((2, 4), 2, 0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 2), 3, 0)
(0) ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((1, 0), 3, 0) ((2, 1), 3, 0) ((2, 3), 3, 0)
(3, 0) ((1, 4), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 2), 3, 0)
0), 3, 0)
                 Node selected: ((4, 2), 2, 0)
                 Path: [((2, 2), 0, 0), ((3, 0), 1, 0), ((4, 2), 2, 0)]
                 Successors: [((2, 1), 3, 0), ((2, 3), 3, 0), ((3, 4), 3, 0), ((5, 4), 3, 0), ((6, 3), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0), ((6, 1), 3, 0),
(3, 0) ((5, 0), 3, 0) ((3, 0), 3, 0)
                  Fringe: [((2, 2), 2, 0), ((1, 1), 2, 0), ((6, 0), 2, 0), ((6, 2), 2, 0), ((5, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3, 3), 2, 0), ((3
((2, 2), 2, 0) ((2, 0), 2, 0) ((3, 1), 2, 0) ((5, 1), 2, 0) ((6, 2), 2, 0) ((6, 4), 2, 0) ((5, 5), 2, 0)
0) ((3, 5), 2, 0) ((2, 4), 2, 0) ((2, 2), 2, 0) ((2, 2), 2, 0) ((4, 2), 2, 0) ((5, 3), 2, 0) ((5, 5), 2, 0)
(2, 0) ((4, 6), 2, 0) ((2, 6), 2, 0) ((1, 5), 2, 0) ((1, 3), 2, 0) ((0, 2), 2, 0) ((2, 2), 2, 0) ((3, 2, 2), 2, 0)
(3), (3), (3), (3), (4), (4), (4), (5), (5), (5), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6),
```

((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0)(0) ((2,3),3,0) ((1,2),3,0) ((1,0),3,0) ((1,0),3,0) ((2,1),3,0) ((2,3),3,0) ((1,4),3,0)(3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0)(0), ((2, 1), 3, 0)

Node selected: ((2, 2), 2, 0)

Path: [((2, 2), 0, 0), ((3, 0), 1, 0), ((2, 2), 2, 0)]

Successors: []

Fringe: [((1,1),2,0) ((6,0),2,0) ((6,2),2,0) ((5,3),2,0) ((3,3),2,0) ((2,2),2,0) ((2,0),2,0) ((2,0),2,0) ((3,1),2,0) ((5,1),2,0) ((6,2),2,0) ((6,4),2,0) ((5,5),2,0) ((3,5),2,0) ((2,4),2,0) ((2,2),2,0) ((2,2),2,0) ((4,2),2,0) ((5,3),2,0) ((5,5),2,0) ((4,6),2,0) ((2,6),2,0) ((1,5),2,0) ((1,3),2,0) ((0,2),2,0) ((2,2),2,0) ((3,3),2,0) ((3,5),2,0) ((2,6),2,0) ((0,6),2,0) ((1,1),2,0) ((2,2),2,0) ((2,4),2,0) ((1,5),2,0) ((2,0),2,0) ((2,2),2,0) ((1,3),2,0) ((5,0),3,0) ((5,2),3,0) ((4,3),3,0) ((2,3),3,0) ((1,2),3,0) ((1,0),3,0) ((1,0),3,0) ((2,1),3,0) ((2,3),3,0) ((1,4),3,0) ((7,0),3,0) ((7,2),3,0) ((6,3),3,0) ((4,3),3,0) ((3,2),3,0) ((3,0),3,0) ((3,0),3,0) ((5,0),3,0) ((5,1),

Path: [((2, 2), 0, 0), ((3, 0), 1, 0), ((1, 1), 2, 0)]

Successors: [(0, 3), 3, 0) ((2, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0)]

Node selected: ((6, 0), 2, 0)

Path: [((2, 2), 0, 0), ((4, 1), 1, 0), ((6, 0), 2, 0)]

Successors: [(4, 1), 3, 0) ((5, 2), 3, 0) ((7, 2), 3, 0) ((8, 1), 3, 0)]

Fringe: $[((6,2),2,0)\ ((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,3),2,0)\ ((2,3),2,0)\ ((2,2),2,0)\ ((2,3),2,0)\ ((2,3),2,0)\ ((2,3),3,0)\ ((2,3),3,0)\ ((2,3),3,0)\ ((2,3),3,0)\ ((3,2),3,0)\ ((3,4),3,0)\ ((2,3),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((2,3),3,0)\ ((3,0),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((2,3),3,0)\ ((3,0),3,0)\ ((3,2),3,0)\ ((2,3),3,0)\ ((3,2),3,0)\ ((2,3),3,0)\ ((3,2),3,0)\ ((2,3),3,0)\ ((3,2),3,0)\ ((2,3),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((2,3),3,0)\ ((3,2),$

Node selected: ((6, 2), 2, 0)

Path: [((2, 2), 0, 0), ((4, 1), 1, 0), ((6, 2), 2, 0)]

Successors: [((4, 1), 3, 0), ((4, 3), 3, 0), ((5, 4), 3, 0), ((7, 4), 3, 0), ((8, 3), 3, 0), ((8, 1), 3, 0), ((7, 0), 3, 0), ((5, 0), 3, 0)]

```
Fringe: [((5,3),2,0)\ ((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,3),2,0)\ ((1,2),3,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((2,1),3,0)\ ((2,3),3,0)\ ((3,4),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((5,0),3,0)\ ((6,1),3,0)\ ((6,3),3,0)\ ((5,4),3,0)\ ((3,4),3,0)\ ((2,3),3,0)\ ((2,1),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((2,2),3,0)\ ((3,2),3,0)\ ((3,4),3,0)\ ((3,2),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),
```

Fringe: $[((3,3),2,0)\ ((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,3),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((2,1),3,0)\ ((2,3),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((5,0),3,0)\ ((5,0),3,0)\ ((6,3),3,0)\ ((4,3),3,0)\ ((5,4),3,0)\ ((3,4),3,0)\ ((2,3),3,0)\ ((2,1),3,0)\ ((3,0),$

Node selected: ((3, 3), 2, 0)

Path: [((2, 2), 0, 0), ((4, 1), 1, 0), ((3, 3), 2, 0)]

Successors: [((1, 2), 3, 0), ((1, 4), 3, 0), ((2, 5), 3, 0), ((4, 5), 3, 0), ((5, 4), 3, 0), ((5, 2), 3, 0), ((4, 1), 3, 0), ((2, 1), 3, 0)]

Fringe: $[((2,2),2,0)\ ((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,0)\ ((2,2),2,2,2,0)\ ((2,2),2,2,2,0)\ ((2,2),2,2,2,2,2)\ ((2,2),2,2,2,2,2)\ ((2,2),2,2,2,2,$

Node selected: ((2, 2), 2, 0)

Path: [((2, 2), 0, 0), ((4, 1), 1, 0), ((2, 2), 2, 0)]

Successors: []

Fringe: $[((2,0),2,0)\ ((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((2,1),3,0)\ ((2,3),3,0)\ ((1,4),3,3,0)\ ((2,3),3,0)\ ((1,4),3,3,0)\ ((2,3),3,0)\ ((3,0),3,0)\ ((3$

Node selected: ((2, 0), 2, 0)

Path: [((2, 2), 0, 0), ((4, 1), 1, 0), ((2, 0), 2, 0)]

Successors: [((0, 1), 3, 0), ((1, 2), 3, 0), ((3, 2), 3, 0), ((4, 1), 3, 0)]

Fringe: $[((3,1),2,0)\ ((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((2,1),3,0)\ ((2,3),3,0)\ ((1,4),3,0)\ ((3,0),$

Node selected: ((3, 1), 2, 0)

Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((3, 1), 2, 0)]

Successors: [((1, 0), 3, 0), ((1, 2), 3, 0), ((2, 3), 3, 0), ((4, 3), 3, 0), ((5, 2), 3, 0), ((5, 0), 3, 0)]

Fringe: $[((5,1),2,0)\ ((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((2,3),3,0)\ ((2,3),3,0)\ ((1,2),$

0), 3, 0) ((1, 0), 3, 0) ((2, 1), 3, 0) ((2, 3), 3, 0) ((1, 4), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0) ((6, 3), 3, 0) ((5, 4), 3, 0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0) ((3, 2), 3, 0) ((2, 3), 3, 0) ((0, 3), 3, 0) ((8, 1), 3, 0) ((7, 2), 3, 0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0) ((6, 1), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((4, 1), 3, 0) ((6, 1), 3, 0) ((7, 2), 3, 0) ((7, 4), 3, 0) ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0) ((2, 1), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((1, 2), 3, 0) ((6, 5), 3, 0) ((1, 2), 3, 0) ((1, 2), 3, 0) ((1, 2), 3, 0) ((1, 2), 3, 0) ((1, 2), 3, 0) ((1, 2), 3, 0) ((1, 2), 3, 0) ((1, 2), 3, 0) ((1, 2), 3, 0) ((1, 0), 3,

Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((5, 1), 2, 0)]

Successors: [((3, 0), 3, 0), ((3, 2), 3, 0), ((4, 3), 3, 0), ((6, 3), 3, 0), ((7, 2), 3, 0), ((7, 0), 3, 0)]

Fringe: $[((6,2),2,0)\ ((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((2,1),3,0)\ ((2,3),3,0)\ ((1,4),3,0)\ ((7,0),3,0)\ ((7,2),3,0)\ ((6,3),3,0)\ ((3,2),$

Node selected: ((6, 2), 2, 0)

Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((6, 2), 2, 0)]

Successors: [((4, 1), 3, 0), ((4, 3), 3, 0), ((5, 4), 3, 0), ((7, 4), 3, 0), ((8, 3), 3, 0), ((8, 1), 3, 0), ((7, 0), 3, 0), ((5, 0), 3, 0)]

Fringe: $[((6,4),2,0)\ ((5,5),2,0)\ ((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((2,1),3,0)\ ((2,3),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((5,0),3,0)\ ((6,1),3,0)\ ((6,3),3,0)\ ((5,4),3,0)\ ((3,4),3,0)\ ((2,3),3,0)\ ((2,1),3,0)\ ((3,0),$

```
4),\ 3,\ 0)\ ((1,\ 2),\ 3,\ 0)\ ((4,\ 1),\ 3,\ 0)\ ((3,\ 2),\ 3,\ 0)\ ((1,\ 2),\ 3,\ 0)\ ((0,\ 1),\ 3,\ 0)\ ((5,\ 0),\ 3,\ 0)\\ ((5,\ 2),\ 3,\ 0)\ ((4,\ 3),\ 3,\ 0)\ ((2,\ 3),\ 3,\ 0)\ ((1,\ 2),\ 3,\ 0)\ ((1,\ 0),\ 3,\ 0)\ ((7,\ 0),\ 3,\ 0)\ ((7,\ 2),\ 3,\ 0)\ ((6,\ 3),\ 3,\ 0)\ ((4,\ 3),\ 3,\ 0)\ ((3,\ 2),\ 3,\ 0)\ ((3,\ 0),\ 3,\ 0)\ ((5,\ 0),\ 3,\ 0)\ ((7,\ 0),\ 3,\ 0)\ ((8,\ 1),\ 3,\ 0)\ ((8,\ 3),\ 3,\ 0)\ ((7,\ 4),\ 3,\ 0)\ ((5,\ 4),\ 3,\ 0)\ ((4,\ 3),\ 3,\ 0)\ ((4,\ 1),\ 3,\ 0)\ ]
```

Node selected: ((6, 4), 2, 0)Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((6, 4), 2, 0)]

Successors: [((4, 3), 3, 0), ((4, 5), 3, 0), ((5, 6), 3, 0), ((7, 6), 3, 0), ((8, 5), 3, 0), ((8, 3), 3, 0), ((7, 2), 3, 0), ((5, 2), 3, 0)]

```
Fringe: [((5,5), 2, 0), ((3,5), 2, 0), ((2,4), 2, 0), ((2,2), 2, 0), ((2,2), 2, 0), ((4,2), 2, 0)]
((5,3), 2, 0) ((5,5), 2, 0) ((4,6), 2, 0) ((2,6), 2, 0) ((1,5), 2, 0) ((1,3), 2, 0) ((0,2), 2, 0)
(0) ((2, 2), 2, 0) ((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0) ((1, 1), 2, 0) ((2, 2), 2, 0)
(2, 0) ((2, 4), 2, 0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 0), 3, 0)
(2), (3), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), 
((2, 3), 3, 0) ((1, 4), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0)
(0) ((3,0), 3, 0) ((3,0), 3, 0) ((5,0), 3, 0) ((6,1), 3, 0) ((6,3), 3, 0) ((5,4), 3, 0) ((3,4), 3, 0)
(3, 0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((3, 0), 3, 0) ((3, 2), 3, 0) ((2, 3), 3, 0) ((0, 3), 3, 0) ((8, 3), 3, 0)
(1), (3, 0), (7, 2), (7, 3), (7, 2), (7, 3), (7, 2), (7, 3), (7, 2), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3), (7, 3)
((8, 3), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((4, 1), 3, 0) ((6, 1), 3, 0)
(0) ((7, 2), 3, 0) ((7, 4), 3, 0) ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0) ((2, 1), 3, 0)
(4, 1), 3, 0) ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0) ((1, 4), 3, 0)
(2), (3, 0), (4, 1), (4, 0), (4, 1), (4, 0), (4, 1), (4, 0), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1)
((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0)
(4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0)
(3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((7, 2), 3, 0) ((8, 4), 3, 0)
(3), (3), (3), (3), (3), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4),
```

Node selected: ((5, 5), 2, 0)

Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((5, 5), 2, 0)]

Successors: [((3, 4), 3, 0) ((3, 6), 3, 0) ((4, 7), 3, 0) ((6, 7), 3, 0) ((7, 6), 3, 0) ((7, 4), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0)]

Fringe: $[((3,5),2,0)\ ((2,4),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((2,1),3,0)\ ((2,3),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((5,0),3,0)\ ((6,3),3,0)\ ((6,3),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,4),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,1),3,0)\ ((4,2),3,0)\ ((4,2),3,0)\ ((4,3),3,0)\ ((3,2),3,0)\ ((4,3),3,0)\ ((4,3),3,0)\ ((3,2),3,0)\ ((3,2),3,0)\ ((1,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((3,2),$

```
\begin{array}{l} 3,\ 0)\ ((5,\ 4),\ 3,\ 0)\ ((4,\ 3),\ 3,\ 0)\ ((4,\ 1),\ 3,\ 0)\ ((5,\ 2),\ 3,\ 0)\ ((7,\ 2),\ 3,\ 0)\ ((8,\ 3),\ 3,\ 0)\ ((8,\ 5),\ 3,\ 0)\ ((7,\ 6),\ 3,\ 0)\ ((5,\ 6),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 3),\ 3,\ 0)\ ((4,\ 3),\ 3,\ 0)\ ((6,\ 3),\ 3,\ 0)\ ((7,\ 4),\ 3,\ 0)\ ((7,\ 6),\ 3,\ 0)\ ((6,\ 7),\ 3,\ 0)\ ((4,\ 7),\ 3,\ 0)\ ((3,\ 6),\ 3,\ 0)\ ((3,\ 4),\ 3,\ 0)\ ]
```

Node selected: ((3, 5), 2, 0)

Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((3, 5), 2, 0)]

Successors: [((1, 4), 3, 0) ((1, 6), 3, 0) ((2, 7), 3, 0) ((4, 7), 3, 0) ((5, 6), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((2, 3), 3, 0)]

```
Fringe: [((2, 4), 2, 0), ((2, 2), 2, 0), ((2, 2), 2, 0), ((4, 2), 2, 0), ((5, 3), 2, 0), ((5, 5), 2, 0)]
((4, 6), 2, 0) ((2, 6), 2, 0) ((1, 5), 2, 0) ((1, 3), 2, 0) ((0, 2), 2, 0) ((2, 2), 2, 0) ((3, 3), 2, 0)
(0) ((3,5), 2, 0) ((2,6), 2, 0) ((0,6), 2, 0) ((1,1), 2, 0) ((2,2), 2, 0) ((2,4), 2, 0) ((1,5), 2, 0)
(2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 2), 3, 0)
(3), (3), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), 
((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0)
(0) ((5,0),3,0) ((6,1),3,0) ((6,3),3,0) ((5,4),3,0) ((3,4),3,0) ((2,3),3,0) ((2,1),3,0)
(3, 0) ((3, 0), 3, 0) ((3, 2), 3, 0) ((2, 3), 3, 0) ((0, 3), 3, 0) ((8, 1), 3, 0) ((7, 2), 3, 0) ((5, 3), 0)
(2), (3, 0), (4, 1), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0), (4, 0)
((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((4, 1), 3, 0) ((6, 1), 3, 0) ((7, 2), 3, 0) ((7, 4), 3, 0)
0) ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0) ((2, 1), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0)
(3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((4, 1), 3, 0) ((3, 4), 3, 0)
(2), (3), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), (1), 
((1, 2), 3, 0) ((1, 0), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0)
(0) ((3,0), 3, 0) ((5,0), 3, 0) ((7,0), 3, 0) ((8,1), 3, 0) ((8,3), 3, 0) ((7,4), 3, 0) ((5,4), 3, 0)
(4, 3), (4, 3), (3, 0), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 1), (4, 
(6), (5), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), 
((7, 6), 3, 0) ((6, 7), 3, 0) ((4, 7), 3, 0) ((3, 6), 3, 0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((4, 3), 3, 0)
0) ((5,4),3,0) ((5,6),3,0) ((4,7),3,0) ((2,7),3,0) ((1,6),3,0) ((1,4),3,0)
```

Node selected: ((2, 4), 2, 0)

Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((2, 4), 2, 0)]

Successors: [((0, 3), 3, 0), ((0, 5), 3, 0), ((1, 6), 3, 0), ((3, 6), 3, 0), ((4, 5), 3, 0), ((4, 3), 3, 0), ((3, 2), 3, 0), ((1, 2), 3, 0)]

Fringe: $[((2,2),2,0)\ ((2,2),2,0)\ ((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((2,3),3,2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),3,0)\ ((1,3),3,0)\ ((1,3),3,0)\ ((1,3),3,0)\ ((1,3),3,0)\ ((1,4),3,0)\ ((1,4),3,0)\ ((1,4),3,0)\ ((1,2),3,0)\ ((1,4),3,0)\ ((1,2),3,0)\ ((1,4),3,0)\ ((3,2),3,0)\ ((1,2$

 $0) \ ((5,0),3,0) \ ((7,0),3,0) \ ((8,1),3,0) \ ((8,3),3,0) \ ((7,4),3,0) \ ((5,4),3,0) \ ((4,3),3,0) \ ((4,1),3,0) \ ((5,2),3,0) \ ((7,2),3,0) \ ((8,3),3,0) \ ((8,5),3,0) \ ((7,6),3,0) \ ((5,6),3,0) \ ((4,5),3,0) \ ((4,3),3,0) \ ((4,3),3,0) \ ((6,3),3,0) \ ((7,4),3,0) \ ((7,6),3,0) \ ((6,7),3,0) \ ((4,7),3,0) \ ((3,6),3,0) \ ((3,4),3,0) \ ((2,3),3,0) \ ((4,3),3,0) \ ((5,4),3,0) \ ((5,6),3,0) \ ((4,7),3,0) \ ((2,7),3,0) \ ((1,6),3,0) \ ((1,4),3,0) \ ((1,2),3,0) \ ((3,2),3,0) \ ((4,3),3,0) \ ((4,5),3,0) \ ((3,6),3,0) \ ((1,6),3,0) \ ((0,5),3,0) \ ((0,3),3,$

Node selected: ((2, 2), 2, 0)

Path: [((2, 2), 0, 0), ((4, 3), 1, 0), ((2, 2), 2, 0)]

Successors: []

Fringe: [((2, 2), 2, 0), ((4, 2), 2, 0), ((5, 3), 2, 0), ((5, 5), 2, 0), ((4, 6), 2, 0), ((2, 6), 2, 0)]((1, 5), 2, 0) ((1, 3), 2, 0) ((0, 2), 2, 0) ((2, 2), 2, 0) ((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0)(0, 6), (2, 0), ((1, 1), 2, 0), ((2, 2), 2, 0), ((2, 4), 2, 0), ((1, 5), 2, 0), ((2, 0), 2, 0), ((2, 2), 2,(2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 2), 3, 0)(0), (1, 0), (1, 0), (2, 1), (2, 1), (2, 3), (2, 3), (3, 0), (1, 4), (4, 3, 0), (4,((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0)(6, 3), 3, 0) ((5, 4), 3, 0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((3, 0), 3, 0) ((3, 2), 3, 0)(3, 0) ((2, 3), 3, 0) ((0, 3), 3, 0) ((8, 1), 3, 0) ((7, 2), 3, 0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0)(0), ((4, 1), 3, 0) ((4, 1), 3, 0) ((6, 1), 3, 0) ((7, 2), 3, 0) ((7, 4), 3, 0) ((6, 5), 3, 0) ((4, 5), 3, 0)(0) ((3, 4), 3, 0) ((3, 2), 3, 0) ((2, 1), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0)(0, 0) ((1), (3), (0), ((7,0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0)(0) ((7,0),3,0) ((8,1),3,0) ((8,3),3,0) ((7,4),3,0) ((5,4),3,0) ((4,3),3,0) ((4,1),3,0)(3, 0) ((5, 2), 3, 0) ((7, 2), 3, 0) ((8, 3), 3, 0) ((8, 5), 3, 0) ((7, 6), 3, 0) ((5, 6), 3, 0) ((4, 5), 3, 0)(5), (4, 3)((4,7),3,0) ((3,6),3,0) ((3,4),3,0) ((2,3),3,0) ((4,3),3,0) ((5,4),3,0) ((5,6),3,0)(0) ((4,7),3,0) ((2,7),3,0) ((1,6),3,0) ((1,4),3,0) ((1,2),3,0) ((3,2),3,0) ((4,3),3,0)(4, 5), (4, 5), (3, 0), ((3, 6), 3, 0), ((1, 6), 3, 0), ((0, 5), 3, 0), ((0, 3), 3, 0)

Node selected: ((2, 2), 2, 0)

Path: [((2, 2), 0, 0), ((3, 4), 1, 0), ((2, 2), 2, 0)]

Successors: []

Fringe: $[((4,2),2,0)\ ((5,3),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((2,1),3,0)\ ((2,1),3,0)\ ((3,0),3,0)\ ((3,1),$

```
\begin{array}{l} 0),\ 3,\ 0)\ ((5,\ 2),\ 3,\ 0)\ ((4,\ 3),\ 3,\ 0)\ ((2,\ 3),\ 3,\ 0)\ ((1,\ 2),\ 3,\ 0)\ ((1,\ 0),\ 3,\ 0)\ ((7,\ 0),\ 3,\ 0)\\ ((7,\ 2),\ 3,\ 0)\ ((6,\ 3),\ 3,\ 0)\ ((4,\ 3),\ 3,\ 0)\ ((3,\ 2),\ 3,\ 0)\ ((3,\ 0),\ 3,\ 0)\ ((5,\ 0),\ 3,\ 0)\ ((5,\ 0),\ 3,\ 0)\ ((5,\ 2),\ 3,\ 0)\ ((8,\ 3),\ 3,\ 0)\ ((8,\ 5),\ 3,\ 0)\ ((5,\ 4),\ 3,\ 0)\ ((5,\ 6),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 7),\ 3,\ 0)\\ ((3,\ 6),\ 3,\ 0)\ ((3,\ 4),\ 3,\ 0)\ ((2,\ 3),\ 3,\ 0)\ ((4,\ 3),\ 3,\ 0)\ ((4,\ 3),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3,\ 0)\ ((4,\ 5),\ 3
```

Node selected: ((4, 2), 2, 0)

Path: [((2, 2), 0, 0), ((3, 4), 1, 0), ((4, 2), 2, 0)]

Successors: [((2, 1), 3, 0), ((2, 3), 3, 0), ((3, 4), 3, 0), ((5, 4), 3, 0), ((6, 3), 3, 0), ((6, 1), 3, 0), ((5, 0), 3, 0), ((3, 0), 3, 0)]

```
Fringe: [((5, 3), 2, 0), ((5, 5), 2, 0), ((4, 6), 2, 0), ((2, 6), 2, 0), ((1, 5), 2, 0), ((1, 3), 2, 0)]
((0, 2), 2, 0) ((2, 2), 2, 0) ((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0) ((1, 1), 2, 0)
(0) ((2, 2), 2, 0) ((2, 4), 2, 0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 2, 0)
(3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((1, 0), 3, 0) ((2, 3), 3, 0)
(1), (2, 3), (3, 0), ((1, 4), (3, 0), ((7, 0), (3, 0), ((7, 2), (7, 0), ((6, 3), (3, 0), ((4, 3), (3, 0)
((3, 2), 3, 0) ((3, 0), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0) ((6, 3), 3, 0) ((5, 4), 3, 0)
(0) ((3, 4), 3, 0) ((2, 3), 3, 0) ((2, 1), 3, 0) ((3, 0), 3, 0) ((3, 2), 3, 0) ((2, 3), 3, 0) ((0, 3), 3, 0)
(3, 0) ((8, 1), 3, 0) ((7, 2), 3, 0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0)
(4, 1), (3, 0), ((8, 3), 3, 0), ((7, 4), 3, 0), ((5, 4), 3, 0), ((4, 3), 3, 0), ((4, 1), 3, 0), ((4, 1), 3, 0)
((6, 1), 3, 0) ((7, 2), 3, 0) ((7, 4), 3, 0) ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0)
(0) ((2, 1), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0)
(3, 0) ((1, 2), 3, 0) ((4, 1), 3, 0) ((3, 2), 3, 0) ((1, 2), 3, 0) ((0, 1), 3, 0) ((5, 0), 3, 0) ((5, 0), 3, 0)
(2), (3), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), 
((6, 3), 3, 0) ((4, 3), 3, 0) ((3, 2), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0)
(0) ((8, 3), 3, 0) ((7, 4), 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((7, 2), 3, 0)
(4, 3), (8, 3), (8, 5), (8, 5), (7, 6), (7, 6), (8, 7), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10)
(3), (4), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), 
((3, 4), 3, 0) ((2, 3), 3, 0) ((4, 3), 3, 0) ((5, 4), 3, 0) ((5, 6), 3, 0) ((4, 7), 3, 0) ((2, 7), 3, 0)
(0) ((1, 6), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((3, 2), 3, 0) ((4, 3), 3, 0) ((4, 5), 3, 0) ((3, 6), 3, 0)
(3, 0) ((1, 6), 3, 0) ((0, 5), 3, 0) ((0, 3), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0) ((6, 1), 3, 0)
(3), (3), (3), (3), (3), (3), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4),
```

Node selected: ((5, 3), 2, 0)

Path: [((2, 2), 0, 0), ((3, 4), 1, 0), ((5, 3), 2, 0)]

Successors: [((3, 2), 3, 0), ((3, 4), 3, 0), ((4, 5), 3, 0), ((6, 5), 3, 0), ((7, 4), 3, 0), ((7, 2), 3, 0), ((6, 1), 3, 0), ((4, 1), 3, 0)]

Fringe: $[((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((1,5),2,0)\ ((1,3),2,0)\ ((0,2),2,0)\ ((2,2),2,0)\ ((3,3),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((0,6),2,0)\ ((1,1),2,0)\ ((2,2),2,0)\ ((2,4),2,0)\ ((1,5),2,0)\ ((2,0),2,0)\ ((2,2),2,0)\ ((1,3),2,0)\ ((5,0),3,0)\ ((5,2),3,0)\ ((4,3),3,0)\ ((2,3),3,0)\ ((1,2),3,0)\ ((1,0),3,0)\ ((1,0),3,0)\ ((2,1),3,0)\ ((2,3),3,0)\ ((3,0),3,0)\ ((3,0),3,0)\ ((5,0),3,0)\ ((6,1),3,0)\ ((6,3),3,0)\ ((5,4),3,0)\ ((3,4),3,0)\ ((2,3),3,0)\ ((2,1),3,0)\ ((3,0),$

 $3, 0) \ ((7, 2), 3, 0) \ ((5, 2), 3, 0) \ ((4, 1), 3, 0) \ ((5, 0), 3, 0) \ ((7, 0), 3, 0) \ ((8, 1), 3, 0) \ ((8, 3), 3, 0) \ ((7, 4), 3, 0) \ ((5, 4), 3, 0) \ ((4, 3), 3, 0) \ ((4, 1), 3, 0) \ ((4, 1), 3, 0) \ ((6, 1), 3, 0) \ ((7, 2), 3, 0) \ ((7, 4), 3, 0) \ ((6, 5), 3, 0) \ ((4, 5), 3, 0) \ ((3, 4), 3, 0) \ ((3, 2), 3, 0) \ ((2, 1), 3, 0) \ ((4, 1), 3, 0) \ ((5, 2), 3, 0) \ ((5, 4), 3, 0) \ ((4, 5), 3, 0) \ ((2, 5), 3, 0) \ ((1, 4), 3, 0) \ ((1, 2), 3, 0) \ ((1, 3), 3, 0) \ ((1, 2), 3, 0) \ ((1, 3), 3, 0) \ ((1, 3), 3, 0) \ ((1, 3), 3, 0) \ ((1, 3), 3, 0) \ ((1, 3), 3, 0) \ ((1, 3), 3, 0) \ ((1, 4), 3,$

Node selected: ((5, 5), 2, 0)

Path: [((2, 2), 0, 0), ((3, 4), 1, 0), ((5, 5), 2, 0)]

Successors: []

Fringe: [(4,6),2,0)((2,6),2,0)((1,5),2,0)((1,3),2,0)((0,2),2,0)((2,2),2,0)((3, 3), 2, 0) ((3, 5), 2, 0) ((2, 6), 2, 0) ((0, 6), 2, 0) ((1, 1), 2, 0) ((2, 2), 2, 0) ((2, 4), 2, 0)(0) ((1, 5), 2, 0) ((2, 0), 2, 0) ((2, 2), 2, 0) ((1, 3), 2, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 2, 0)(2, 3), (2, 3), (3, 0), ((1, 2), 3, 0), ((1, 0), 3, 0), ((1, 0), 3, 0), ((2, 1), 3, 0), ((2, 3), 3, 0), ((1, 0), 3, 0), ((1, 0), 3, 0), ((2, 1), 3, 0), ((2, 3), 3, 0), ((2,(4), (4), (5), (6), ((3,0),3,0) ((5,0),3,0) ((6,1),3,0) ((6,3),3,0) ((5,4),3,0) ((3,4),3,0) ((2,3),3,0)(0) ((2, 1), 3, 0) ((3, 0), 3, 0) ((3, 2), 3, 0) ((2, 3), 3, 0) ((0, 3), 3, 0) ((8, 1), 3, 0) ((7, 2), 3, 0)(5, 0) ((5, 2), 3, 0) ((4, 1), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 0), 3, 0)(4, 3, 0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((4, 1), 3, 0) ((6, 1), 3, 0) ((7, 2), 3, 0)((7, 4), 3, 0) ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0) ((2, 1), 3, 0) ((4, 1), 3, 0)(0) ((5, 2), 3, 0) ((5, 4), 3, 0) ((4, 5), 3, 0) ((2, 5), 3, 0) ((1, 4), 3, 0) ((1, 2), 3, 0) ((4, 1), 3, 0)(3, 0) ((3, 2), 3, 0) ((1, 2), 3, 0) ((0, 1), 3, 0) ((5, 0), 3, 0) ((5, 2), 3, 0) ((4, 3), 3, 0) ((2, 3, 0), 0)3), 3, 0) ((1, 2), 3, 0) ((1, 0), 3, 0) ((7, 0), 3, 0) ((7, 2), 3, 0) ((6, 3), 3, 0) ((4, 3), 3, 0)((3, 2), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((7, 0), 3, 0) ((8, 1), 3, 0) ((8, 3), 3, 0) ((7, 4), 3, 0)(0) ((5, 4), 3, 0) ((4, 3), 3, 0) ((4, 1), 3, 0) ((5, 2), 3, 0) ((7, 2), 3, 0) ((8, 3), 3, 0) ((8, 5), 3, 0)(3, 0) ((7, 6), 3, 0) ((5, 6), 3, 0) ((4, 5), 3, 0) ((4, 3), 3, 0) ((4, 3), 3, 0) ((6, 3), 3, 0) ((7, 6), 3, 0)(4), (4), (5), (5), (6), ((4, 3), 3, 0) ((5, 4), 3, 0) ((5, 6), 3, 0) ((4, 7), 3, 0) ((2, 7), 3, 0) ((1, 6), 3, 0) ((1, 4), 3, 0)(0) ((1, 2), 3, 0) ((3, 2), 3, 0) ((4, 3), 3, 0) ((4, 5), 3, 0) ((3, 6), 3, 0) ((1, 6), 3, 0) ((0, 5), 3, 0)(3, 0) ((0, 3), 3, 0) ((3, 0), 3, 0) ((5, 0), 3, 0) ((6, 1), 3, 0) ((6, 3), 3, 0) ((5, 4), 3, 0) ((3, 0), 3, 0)(4), ((6, 5), 3, 0) ((4, 5), 3, 0) ((3, 4), 3, 0) ((3, 2), 3, 0)

Node selected: ((4, 6), 2, 0)

Path: [((2, 2), 0, 0), ((3, 4), 1, 0), ((4, 6), 2, 0)]

Busqueda: Grafo

```
Estrategia: A*
                         Nodos generados: 179
                         Nodos expandidos: 28
                          Factor de ramificacion: 12.851029396057129
                         Profun: 2
                         Coste: 2
                         Solucion: (2,2) (3,4) (4,6)
                           ***************
                           ***************
                          Algoritmo A* con la heurística h_1(n) (ecuación 2)
                         Empezando la busqueda.
                         Fringe: [((2, 2), 0, 2)]
                         Node selected: ((2, 2), 0, 2)
                         Path: [((2, 2), 0, 2)]
                          Successors: [((0, 1), 1, 3), ((0, 3), 1, 2), ((1, 4), 1, 1), ((3, 4), 1, 1), ((4, 3), 1, 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), ((4, 1), 1), (
 1, 1) ((3, 0), 1, 2) ((1, 0), 1, 3)
                          Fringe: [(4, 1), 1, 1) (4, 3), 1, 1) ((3, 4), 1, 1) ((1, 4), 1, 1) ((3, 0), 1, 2) ((0, 3), 1, 2)
  ((1, 0), 1, 3) ((0, 1), 1, 3)
                         Node selected: ((4, 1), 1, 1)
                         Path: [((2, 2), 0, 2), ((4, 1), 1, 1)]
                         Successors: [(2,0), 2, 2), ((2,2), 2, 2), ((3,3), 2, 1), ((5,3), 2, 1), ((6,2), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2, 2), ((6,0), 2,
[2, 2)
                           ______
                          Fringe: [(4, 3), 1, 1) ((3, 4), 1, 1) ((1, 4), 1, 1) ((3, 0), 1, 2) ((0, 3), 1, 2) ((5, 3), 2, 1)
  ((3, 3), 2, 1) ((1, 0), 1, 3) ((0, 1), 1, 3) ((6, 0), 2, 2) ((6, 2), 2, 2) ((2, 2), 2, 2) ((2, 0), 2, 2)
2)
                         Node selected: ((4, 3), 1, 1)
                         Path: [((2, 2), 0, 2), ((4, 3), 1, 1)]
                          Successors: [((2, 2), 2, 2), ((2, 4), 2, 1), ((3, 5), 2, 0), ((5, 5), 2, 0), ((6, 4), 2, 1), ((6, 2), 2, 2), ((6, 4), 2, 1), ((6, 2), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2), ((6, 4), 2, 2),
 (2, 2) ((5, 1), 2, 2) ((3, 1), 2, 2)
                          Fringe: [((3, 4), 1, 1), ((1, 4), 1, 1), ((5, 5), 2, 0), ((3, 5), 2, 0), ((3, 0), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0, 3), 1, 2), ((0
 ((5, 3), 2, 1) ((3, 3), 2, 1) ((6, 4), 2, 1) ((2, 4), 2, 1) ((1, 0), 1, 3) ((0, 1), 1, 3) ((6, 0), 2, 1)
 (6, 2), (2, 2), ((2, 2), 2, 2), ((2, 0), 2, 2), ((3, 1), 2, 2), ((5, 1), 2, 2), ((6, 2), 2, 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2), ((2, 2), 2)
[2, 2)
                         Node selected: ((3, 4), 1, 1)
                         Path: [((2, 2), 0, 2), ((3, 4), 1, 1)]
```

Fringe: [((5,5),2,0),((3,5),2,0),((5,5),2,0),((4,6),2,0),((2,6),2,0),((3,5),2,0),((2,6),2,0),((3,0),1,2),((0,3),1,2),((5,3),2,1),((3,3),2,1),((6,4),2,1),((2,4),2,1),((4,2),2,1),((5,3),2,1),((1,5),2,1),((3,3),2,1),((0,6),2,1),((1,0),1,3),((0,1),1,3),((6,0),2,2),((6,2),2,2),((2,2),2,2),((2,0),2,2),((3,1),2,2),((5,1),2,2),((6,2),2,2),((2,2),2,2),((1,3),2,2),((2,2),

Node selected: ((5, 5), 2, 0)

Path: [((2, 2), 0, 2), ((4, 3), 1, 1), ((5, 5), 2, 0)]

Successors: [((3, 4), 3, 1), ((3, 6), 3, 0), ((4, 7), 3, 0), ((6, 7), 3, 1), ((7, 6), 3, 1), ((7, 4), 3, 1), ((6, 3), 3, 1), ((4, 3), 3, 1)]

Fringe: $[((3,5),2,0)\ ((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((3,0),1,2)\ ((0,3),1,2)\ ((5,3),2,1)\ ((3,3),2,1)\ ((6,4),2,1)\ ((2,4),2,1)\ ((4,2),2,1)\ ((5,3),2,1)\ ((1,5),2,1)\ ((3,3),2,1)\ ((0,6),2,1)\ ((4,7),3,0)\ ((3,6),3,0)\ ((1,0),1,3)\ ((0,1),1,3)\ ((6,0),2,2)\ ((6,2),2,2)\ ((2,2),2,2)\ ((2,0),2,2)\ ((3,1),2,2)\ ((5,1),2,2)\ ((6,2),2,2)\ ((2,2),2,2)\ ((1,3),2,2)\ ((0,2),2,2)\ ((2,2),2,2)\ ((4,3),3,1)\ ((6,3),3,1)\ ((7,4),3,1)\ ((7,6),3,1)\ ((6,7),3,1)\ ((3,4),3,1)\]$

Node selected: ((3, 5), 2, 0)

Path: [((2, 2), 0, 2), ((4, 3), 1, 1), ((3, 5), 2, 0)]

Successors: [((1, 4), 3, 1), ((1, 6), 3, 1), ((2, 7), 3, 1), ((4, 7), 3, 0), ((5, 6), 3, 0), ((5, 4), 3, 1), ((4, 3), 3, 1), ((2, 3), 3, 1)]

Fringe: $[((5,5),2,0)\ ((4,6),2,0)\ ((2,6),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((3,0),1,2)\ ((0,3),1,2)\ ((5,3),2,1)\ ((3,3),2,1)\ ((6,4),2,1)\ ((2,4),2,1)\ ((4,2),2,1)\ ((5,3),2,1)\ ((1,5),2,1)\ ((3,3),2,1)\ ((0,6),2,1)\ ((4,7),3,0)\ ((3,6),3,0)\ ((5,6),3,0)\ ((4,7),3,0)\ ((1,0),1,3)\ ((0,1),1,3)\ ((6,0),2,2)\ ((6,2),2,2)\ ((2,2),2,2)\ ((2,2),2,2)\ ((2,0),2,2)\ ((3,1),2,2)\ ((5,1),2,2)\ ((6,2),2,2)\ ((2,2),2,2)\ ((2,2),2,2)\ ((1,3),2,2)\ ((0,2),2,2)\ ((2,2),2,2)\ ((2,3),3,1)\ ((3,4),3,1)\ ((2,3),3,1)\ ((4,3),3,1)\ ((5,4),3,1)\ ((2,7),3,1)\ ((1,6),3,1)\ ((1,4),3,1)\]$

Node selected: ((5, 5), 2, 0)

Path: [((2, 2), 0, 2), ((3, 4), 1, 1), ((5, 5), 2, 0)]

```
Successors: []
```

Fringe: $[((4,6),2,0)\ ((2,6),2,0)\ ((3,5),2,0)\ ((2,6),2,0)\ ((3,0),1,2)\ ((0,3),1,2)\ ((5,3),2,1)\ ((3,3),2,1)\ ((6,4),2,1)\ ((2,4),2,1)\ ((4,2),2,1)\ ((5,3),2,1)\ ((1,5),2,1)\ ((3,3),2,1)\ ((0,6),2,1)\ ((4,7),3,0)\ ((3,6),3,0)\ ((5,6),3,0)\ ((4,7),3,0)\ ((1,0),1,3)\ ((0,1),1,3)\ ((6,0),2,2)\ ((6,2),2,2)\ ((2,2),2,2)\ ((2,2),2,2)\ ((2,0),2,2)\ ((3,1),2,2)\ ((5,1),2,2)\ ((6,2),2,2)\ ((2,2),2,2)\ ((1,3),2,2)\ ((0,2),2,2)\ ((2,2),2,2)\ ((4,3),3,1)\ ((6,3),3,1)\ ((7,4),3,1)\ ((7,6),3,1)\ ((6,7),3,1)\ ((3,4),3,1)\]$

Node selected: ((4, 6), 2, 0)

Path: [((2, 2), 0, 2), ((3, 4), 1, 1), ((4, 6), 2, 0)]

Busqueda: Grafo Estrategia: A*

Nodos generados: 53 Nodos expandidos: 7

Factor de ramificacion: 6.728415489196777

Profun: 2 Coste: 2

Solucion: (2,2) (3,4) (4,6)

Algoritmo A* con la heurística $h_2(n)$ (ecuación 3)

Empezando la busqueda. Con la heurística 2

Fringe: [((2, 2), 0, 2)]

Node selected: ((2, 2), 0, 2)

Path: [((2, 2), 0, 2)]

Successors: [((0, 1), 1, 3) ((0, 3), 1, 2) ((1, 4), 1, 2) ((3, 4), 1, 1) ((4, 3), 1, 2) ((4, 1), 1, 3) ((3, 0), 1, 3) ((1, 0), 1, 3)]

Fringe: [((3, 4), 1, 1), ((4, 3), 1, 2), ((1, 4), 1, 2), ((0, 3), 1, 2), ((1, 0), 1, 3), ((3, 0), 1, 3), ((4, 1), 1, 3), ((0, 1), 1, 3)]

Node selected: ((3, 4), 1, 1)

Path: [((2, 2), 0, 2), ((3, 4), 1, 1)]

Successors: [((1, 3), 2, 2), ((1, 5), 2, 2), ((2, 6), 2, 1), ((4, 6), 2, 0), ((5, 5), 2, 1), ((5, 3), 2, 2), ((4, 2), 2, 2), ((2, 2), 2, 2)]

```
Fringe: [(4,6),2,0)(4,3),1,2)((1,4),1,2)((0,3),1,2)((5,5),2,1)((2,6),2,1)
((1,0),1,3) ((3,0),1,3) ((4,1),1,3) ((0,1),1,3) ((2,2),2,2) ((4,2),2,2) ((5,3),2,3)
(1, 5), 2, 2) ((1, 3), 2, 2)
  Node selected: ((4, 6), 2, 0)
  Path: [((2, 2), 0, 2), ((3, 4), 1, 1), ((4, 6), 2, 0)]
  ****************
  **************
  Busqueda: Grafo
  Estrategia: A*
  Nodos generados: 17
  Nodos expandidos: 2
  Factor de ramificacion: 3.5311241149902344
  Profun: 2
  Coste: 2
  Solucion: (2,2) (3,4) (4,6)
  ***************
  ***************
```

1.2. Caracterización de la calidad de las heurísticas empleadas

A continuación se expone la calidad de las heurísticas empleadas en función de la longitud del camino de solución óptimo. en la tabla 1 se muestran los resultados obtenidos para las distintas heurísticas empleando una estructura de grafo donde la posición final es (5, 5).

1.3. Comparación del rendimiento de los distintos métodos de búsqueda implementados

En este apartado se muestra en la tabla 2 el rendimiento de los distintos métodos de búsqueda implementados (los resultados fueron obtenidos empleando la búsqueda con estructura de grafo) donde la búsqueda ciega usa una estrategia de exploración en anchura mientras que $A^*(h_0)$, $A^*(h_1)$ y $A^*(h_2)$ se corresponden con las ecuaciones 1, 2 y 3 respectivamente.

2. Discusión

2.1. Comparativa entre heurísticas

En este apartado se realiza una breve discusión sobre los resultados obtenidos por las heurísticas para los ejemplos planteados en relación a $h^*(n)$ (función de coste óptimo) haciendo que, la calidad (y la precisión) de una heurística aumente según se acercan los resultados a los obtenidos por $h^*(n)$.

Tabla 1: Tabla comparativa del rendimiento de las heurísticas

Estado	$h_0(s)$	$h_1(s)$	$h_2(s)$	h*(s)
(3, 4)	0	1	1	1
(3, 5)	0	0	1	2
(4, 0)	0	2	3	4
(0, 0)	0	3	3	4
(4, 5)	0	0	1	3
(0, 5)	0	1	3	3
(1, 5)	0	1	2	2
(8, 1)	0	2	2	3
(1, 0)	0	3	3	3
(7, 7)	0	1	1	4
(3, 9)	0	2	2	2
(0, 9)	0	3	3	3
(0, 8)	0	2	3	4
(5, 4)	0	0	1	2
(9, 0)	0	3	3	3
Promedio	0	1,6	2,13	2,86

Tal y como se ha demostrado en la primera parte de la memoria, las heurísticas nunca sobreestiman el coste real y eso se puede observar en la tabla 1. Como se puede ver en la heurística $h_0(n)$ siempre devuelve el valor 0 porque no tiene en cuenta el estado en el que está, y como es de esperar es una mala heurística porque es la que más se aleja de $h^*(n)$. Sin embargo, las heurísticas $h_1(n)$ y $h_2(n)$ se acercan a la función de coste óptimo $h^*(n)$ lo que hará que tengan que explorar la misma o menor cantidad de estados que la heurística $h_0(n)$ y la búsqueda primero en anchura.

2.2. Ventajas e inconvenientes de los métodos de búsqueda

La principal diferencia es que los métodos de búsqueda ciega con respecto a los informados es que los primeros no usan para nada la información del estado del problema buscando la solución de manera sistemática teniendo en cuenta de como se van explorando los nodos en la estructura búsqueda. Para los dos tipos de búsqueda ciega hay distintos puntos a tener en cuenta:

1. En la búsqueda primero en profundidad, el algoritmo de búsqueda puede no encon-

Coste de la búsqueda Factor Ramificación Efectivo $A^*(h_0)$ $A^*(h_1)$ $A^*(h_2)$ $A^*(h_1)$ $A^*(h_2)$ d Ciega Ciega $A^*(h_0)$ 0 0 0 0 0 1.00 1.00 1.00 1.00 1 2 2 2 1 7.99 7.99 7.99 1.99 2 2 10 10 5 6.866.86 4.81 2.37 3 28 28 13 5 5.21 5.21 3,96 2,719 4 153 153 33 5.31 5.313.622.455 907 907 76 17 5.44 5.44 3.29 2.32 6 3267 3267 117 34 5.06 5.06 3.01 2.26 4 424 424 6.99 6.99 7.545.46 518 143 3 86 86 69 217.957.957.60 5.50 4 481 481 78 27 7.227.224.36 3.30 2 9 9 5 2 7.997.995.84 3.53 5 587 587 135 58 4.974.973.583.01 5 2100 2100 211 62 3.94 3.07 6.486.484 75 75 89 36 4.364.364.703.714 160 15 5.39 5.39 2.78 160 443.79

Tabla 2: Tabla comparativa de rendimiento de los métodos de búsqueda

trar la solución debido a que se pone a explorar la profundidad de las ramas dando como consecuencia:

- el algoritmo se encuentre atrapado en una rama infinita donde no hay la solución
- o que el algoritmo este en un bucle infinito dentro de una rama

por estas razones se dice que el algoritmo primero en profundidad si encuentra la solución la encuentra por casualidad y la cual no tiene porque ser la búsqueda óptima.

2. En la búsqueda primero en anchura, el algoritmo de búsqueda se basa en explorar todas las posibilidades que hay en las ramas de la misma profundidad antes de proceder a buscar en las ramas descendientes. La búsqueda en anchura se basa en la exploración de todo el espacio de estados desde los que se puede llegar desde un estado inicial S_0 , con lo que siempre encuentra una solución (si el factor de ramificación no es infinito y existe una solución), además esta solución que encuentra es óptima si los costes asociados a las operaciones son iguales (y valores constantes).

Sin embargo en la búsqueda informada se usa la información de un estado para compararla con otros para poder decidir si un estado está más cerca que otro para así poder generar menos nodos.

Como podemos ver el número de nodos que genera la profundidad en anchura es exponencial (tal y como se explicó en la primera parte de la memoria), mientras que las heurísticas en el algoritmo A* tratan de minimizar el número de nodos que hay que examinar para encontrar la solución, lo que supone que la generación de nuevos nodos, aunque crece también de manera exponencial no lo hace de una manera tan exhaustiva como la búsqueda en anchura.

2.3. Heurística no admisible

Lo primordial a la hora de tratar de encontrar la solución a este es el mero hecho de poder hallarla, pero en la mayoría de las ocasiones se quiere que está sea óptima, para ello al que minimizar los costes de esta, para ello las estrategias de búsqueda que ordenan la frontera (fringe) se basan en examinar los estados que se estima que van a tener un coste menor y para ello la función que estima ese coste tiene que ser admisible (es decir no sobreestimar el verdadero coste que va a tener) y así se logra encontrar una solución que es óptima. El hecho de no usar heurísticas no admisibles es que están pueden hallar soluciones subóptimas, aunque no siempre dado a que cualquier heurística admisible que se le sume una constante k distinta de cero deja de ser admisible (al dar en el estado que es solución una estimación de coste k en lugar de cero) y encuentra soluciones óptimas.

Para ello se propone la siguiente heurística:

$$h_4(n) = h_1(n) * 2^{dx} (4)$$

donde $dx = |x_i - x_m|$. Esta heurística lo que hace es penalizar los movimientos en un eje haciendo que intente moverse primero por el eje contrario.

Con la heurística mostrada en la ecuación 4 podemos ver que el proceso de búsqueda nos da un camino no óptimo para ir desde la posición (0, 0) a la (9, 9) cuya salida de ejecución se muestra a continuación (aunque se puede ver en la figura 2 que aparece el tablero con la posición inicial y final donde en color azul aparece uno de los caminos óptimos mientras que con el camino rojo aparece las posiciones que ha utilizado la h_4).

```
Successors: [(0, 0), 2, 3072) ((0, 2), 2, 2560) ((1, 3), 2, 1024) ((3, 3), 2, 256) ((4, 2), 3072)
[2, 128) ((4, 0), 2, 128)]
                ______
               Fringe: [(4, 0), 2, 128) (4, 2), 2, 128) ((3, 3), 2, 256) ((1, 3), 2, 1024) ((1, 2), 1, 1280)
 ((0, 2), 2, 2560) ((0, 0), 2, 3072)
              Node selected: ((4, 0), 2, 128)
              Path: [((0,0), 0, 3072), ((2,1), 1, 640), ((4,0), 2, 128)]
              Successors: [((2, 1), 3, 640), ((3, 2), 3, 256), ((5, 2), 3, 48), ((6, 1), 3, 24)]
               Fringe: [((6, 1), 3, 24), ((5, 2), 3, 48), ((4, 2), 2, 128), ((3, 3), 2, 256), ((3, 2), 3, 256), ((2, 3, 2), 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3, 2), 3, 256), ((3
 1), 3, 640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)
               Node selected: ((6, 1), 3, 24)
              Path: [((0,0), 0, 3072), ((2,1), 1, 640), ((4,0), 2, 128), ((6,1), 3, 24)]
              Successors: [((4, 0), 4, 128) ((4, 2), 4, 128) ((5, 3), 4, 48) ((7, 3), 4, 8) ((8, 2), 4, 4)
 ((8, 0), 4, 6)
               Fringe: [(8, 2), 4, 4) ((8, 0), 4, 6) ((7, 3), 4, 8) ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 2), 2, 4, 4)
128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 3, 640) ((1, 3), 2, 256)
(0, 1024) (1, 2), (1, 1280) (0, 2), (0, 2), (0, 0), (0, 0), (0, 0), (0, 0)
               Node selected: ((8, 2), 4, 4)
              Path: [((0,0), 0, 3072), ((2,1), 1, 640), ((4,0), 2, 128), ((6,1), 3, 24), ((8,2), 4, 4)]
              Successors: [(6, 1), 5, 24) ((6, 3), 5, 24) ((7, 4), 5, 8) ((9, 4), 5, 1) ((9, 0), 5, 3) ((7, 4), 5, 8)
0), 5, 12)
               Fringe: [((9, 4), 5, 1), ((9, 0), 5, 3), ((8, 0), 4, 6), ((7, 3), 4, 8), ((7, 4), 5, 8), ((7, 0), 5, 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((7, 0), 6), ((
(6, 3), 5, 24) (6, 1), 5, 24) ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 2), 2, 128) ((4, 2), 4, 48)
 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 3, 640) ((1, 3), 2, 1024) ((1, 3), 2, 1024)
(0, 1, 1280) (0, 2), 2, 2560) (0, 0), 2, 3072)
               Node selected: ((9, 4), 5, 1)
               Path: [((0,0), 0, 3072), ((2,1), 1, 640), ((4,0), 2, 128), ((6,1), 3, 24), ((8,2), 4, 4), ((9,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (1
4), 5, 1)
              Successors: [((7, 3), 6, 8), ((7, 5), 6, 8), ((8, 6), 6, 2), ((8, 2), 6, 4)]
               _____
               Fringe: [((9,0),5,3),((8,6),6,2),((8,0),4,6),((8,2),6,4),((7,3),4,8),((7,4),5,8)]
 ((7,5),6,8) ((7,3),6,8) ((7,0),5,12) ((6,3),5,24) ((6,1),5,24) ((5,2),3,48) ((5,3),5)
4, 48) ((4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 2), 3, 256)
 1), 3, 640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)
               Node selected: ((9, 0), 5, 3)
              Path: [((0,0), 0, 3072), ((2,1), 1, 640), ((4,0), 2, 128), ((6,1), 3, 24), ((8,2), 4, 4), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((
[0), [5, 3)
              Successors: [((7, 1), 6, 12), ((8, 2), 6, 4)]
                ______
```

```
Fringe: [((8, 6), 6, 2), ((8, 0), 4, 6), ((8, 2), 6, 4), ((8, 2), 6, 4), ((7, 3), 4, 8), ((7, 4), 5, 8)]
 ((7, 5), 6, 8) ((7, 3), 6, 8) ((7, 0), 5, 12) ((7, 1), 6, 12) ((6, 3), 5, 24) ((6, 1), 5, 24) ((5, 2), 6, 8)
(3, 48) ((5, 3), 4, 48) ((4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 4, 48)
3, 256) ((2, 1), 3, 640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)
                     Node selected: ((8, 6), 6, 2)
                      Path: [((0,0), 0, 3072), ((2,1), 1, 640), ((4,0), 2, 128), ((6,1), 3, 24), ((8,2), 4, 4), ((9,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (1
4), 5, 1) ((8, 6), 6, 2)
                      Successors: [(6, 5), 7, 16) ((6, 7), 7, 8) ((7, 8), 7, 4) ((9, 8), 7, 0) ((9, 4), 7, 1) ((7, 4), 7, 1)
[7, 8]
                      Fringe: [((9, 8), 7, 0), ((9, 4), 7, 1), ((8, 0), 4, 6), ((8, 2), 6, 4), ((8, 2), 6, 4), ((7, 8), 7, 6), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((10, 10), 10), ((1
4) ((7, 3), 4, 8) ((7, 4), 5, 8) ((7, 5), 6, 8) ((7, 3), 6, 8) ((7, 4), 7, 8) ((6, 7), 7, 8) ((7, 0), 7, 8)
5, 12) ((7, 1), 6, 12) ((6, 5), 7, 16) ((6, 3), 5, 24) ((6, 1), 5, 24) ((5, 2), 3, 48) ((5, 3), 4, 4)
48) ((4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 128)
[3, 640] ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)
                     Node selected: ((9, 8), 7, 0)
                      Path: [((0,0), 0, 3072), ((2,1), 1, 640), ((4,0), 2, 128), ((6,1), 3, 24), ((8,2), 4, 4), ((9,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (10,1), (1
(4), 5, 1) ((8, 6), 6, 2) ((9, 8), 7, 0)
                      Successors: [((7, 7), 8, 4), ((7, 9), 8, 0), ((8, 6), 8, 2)]
                     Fringe: [((9, 4), 7, 1), ((7, 9), 8, 0), ((8, 0), 4, 6), ((8, 2), 6, 4), ((8, 2), 6, 4), ((8, 6), 8, 6), ((8, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1), 1), ((10, 1)
(7, 8), 7, 4) (7, 3), 4, 8) (7, 7), 8, 4) (7, 4), 5, 8) (7, 5), 6, 8) (7, 3), 6, 8) (7, 4), 6, 8)
(6, 7), 7, 8) ((7, 0), 5, 12) ((7, 1), 6, 12) ((6, 5), 7, 16) ((6, 3), 5, 24) ((6, 1), 5, 24)
 ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256)
 ((3, 2), 3, 256) ((2, 1), 3, 640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 2560)
2, 3072)
                     Node selected: ((9, 4), 7, 1)
                     Path: [((0,0), 0, 3072), ((2,1), 1, 640), ((4,0), 2, 128), ((6,1), 3, 24), ((8,2), 4, 4), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((9,1), ((
4), 5, 1) ((8, 6), 6, 2) ((9, 4), 7, 1)]
                     Successors: [((7, 3), 8, 8), ((7, 5), 8, 8), ((8, 6), 8, 2), ((8, 2), 8, 4)]
                      ______
                     Fringe: [(7, 9), 8, 0) ((8, 0), 4, 6) ((8, 2), 6, 4) ((8, 2), 6, 4) ((8, 6), 8, 2) ((8, 6), 8, 2)
 ((7, 8), 7, 4) ((7, 3), 4, 8) ((7, 7), 8, 4) ((8, 2), 8, 4) ((7, 4), 5, 8) ((7, 5), 6, 8) ((7, 3), 6, 8)
8) ((7, 4), 7, 8) ((6, 7), 7, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 0), 5, 12) ((7, 1), 6, 12) ((6, 12), 13)
5), 7, 16) ((6, 3), 5, 24) ((6, 1), 5, 24) ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 2), 2, 128) ((4, 2), 2, 128)
4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 3, 640) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3), 2, 1024) ((1, 3
(0, 1, 1280) (0, 2), 2, 2560) (0, 0), 2, 3072)
                      Node selected: ((7, 9), 8, 0)
                      Path: [((0, 0), 0, 3072), ((2, 1), 1, 640), ((4, 0), 2, 128), ((6, 1), 3, 24), ((8, 2), 4, 4), ((9, 10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 10), (10, 
(4), 5, 1) ((8, 6), 6, 2) ((9, 8), 7, 0) ((7, 9), 8, 0)
                     Successors: [((5, 8), 9, 16), ((9, 8), 9, 0), ((8, 7), 9, 2), ((6, 7), 9, 8)]
                       _____
```

Fringe: [((9, 8), 9, 0), ((8, 0), 4, 6), ((8, 2), 6, 4), ((8, 2), 6, 4), ((8, 6), 8, 2), ((8, 6), 8, 4), ((8, 6), 8, 2), ((8

```
2) ((7, 8), 7, 4) ((8, 7), 9, 2) ((7, 3), 4, 8) ((7, 7), 8, 4) ((8, 2), 8, 4) ((7, 4), 5, 8) ((7, 5), 6, 8) ((7, 3), 6, 8) ((7, 4), 7, 8) ((6, 7), 7, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 0), 5, 12) ((6, 7), 9, 8) ((7, 1), 6, 12) ((6, 5), 7, 16) ((5, 8), 9, 16) ((6, 3), 5, 24) ((6, 1), 5, 24) ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 3, 640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072) ]

Node selected: ((9, 8), 9, 0)
```

Path: [((0,0), 0, 3072) ((2,1), 1, 640) ((4,0), 2, 128) ((6,1), 3, 24) ((8,2), 4, 4) ((9,4), 5, 1) ((8,6), 6, 2) ((9,8), 7, 0) ((7,9), 8, 0) ((9,8), 9, 0)]Successors: [((7,7), 10, 4) ((7,9), 10, 0) ((8,6), 10, 2)]

Fringe: [((8,0),4,6)((8,2),6,4)((8,2),6,4)((8,6),8,2)((8,6),8,2)((7,9),10,0)((7,8),7,4)((8,7),9,2)((7,3),4,8)((7,7),8,4)((8,2),8,4)((8,6),10,2)((7,4),5,8)((7,5),6,8)((7,3),6,8)((7,7),10,4)((7,4),7,8)((6,7),7,8)((7,5),8,8)((7,3),8,8)((7,0),5,12)((6,7),9,8)((7,1),6,12)((6,5),7,16)((5,8),9,16)((6,3),5,24)((6,1),5,24)((5,2),3,48)((5,3),4,48)((4,2),2,128)((4,2),4,128)((4,0),4,128)((3,3),2,256)((3,2),3,256)((2,1),3,640)((1,3),2,1024)((1,2),1,1280)((0,2),2,2560)((0,0),2,3072)]

Node selected: ((8, 0), 4, 6)

Path: [((0, 0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 0), 4, 6)]Successors: [((6, 1), 5, 24) ((7, 2), 5, 12) ((9, 2), 5, 2)]

Fringe: [((9, 2), 5, 2), ((8, 2), 6, 4), ((8, 2), 6, 4), ((8, 6), 8, 2), ((8, 6), 8, 2), ((7, 9), 10, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((7, 3), 4, 8), ((7, 7), 8, 4), ((8, 2), 8, 4), ((8, 6), 10, 2), ((7, 4), 5, 8), ((7, 5), 6, 8), ((7, 3), 6, 8), ((7, 7), 10, 4), ((7, 4), 7, 8), ((6, 7), 7, 8), ((7, 5), 8, 8), ((7, 3), 8, 8), ((7, 0), 5, 12), ((6, 7), 9, 8), ((7, 2), 5, 12), ((7, 1), 6, 12), ((6, 5), 7, 16), ((5, 8), 9, 16), ((6, 3), 5, 24), ((6, 1), 5, 24), ((6, 1), 5, 24), ((5, 2), 3, 48), ((5, 3), 4, 48), ((4, 2), 2, 128), ((4, 2), 4, 128), ((4, 0), 4, 128), ((3, 3), 2, 256), ((3, 2), 3, 256), ((2, 1), 3, 640), ((1, 3), 2, 1024), ((1, 2), 1, 1280), ((0, 2), 2, 2560), ((0, 0), 2, 3072)]

Node selected: ((9, 2), 5, 2)

Path: [((0, 0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 0), 4, 6) ((9, 2), 5, 2)]

Successors: [((7, 1), 6, 12), ((7, 3), 6, 8), ((8, 4), 6, 4), ((8, 0), 6, 6)]

Fringe: [((8,2),6,4)((8,2),6,4)((8,6),8,2)((8,6),8,2)((7,9),10,0)((8,4),6,4)((7,8),7,4)((8,7),9,2)((7,3),4,8)((7,7),8,4)((8,2),8,4)((8,6),10,2)((8,0),6,6)((7,4),5,8)((7,5),6,8)((7,3),6,8)((7,7),10,4)((7,3),6,8)((7,4),7,8)((6,7),7,8)((7,5),8,8)((7,3),8,8)((7,0),5,12)((6,7),9,8)((7,2),5,12)((7,1),6,12)((7,1),6,12)((6,5),7,16)((5,8),9,16)((6,3),5,24)((6,1),5,24)((6,1),5,24)((5,2),3,48)((5,3),4,48)((4,2),2,128)((4,2),4,128)((4,0),4,128)((3,3),2,256)((3,2),3,256)((2,1),3,640)((1,3),2,1024)((1,2),1,1280)((0,2),2,2560)((0,0),2,3072)]

Node selected: ((8, 2), 6, 4)

Path: [((0, 0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 2), 6, 4)]

Successors: [((6, 1), 7, 24) ((6, 3), 7, 24) ((7, 4), 7, 8) ((9, 4), 7, 1) ((9, 0), 7, 3) ((7, 0), 7, 12)]

Fringe: [((9,4),7,1)((8,2),6,4)((8,6),8,2)((8,6),8,2)((7,9),10,0)((8,4),6,4)((9,0),7,3)((7,8),7,4)((8,7),9,2)((7,3),4,8)((7,7),8,4)((8,2),8,4)((8,6),10,2)((8,0),6,6)((7,4),5,8)((7,5),6,8)((7,3),6,8)((7,7),10,4)((7,3),6,8)((7,4),7,8)((6,7),7,8)((7,4),7,8)((7,5),8,8)((7,3),8,8)((7,0),5,12)((6,7),9,8)((7,2),5,12)((7,1),6,12)((7,1),6,12)((7,0),7,12)((6,5),7,16)((5,8),9,16)((6,3),5,24)((6,1),5,24)((6,1),5,24)((6,3),7,24)((6,1),7,24)((5,2),3,48)((5,3),4,48)((4,2),2,128)((4,2),4,128)((4,0),4,128)((3,3),2,256)((3,2),3,256)((2,1),3,640)((1,3),2,1024)((1,2),1,1280)((0,2),2,2560)((0,0),2,3072)]

Node selected: ((9, 4), 7, 1)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 2), 6, 4) ((9, 4), 7, 1)]

Successors: [((7, 3), 8, 8), ((7, 5), 8, 8), ((8, 6), 8, 2), ((8, 2), 8, 4)]

Fringe: [((8, 2), 6, 4) ((8, 6), 8, 2) ((8, 6), 8, 2) ((7, 9), 10, 0) ((8, 4), 6, 4) ((9, 0), 7, 3) ((8, 6), 8, 2) ((7, 8), 7, 4) ((8, 7), 9, 2) ((7, 3), 4, 8) ((7, 7), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 0), 6, 6) ((8, 2), 8, 4) ((7, 4), 5, 8) ((7, 5), 6, 8) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 3), 6, 8) ((7, 4), 7, 8) ((6, 7), 7, 8) ((7, 4), 7, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 3), 8, 8) ((7, 0), 5, 12) ((6, 7), 9, 8) ((7, 2), 5, 12) ((7, 1), 6, 12) ((7, 1), 6, 12) ((7, 0), 7, 12) ((6, 5), 7, 16) ((5, 8), 9, 16) ((6, 3), 5, 24) ((6, 1), 5, 24) ((6, 1), 5, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 3, 640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)]

Node selected: ((8, 2), 6, 4)

Path: [((0, 0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 0), 5, 3) ((8, 2), 6, 4)]

Successors: [((6, 1), 7, 24) ((6, 3), 7, 24) ((7, 4), 7, 8) ((9, 4), 7, 1) ((9, 0), 7, 3) ((7, 0), 7, 12)]

Fringe: [((9,4),7,1)((8,6),8,2)((8,6),8,2)((7,9),10,0)((8,4),6,4)((9,0),7,3)((8,6),8,2)((9,0),7,3)((7,8),7,4)((8,7),9,2)((7,3),4,8)((7,7),8,4)((8,2),8,4)((8,6),10,2)((8,0),6,6)((8,2),8,4)((7,4),5,8)((7,5),6,8)((7,3),6,8)((7,7),10,4)((7,3),6,8)((7,4),7,8)((6,7),7,8)((7,4),7,8)((7,4),7,8)((7,4),7,8)((7,5),8,8)((7,3),8,8)((7,5),8,8)((7,3),8,8)((7,5),8,8)((7,3),8,8)((7,5),8,8)((7,0),5,12)((6,7),9,8)((7,2),5,12)((7,1),6,12)((7,1),6,12)((7,0),7,12)((7,0),7,12)((6,5),7,16)((5,8),9,16)((6,3),5,24)((6,1),5,24)((6,1),5,24)((6,3),7,24)((6,1),7,24)((6,3),7,24)((6,1),7,24)((5,2),3,48)((5,3),4,48)((4,2),2,128)((4,2),4,128)((4,0),4,128)((3,3),2,256)((3,2),3,256)((2,1),3,640)((1,3),2,1024)((1,2),1,1280)((0,2),2,2560)((0,0),2,3072)]

Node selected: ((9, 4), 7, 1)

Path: [((0, 0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 0), 5, 3) ((8, 2), 6, 4) ((9, 4), 7, 1)]

Successors: [((7, 3), 8, 8), ((7, 5), 8, 8), ((8, 6), 8, 2), ((8, 2), 8, 4)]

Fringe: $[((8,6),8,2)\ ((8,6),8,2)\ ((7,9),10,0)\ ((8,4),6,4)\ ((9,0),7,3)\ ((8,6),8,2)\ ((9,0),7,3)\ ((8,6),8,2)\ ((7,8),7,4)\ ((8,7),9,2)\ ((7,3),4,8)\ ((7,7),8,4)\ ((8,2),8,4)\ ((8,6),10,2)\ ((8,0),6,6)\ ((8,2),8,4)\ ((8,2),8,4)\ ((7,4),5,8)\ ((7,5),6,8)\ ((7,3),6,8)\ ((7,7),10,4)\ ((7,3),6,8)\ ((7,4),7,8)\ ((6,7),7,8)\ ((7,4),7,8)\ ((7,4),7,8)\ ((7,5),8,8)\ ((7,3),8,8)\ ((7,5),8,8)\ ((7,3),8,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,0),5,12)\ ((6,7),9,8)\ ((7,2),5,12)\ ((7,1),6,12)\ ((7,1),6,12)\ ((7,0),7,12)\ ((6,5),7,16)\ ((5,8),9,16)\ ((6,3),5,24)\ ((6,1),5,24)\ ((6,1),5,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,3),7,24)\ ((6,3),7,24)\ ((6,2),3,3,256)\ ((2,1),3,640)\ ((1,3),2,1024)\ ((1,2),1,1280)\ ((0,2),2,2560)\ ((0,0),2,3072)\]$

Node selected: ((8, 6), 8, 2)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 6), 6, 2) ((9, 8), 7, 0) ((8, 6), 8, 2)]

Successors: [((6, 5), 9, 16) ((6, 7), 9, 8) ((7, 8), 9, 4) ((9, 8), 9, 0) ((9, 4), 9, 1) ((7, 4), 9, 8)]

Fringe: $[((9,8),9,0)\ ((8,6),8,2)\ ((7,9),10,0)\ ((8,4),6,4)\ ((9,0),7,3)\ ((8,6),8,2)\ ((9,0),7,3)\ ((8,6),8,2)\ ((9,4),9,1)\ ((7,8),7,4)\ ((8,7),9,2)\ ((7,3),4,8)\ ((7,7),8,4)\ ((8,2),8,4)\ ((8,6),10,2)\ ((8,0),6,6)\ ((8,2),8,4)\ ((8,2),8,4)\ ((7,4),5,8)\ ((7,8),9,4)\ ((7,5),6,8)\ ((7,3),6,8)\ ((7,7),10,4)\ ((7,3),6,8)\ ((7,4),7,8)\ ((6,7),7,8)\ ((7,4),7,8)\ ((7,4),7,8)\ ((7,5),8,8)\ ((7,3),8,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,3),8,8)\ ((7,5),8,8)\ ((7,1),6,12)\ ((7,0),7,12)\ ((6,7),9,8)\ ((7,2),5,12)\ ((7,4),9,8)\ ((6,7),9,8)\ ((7,5),9,16)\ ((6,3),5,24)\ ((6,1),5,24)\ ((6,1),5,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,3),7,24)\ ((6,3),7,24)\ ((6,3),7,24)\ ((6,3),3,2,256)\ ((3,2),3,256)\ ((2,1),3,640)\ ((1,3),2,1024)\ ((1,2),1,1280)\ ((0,2),2,2560)\ ((0,0),2,3072)\]$

Node selected: ((9, 8), 9, 0)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 6), 6, 2) ((9, 8), 7, 0) ((8, 6), 8, 2) ((9, 8), 9, 0)]

Successors: [((7, 7), 10, 4), ((7, 9), 10, 0), ((8, 6), 10, 2)]

Fringe: $[((8,6),8,2)\ ((7,9),10,0)\ ((8,4),6,4)\ ((9,0),7,3)\ ((8,6),8,2)\ ((9,0),7,3)\ ((8,6),8,2)\ ((9,4),9,1)\ ((7,9),10,0)\ ((7,8),7,4)\ ((8,7),9,2)\ ((7,3),4,8)\ ((7,7),8,4)\ ((8,2),8,4)\ ((8,6),10,2)\ ((8,0),6,6)\ ((8,2),8,4)\ ((8,2),8,4)\ ((8,6),10,2)\ ((7,4),5,8)\ ((7,8),9,4)\ ((7,5),6,8)\ ((7,3),6,8)\ ((7,7),10,4)\ ((7,3),6,8)\ ((7,7),10,4)\ ((7,4),7,8)\ ((6,7),7,8)\ ((7,4),7,8)\ ((7,4),7,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,5),9,8)\ ((7,1),6,12)\ ((7,0),5,12)\ ((6,7),9,8)\ ((7,2),5,12)\ ((7,4),9,8)\ ((6,7),9,8)\ ((7,1),6,12)\ ((7,1),6,12)\ ((7,0),7,12)\ ((7,0),7,12)\ ((6,5),7,16)\ ((5,8),9,16)\ ((6,5),9,16)\ ((6,3),5,24)\ ((6,1),5,24)\ ((6,1),5,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24)\ ((6,1),7,24)\ ((6,3),7,24$

Node selected: ((8, 6), 8, 2)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 6), 6, 2) ((9, 4), 7, 1) ((8, 6), 8, 2)]

Successors: [((6, 5), 9, 16) ((6, 7), 9, 8) ((7, 8), 9, 4) ((9, 8), 9, 0) ((9, 4), 9, 1) ((7, 4), 9, 8)]

Fringe: $[((9,8),9,0)\ ((7,9),10,0)\ ((8,4),6,4)\ ((9,0),7,3)\ ((8,6),8,2)\ ((9,0),7,3)\ ((8,6),8,2)\ ((9,4),9,1)\ ((7,9),10,0)\ ((9,4),9,1)\ ((7,8),7,4)\ ((8,7),9,2)\ ((7,3),4,8)\ ((7,7),8,4)\ ((8,2),8,4)\ ((8,6),10,2)\ ((8,0),6,6)\ ((8,2),8,4)\ ((8,2),8,4)\ ((8,6),10,2)\ ((7,4),5,8)\ ((7,3),6,8)\ ((7,7),10,4)\ ((7,3),6,8)\ ((7,7),10,4)\ ((7,3),6,8)\ ((7,7),10,4)\ ((7,3),8,8)\ ((7,7),10,4)\ ((7,3),8,8)\ ((7,5),8,8)\ ((7,5),8,8)\ ((7,3),8,8)\ ((7,5),8,8)\ ((7,3),8,8)\ ((7,5),8,8)\ ((7,3),8,8)\ ((7,5),8,8)\ ((7,3),8,8)\ ((7,4),9,8)\ ((6,7),9,8)\ ((7,4),9,8)\ ((6,7),9,8)\ ((7,1),6,12)$

Node selected: ((9, 8), 9, 0)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 6), 6, 2) ((9, 4), 7, 1) ((8, 6), 8, 2) ((9, 8), 9, 0)]Successors: [((7, 7), 10, 4) ((7, 9), 10, 0) ((8, 6), 10, 2)]

Fringe: [((7,9),10,0)((8,4),6,4)((9,0),7,3)((8,6),8,2)((9,0),7,3)((8,6),8,2)((9,4),9,1)((7,9),10,0)((9,4),9,1)((7,9),10,0)((7,8),7,4)((8,7),9,2)((7,3),4,8)((7,7),8,4)((8,2),8,4)((8,6),10,2)((8,6),10,2)((8,6),10,2)((7,4),5,8)((7,8),9,4)((7,8),9,4)((7,5),6,8)((7,3),6,8)((7,7),10,4)((7,3),6,8)((7,7),10,4)((7,7),10,4)((7,4),7,8)((6,7),7,8)((7,4),7,8)((7,4),7,8)((7,5),8,8)((7,3),8,8)((7,5),8,8)((7,3),8,8)((7,0),5,12)((6,7),9,8)((7,2),5,12)((7,4),9,8)((6,7),9,8)((7,4),9,8)((6,7),9,8)((7,1),6,12)((7,1),6,12)((7,0),7,12)((7,0),7,12)((6,5),7,16)((5,8),9,16)((6,5),9,16)((6,5),9,16)((6,3),5,24)((6,1),5,24)((6,1),5,24)((6,3),7,24)((6,1),7,24)((6,3),7,24)((6,1),7,24)((6,1),7,24)((6,1),7,24)((6,1),7,24)((6,2),2,128)((4,2),4,128)((4,0),4,128)((3,3),2,256)((3,2),3,256)((2,1),3,640)((1,3),2,1024)((1,2),1,1280)((0,2),2,2560)((0,0),2,3072)]

Node selected: ((7, 9), 10, 0)

Path: [((0,0), 0, 3072) ((2,1), 1, 640) ((4,0), 2, 128) ((6,1), 3, 24) ((8,2), 4, 4) ((9,4), 5, 1) ((8,6), 6, 2) ((9,8), 7, 0) ((7,9), 8, 0) ((9,8), 9, 0) ((7,9), 10, 0)]Successors: [((5,8), 11, 16) ((9,8), 11, 0) ((8,7), 11, 2) ((6,7), 11, 8)]

Fringe: [((8,4),6,4)((9,0),7,3)((8,6),8,2)((9,0),7,3)((8,6),8,2)((9,4),9,1)((7,9),10,0)((9,4),9,1)((7,9),10,0)((7,8),7,4)((8,7),9,2)((9,8),11,0)((7,3),4,8)((7,7),8,4)((8,2),8,4)((8,6),10,2)((8,0),6,6)((8,2),8,4)((8,2),8,4)((8,6),10,2)((8,6),10,2)((7,4),5,8)((7,8),9,4)((7,8),9,4)((8,7),11,2)((7,5),6,8)((7,3),6,8)((7,7),10,4)((7,3),6,8)((7,7),10,4)((7,7),10,4)((7,4),7,8)((6,7),10,4)((6,7),

 $\begin{array}{l} 7,\,8)\,\left((7,\,4),\,7,\,8\right)\,\left((7,\,4),\,7,\,8\right)\,\left((7,\,5),\,8,\,8\right)\,\left((7,\,3),\,8,\,8\right)\,\left((7,\,5),\,8,\,8\right)\,\left((7,\,3),\,8,\,8\right)\,\left((7,\,3),\,8,\,8\right)\,\left((7,\,2),\,5,\,12\right)\,\left((7,\,4),\,9,\,8\right)\,\left((6,\,7),\,9,\,8\right)\,\left((7,\,4),\,9,\,8\right)\,\left((6,\,7),\,9,\,8\right)\,\left((7,\,1),\,6,\,12\right)\,\left((7,\,1),\,6,\,12\right)\,\left((7,\,0),\,7,\,12\right)\,\left((7,\,0),\,7,\,12\right)\,\left((6,\,7),\,11,\,8\right)\,\left((6,\,5),\,7,\,16\right)\,\left((5,\,8),\,9,\,16\right)\,\left((6,\,5),\,9,\,16\right)\,\left((6,\,5),\,9,\,16\right)\,\left((5,\,8),\,11,\,16\right)\,\left((6,\,3),\,5,\,24\right)\,\left((6,\,1),\,5,\,24\right)\,\left((6,\,1),\,5,\,24\right)\,\left((6,\,3),\,7,\,24\right)\,\left((6,\,1),\,7,\,24\right)\,\left((6,\,3),\,7,\,24\right)\,\left((6,\,2),\,3,\,48\right)\,\left((5,\,3),\,4,\,48\right)\,\left((4,\,2),\,2,\,128\right)\,\left((4,\,2),\,4,\,128\right)\,\left((4,\,0),\,4,\,128\right)\,\left((3,\,3),\,2,\,256\right)\,\left((3,\,2),\,3,\,256\right)\,\left((2,\,1),\,3,\,640\right)\,\left((1,\,3),\,2,\,1024\right)\,\left((1,\,2),\,1,\,1280\right)\,\left((0,\,2),\,2,\,2560\right)\,\left((0,\,0),\,2,\,3072\right)\,\right]$

Node selected: ((8, 4), 6, 4)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 0), 4, 6) ((9, 2), 5, 2) ((8, 4), 6, 4)]

Successors: [((6, 3), 7, 24) ((6, 5), 7, 16) ((7, 6), 7, 4) ((9, 6), 7, 1) ((9, 2), 7, 2) ((7, 2), 7, 12)]

Fringe: [((9,6),7,1)((9,2),7,2)((9,0),7,3)((8,6),8,2)((9,0),7,3)((8,6),8,2)((9,4),9,1)((7,9),10,0)((9,4),9,1)((7,9),10,0)((7,8),7,4)((8,7),9,2)((9,8),11,0)((7,6),7,4)((7,3),4,8)((7,7),8,4)((8,2),8,4)((8,6),10,2)((8,0),6,6)((8,2),8,4)((8,2),8,4)((8,6),10,2)((8,6),10,2)((7,4),5,8)((7,8),9,4)((7,8),9,4)((8,7),11,2)((7,5),6,8)((7,3),6,8)((7,7),10,4)((7,7),10,4)((7,7),10,4)((7,4),7,8)((6,7),7,8)((7,4),7,8)((7,4),7,8)((7,5),8,8)((7,5),8,8)((7,3),8,8)((7,5),8,8)((7,3),8,8)((7,5),8,8)((7,3),8,8)((7,5),8,8)((7,4),9,8)((6,7),9,8)((7,1),6,12)((6,7),9,8)((7,2),5,12)((7,4),9,8)((6,7),9,8)((7,4),9,8)((6,7),9,8)((7,1),6,12)((7,1),6,12)((7,0),7,12)((6,5),9,16)((6,5),9,16)((6,5),7,16)((6,5),7,16)((6,5),7,16)((5,8),9,16)((6,5),9,16)((6,5),9,16)((5,8),11,16)((6,3),5,24)((6,1),5,24)((6,1),5,24)((6,1),5,24)((6,1),7,24)((6,3),7,24)((6,1),7,24)((6,3),7,24)((6,3),7,24)((5,2),3,48)((5,3),4,48)((4,2),2,128)((4,2),4,128)((4,0),4,128)((3,3),2,256)((3,2),3,256)((2,1),3,640)((1,3),2,1024)((1,2),1,1280)((0,2),2,2560)((0,0),2,3072)]

Node selected: ((9, 6), 7, 1)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 0), 4, 6) ((9, 2), 5, 2) ((8, 4), 6, 4) ((9, 6), 7, 1)]

Successors: [((7, 5), 8, 8), ((7, 7), 8, 4), ((8, 8), 8, 0), ((8, 4), 8, 4)]

Fringe: $[((8,8),8,0)\ ((9,2),7,2)\ ((9,0),7,3)\ ((8,6),8,2)\ ((9,0),7,3)\ ((8,6),8,2)\ ((9,4),9,1)\ ((7,9),10,0)\ ((9,4),9,1)\ ((7,9),10,0)\ ((7,8),7,4)\ ((8,7),9,2)\ ((9,8),11,0)\ ((7,6),7,4)\ ((7,3),4,8)\ ((7,7),8,4)\ ((8,2),8,4)\ ((8,6),10,2)\ ((8,0),6,6)\ ((8,2),8,4)\ ((8,2),8,4)\ ((8,2),8,4)\ ((8,6),10,2)\ ((8,6),10,2)\ ((8,6),10,2)\ ((8,6),10,2)\ ((8,6),10,2)\ ((8,6),10,2)\ ((8,6),10,2)\ ((8,6),10,2)\ ((8,6),10,2)\ ((8,6),10,2)\ ((8,0),6,6)\ ((8,2),8,4)\ ((7,7),8,4)\ ((7,4),5,8)\ ((7,7),8,4)\ ((7,4),5,8)\ ((7,7),10,4)\ ((7,4),5,8)\ ((7,7),10,4)\ (($

Node selected: ((8, 8), 8, 0)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 0), 4, 6) ((9, 2), 5, 2) ((8, 4), 6, 4) ((9, 6), 7, 1) ((8, 8), 8, 0)]

Successors: [((6,7), 9, 8) ((6, 9), 9, 8) ((9, 6), 9, 1) ((7, 6), 9, 4)]

Fringe: [((9, 2), 7, 2), ((9, 0), 7, 3), ((8, 6), 8, 2), ((9, 0), 7, 3), ((8, 6), 8, 2), ((9, 4), 9, 1), ((7, 9), 10, 0), ((9, 4), 9, 1), ((7, 9), 10, 0), ((9, 6), 9, 1), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 6), 7, 4), ((7, 3), 4, 8), ((7, 7), 8, 4), ((8, 2), 8, 4), ((8, 6), 10, 2), ((8, 0), 6, 6), ((8, 2), 8, 4), ((8, 2), 8, 4), ((8, 6), 10, 2), ((8, 6), 10, 2), ((8, 4), 8, 4), ((7, 7), 8, 4), ((7, 4), 5, 8), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 7), 11, 2), ((7, 6), 9, 4), ((7, 5), 6, 8), ((7, 3), 6, 8), ((7, 7), 10, 4), ((7, 7), 10, 4), ((7, 4), 7, 8), ((7, 4), 7, 8), ((7, 5), 8, 8), ((7, 5), 8, 8), ((7, 3), 8, 8), ((7, 5), 8

Node selected: ((9, 2), 7, 2)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 0), 4, 6) ((9, 2), 5, 2) ((8, 4), 6, 4) ((9, 2), 7, 2)]

Successors: [((7, 1), 8, 12) ((7, 3), 8, 8) ((8, 4), 8, 4) ((8, 0), 8, 6)]

Fringe: [((9,0),7,3)((8,6),8,2)((9,0),7,3)((8,6),8,2)((9,4),9,1)((7,9),10,0)((9,4),9,1)((7,9),10,0)((9,4),9,1)((7,9),10,0)((9,6),9,1)((7,8),7,4)((8,7),9,2)((9,8),11,0)((7,6),7,4)((7,3),4,8)((7,7),8,4)((8,2),8,4)((8,6),10,2)((8,0),6,6)((8,2),8,4)((8,2),8,4)((8,6),10,2)((8,6),10,2)((8,4),8,4)((7,7),8,4)((8,4),8,4)((7,4),5,8)((7,8),9,4)((7,8),9,4)((8,7),11,2)((7,6),9,4)((7,5),6,8)((7,3),6,8)((7,7),10,4)((7,3),6,8)((7,7),10,4)((7,7),10,4)((8,0),8,6)((7,4),7,8)((6,7),7,8)((7,4),7,8)((7,4),7,8)((7,5),8,8)((7,3),8,8)((7,5),8,8)((7,5),8,8)((7,5),8,8)((7,5),8,8)((7,5),8,8)((7,5),8,8)((7,5),8,8)((7,5),9,8)((6,7),9,8)((7,4),9,8)((6,7),9,8)((6,7),9,8)((6,7),9,8)((7,1),6,12)((7,1),6,12)((7,0),7,12)((7,0),7,12)((6,7),11,8)((7,2),7,12)((7,1),8,12)((6,5),7,16)((6,5),7,16)((6,5),7,16)((5,8),9,16)((6,5),9,16)((6,5),9,16)((5,8),11,16)((6,3),5,24)((6,1),5,24)((6,1),5,24)((6,3),7,24)((6,1),7,24)((6,3),7,24)((6,1),7,24)((6,3),7,24)((6,1),7,24)((6,3),7,24)((6,1),7,24)((6,3),7,24)((6,1),7,24)((6,3),7,24)((6,1),7,24)((6,2),2,128)((4,2),4,128)((4,0),4,128)((3,3),2,256)((3,2),3,256)((2,1),3,640)((1,3),2,1024)((1,2),1,1280)((0,2),2,2560)((0,0),2,3072)]

Node selected: ((9, 0), 7, 3)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 2), 6, 4) ((9, 0), 7, 3)]

Successors: [((7, 1), 8, 12) ((8, 2), 8, 4)]

Fringe: [((8, 6), 8, 2), ((9, 0), 7, 3), ((8, 6), 8, 2), ((9, 4), 9, 1), ((7, 9), 10, 0), ((9, 4), 9, 1), ((

 $\begin{array}{c} 1) \; ((7,\,9),\,10,\,0) \; ((9,\,6),\,9,\,1) \; ((7,\,8),\,7,\,4) \; ((8,\,7),\,9,\,2) \; ((9,\,8),\,11,\,0) \; ((7,\,6),\,7,\,4) \; ((7,\,3),\,4,\,8) \; ((7,\,7),\,8,\,4) \; ((8,\,2),\,8,\,4) \; ((8,\,6),\,10,\,2) \; ((8,\,6),\,10,\,2) \; ((8,\,6),\,10,\,2) \; ((8,\,4),\,8,\,4) \; ((7,\,7),\,8,\,4) \; ((8,\,4),\,8,\,4) \; ((8,\,2),\,8,\,4) \; ((7,\,4),\,5,\,8) \; ((7,\,8),\,9,\,4) \; ((7,\,8),\,9,\,4) \; ((8,\,7),\,11,\,2) \; ((7,\,6),\,9,\,4) \; ((7,\,5),\,6,\,8) \; ((7,\,3),\,6,\,8) \; ((7,\,7),\,10,\,4) \; ((7,\,7),\,10,\,4) \; ((7,\,7),\,10,\,4) \; ((8,\,0),\,8,\,6) \; ((7,\,4),\,7,\,8) \; ((6,\,7),\,7,\,8) \; ((7,\,4),\,7,\,8) \; ((7,\,4),\,7,\,8) \; ((7,\,5),\,8,\,8) \; ($

Node selected: ((8, 6), 8, 2)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 2), 6, 4) ((9, 4), 7, 1) ((8, 6), 8, 2)]

Successors: [((6, 5), 9, 16) ((6, 7), 9, 8) ((7, 8), 9, 4) ((9, 8), 9, 0) ((9, 4), 9, 1) ((7, 4), 9, 8)]

Fringe: [((9, 8), 9, 0), ((9, 0), 7, 3), ((8, 6), 8, 2), ((9, 4), 9, 1), ((7, 9), 10, 0), ((9, 4), 9, 1), ((1) ((7, 9), 10, 0) ((9, 6), 9, 1) ((9, 4), 9, 1) ((7, 8), 7, 4) ((8, 7), 9, 2) ((9, 8), 11, 0) ((7, 9), 10, 10)(6), (7, 4), ((7, 3), (4, 8), ((7, 7), (8, 4), ((8, 2), (8, 4), ((8, 6), (8, 6), (8, 0), (8, 6), ((8, 2), (8, 4)((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 4), 8, 4) ((7, 7), 8, 4) ((8, 4), 8, 4) ((8, 2), 8, 4)8, 4) ((7, 4), 5, 8) ((7, 8), 9, 4) ((7, 8), 9, 4) ((8, 7), 11, 2) ((7, 6), 9, 4) ((7, 8), 9, 4) ((8, 8), 9, 4) ((8, 8), 9, 9, 4) ((8, 8),5), 6, 8) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 7), 10, 4) ((8, 0), 8, 6)((7, 4), 7, 8) ((6, 7), 7, 8) ((7, 4), 7, 8) ((7, 4), 7, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8)8) ((7,3), 8, 8) ((7,5), 8, 8) ((7,3), 8, 8) ((7,5), 8, 8) ((7,3), 8, 8) ((7,0), 5, 12) ((6,7), 12)9, 8) ((7, 2), 5, 12) ((7, 4), 9, 8) ((6, 7), 9, 8) ((7, 4), 9, 8) ((6, 7), 9, 8) ((6, 9), 9, 8) ((6, 9), 9, 8)7), 9, 8) ((7, 4), 9, 8) ((6, 7), 9, 8) ((7, 1), 6, 12) ((7, 1), 6, 12) ((7, 0), 7, 12) ((7, 0), 7, 12)(6, 7), 11, 8) ((7, 2), 7, 12) ((7, 1), 8, 12) ((7, 1), 8, 12) ((6, 5), 7, 16) ((6, 5), 7, 16)((5, 8), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((5, 8), 11, 16) ((6, 3), 5, 24) ((6, 5), 9, 16)1), 5, 24) ((6, 1), 5, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) 7, 24) ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 4, 48) ((4, 2), 4, 48) (((2, 256) ((3, 2), 3, 256) ((2, 1), 3, 640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560)((0, 0), 2, 3072)

Node selected: ((9, 8), 9, 0)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 2), 6, 4) ((9, 4), 7, 1) ((8, 6), 8, 2) ((9, 8), 9, 0)]Successors: [((7, 7), 10, 4) ((7, 9), 10, 0) ((8, 6), 10, 2)]

Fringe: [((9,0),7,3)((8,6),8,2)((9,4),9,1)((7,9),10,0)((9,4),9,1)((7,9),10,0)((9,6),9,1)((7,9),10,0)((7,8),7,4)((8,7),9,2)((9,8),11,0)((7,6),7,4)((7,3),4,8)((7,7),8,4)((8,2),8,4)((8,6),10,2)((8,0),6,6)((8,2),8,4)((8,2),8,4)((8,6),10,2)((8,6),10,2)((8,4),8,4)((8,4),8,4)((8,4),8,4)((8,6),10,2)((7,4),5,8)((7,8),9,4)((7,8),9,4)((8,7),11,2)((7,6),9,4)((7,8),9,4)((7,8),9,4)((8,7),11,2)((7,6),9,4)((7,8),9,4)((7,8),9,4)((8,8),11,2)((8,6),9,4)((8,8),11,2)((8,8),9,4

 $8), \, 9, \, 4) \, ((7, \, 5), \, 6, \, 8) \, ((7, \, 3), \, 6, \, 8) \, ((7, \, 7), \, 10, \, 4) \, ((7, \, 3), \, 6, \, 8) \, ((7, \, 7), \, 10, \, 4) \, ((7, \, 7), \, 10$

Node selected: ((9, 0), 7, 3)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 0), 5, 3) ((8, 2), 6, 4) ((9, 0), 7, 3)]

Successors: [((7, 1), 8, 12) ((8, 2), 8, 4)]

Fringe: [(8, 6), 8, 2) ((9, 4), 9, 1) ((7, 9), 10, 0) ((9, 4), 9, 1) ((7, 9), 10, 0) ((9, 6), 9, 1)]1) ((9, 4), 9, 1) ((7, 9), 10, 0) ((7, 8), 7, 4) ((8, 7), 9, 2) ((9, 8), 11, 0) ((7, 6), 7, 4) ((7, 9), 10, 0)(8, 2), (8, 3), (10, 10)((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 4), 8, 4) ((7, 7), 8, 4) ((8, 4), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2)10, 2) ((8, 2), 8, 4) ((7, 4), 5, 8) ((7, 8), 9, 4) ((7, 8), 9, 4) ((8, 7), 11, 2) ((7, 6), 9, 4) ((7, 8), 9, 4)8), 9, 4) ((7, 5), 6, 8) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 7), 10, 4)4) ((8,0), 8, 6) ((7,7), 10, 4) ((7,4), 7, 8) ((6,7), 7, 8) ((7,4), 7, 8) ((7,4), 7, 8) ((7,5), 7, 8)8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 5), 8, 8)(7, 0), (7, 0), (7, 0), (6, 7), (9, 8), (7, 2), (7, 2), (7, 4), (7, 4), (7, 4), (7, 4), (8, 8)((6,7), 9, 8) ((6,9), 9, 8) ((6,7), 9, 8) ((7,4), 9, 8) ((6,7), 9, 8) ((7,1), 6, 12) ((7,1), 6, 12)(7, 0), 7, 12) (7, 0), 7, 12) (6, 7), 11, 8) (7, 2), 7, 12) (7, 1), 8, 12)((7, 1), 8, 12) ((6, 5), 7, 16) ((6, 5), 7, 16) ((5, 8), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16)(6, 1), (5, 8), (6, 1), (6, 3), (6, 1), (6,7, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 2), 2, 2)128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 3, 640) ((1, 3), 3, 640)[2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)

Node selected: ((8, 6), 8, 2)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 0), 5, 3) ((8, 2), 6, 4) ((9, 4), 7, 1) ((8, 6), 8, 2)]

Successors: [((6, 5), 9, 16) ((6, 7), 9, 8) ((7, 8), 9, 4) ((9, 8), 9, 0) ((9, 4), 9, 1) ((7, 4), 9, 8)]

Fringe: [((9,8),9,0)((9,4),9,1)((7,9),10,0)((9,4),9,1)((7,9),10,0)((9,6),9,1)((9,4),9,1)((7,9),10,0)((9,4),9,1)((7,8),7,4)((8,7),9,2)((9,8),11,0)((7,6),7,4)((7,3),4,8)((7,7),8,4)((8,2),8,4)((8,6),10,2)((8,0),6,6)((8,2),8,4)((8,2),8,4)((8,6),10,2)((8,6),10,2)((8,6),10,2)((8,4),8,4)((7,7),8,4)((8,4),8,4)((8,2),8,4)((8,6),10,2)((8,2),8,4)((7,4),5,8)((7,8),9,4)((7,8),9,4)((7,8),9,4)((7,8),9,4)((7,3),6,8)((7,7),10,4)((7,8),9,4)((7,8),9,4)((7,3),6,8)((7,7),10,4)((7,7),10,4)((7,3),6,8)((7,7),10,4)((7,7),10,4)((7,5),8,8)((7,7),10,4)((7,4),7,8)((6,7),7,8)((7,4),7,8)((7,4),7,8)((7,5),8,8)((7,5),

```
3), 8, 8) ((7,5), 8, 8) ((7,3), 8, 8) ((7,0), 5, 12) ((6,7), 9, 8) ((7,2), 5, 12) ((7,4), 9, 8) ((6,7), 9, 8) ((7,4), 9, 8) ((6,7), 9, 8) ((6,7), 9, 8) ((6,7), 9, 8) ((6,7), 9, 8) ((6,7), 9, 8) ((6,7), 9, 8) ((6,7), 9, 8) ((6,7), 9, 8) ((6,7), 9, 8) ((7,4), 9, 8) ((6,7), 9, 8) ((7,1), 6, 12) ((7,1), 6, 12) ((7,0), 7, 12) ((7,0), 7, 12) ((6,7), 11, 8) ((7,2), 7, 12) ((7,1), 8, 12) ((7,1), 8, 12) ((7,1), 8, 12) ((6,5), 7, 16) ((6,5), 7, 16) ((6,5), 9, 16) ((6,5), 9, 16) ((6,5), 9, 16) ((6,5), 9, 16) ((6,5), 9, 16) ((6,5), 9, 16) ((6,3), 5, 24) ((6,1), 5, 24) ((6,1), 5, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7, 24) ((6,3), 7,
```

Node selected: ((9, 8), 9, 0)

Path: [((0,0), 0, 3072) ((2,1), 1, 640) ((4,0), 2, 128) ((6,1), 3, 24) ((8,2), 4, 4) ((9,0), 5, 3) ((8,2), 6, 4) ((9,4), 7, 1) ((8,6), 8, 2) ((9,8), 9, 0)]

Successors: [((7, 7), 10, 4), ((7, 9), 10, 0), ((8, 6), 10, 2)]

Fringe: [((9, 4), 9, 1), ((7, 9), 10, 0), ((9, 4), 9, 1), ((7, 9), 10, 0), ((9, 6), 9, 1), ((9, 4), 9, 1), (1) ((7, 9), 10, 0) ((9, 4), 9, 1) ((7, 9), 10, 0) ((7, 8), 7, 4) ((8, 7), 9, 2) ((9, 8), 11, 0) ((7, 9), 10, 0)(6), (7, 4), ((7, 3), (4, 8), ((7, 7), (8, 4), ((8, 2), (8, 4), ((8, 6), (8, 6), (8, 0), (8, 6), ((8, 2), (8, 4)((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 4), 8, 4) ((7, 7), 8, 4) ((8, 4), 8, 4) ((8, 2), 8, 4)8, 4) ((8, 6), 10, 2) ((8, 2), 8, 4) ((8, 6), 10, 2) ((7, 4), 5, 8) ((7, 8), 9, 4) ((7, 8), 9, 4) ((8, 6), 10, 2) 7), 11, 2) ((7, 6), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 5), 6, 8) ((7, 3), 6, 8) ((7, 7), 10, 4)((7,3),6,8) ((7,7),10,4) ((7,7),10,4) ((8,0),8,6) ((7,7),10,4) ((7,7),10,4) ((7,4),10,4)(7, 8) ((6, 7), 7, 8) ((7, 4), 7, 8) ((7, 4), 7, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 5), 8, 8)(7, 5), (7, 5), (7, 5), (7, 5), (7, 5), (7, 5), (7, 5), (7, 5), (8, 8)((7, 2), 5, 12) ((7, 4), 9, 8) ((6, 7), 9, 8) ((7, 4), 9, 8) ((6, 7), 9, 8) ((6, 9), 9, 8) ((6, 7), 9, 8)8) ((7, 4), 9, 8) ((6, 7), 9, 8) ((7, 4), 9, 8) ((6, 7), 9, 8) ((7, 1), 6, 12) ((7, 1), 6, 12)(0), (7, 12), (7, 0), (7, 12), (6, 7), (7, 11, 8), (7, 2), (7, 12), (7, 1), 8, 12) ((6, 5), 7, 16) ((6, 5), 7, 16) ((5, 8), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16)16) ((6,5), 9, 16) ((5,8), 11, 16) ((6,3), 5, 24) ((6,1), 5, 24) ((6,1), 5, 24) ((6,3), 7, 24)((6, 1), 7, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 3), 7, 24)(2), (4, 2), (4, 128) ((4, 0), (4, 128) ((3, 3), (4, 2), (4,((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)

Node selected: ((9, 4), 9, 1)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 6), 6, 2) ((9, 8), 7, 0) ((8, 6), 8, 2) ((9, 4), 9, 1)]

Successors: [((7, 3), 10, 8), ((7, 5), 10, 8), ((8, 6), 10, 2), ((8, 2), 10, 4)]

Fringe: [((7, 9), 10, 0), ((9, 4), 9, 1), ((7, 9), 10, 0), ((9, 6), 9, 1), ((9, 4), 9, 1), ((7, 9), 10, 0), ((9, 4), 9, 1), ((7, 9), 10, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 6), 7, 4), ((7, 3), 4, 8), ((7, 7), 8, 4), ((8, 2), 8, 4), ((8, 6), 10, 2), ((8, 6), 10, 2), ((8, 6), 10, 2), ((8, 6), 10, 2), ((8, 6), 10, 2), ((8, 6), 10, 2), ((8, 6), 10, 2), ((8, 6), 10, 2), ((8, 6), 10, 2), ((8, 6), 10, 2), ((8, 6), 10, 2), ((8, 6), 10, 2), ((7, 4), 5, 8), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 8), 9, 4), ((7, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8), ((8, 8), 8),

9), 9, 8) ((6,7), 9, 8) ((7,4), 9, 8) ((6,7), 9, 8) ((7,4), 9, 8) ((6,7), 9, 8) ((7,1), 6, 12) ((7,1), 6, 12) ((7,5), 10, 8) ((7,3), 10, 8) ((7,0), 7, 12) ((7,0), 7, 12) ((6,7), 11, 8) ((7,2), 7, 12) ((7,1), 8, 12) ((7,1), 8, 12) ((7,1), 8, 12) ((6,5), 7, 16) ((6,5), 7, 16) ((6,5), 7, 16) ((6,5), 9, 16) ((6,5), 9, 16) ((6,5), 9, 16) ((6,5), 9, 16) ((6,5), 9, 16) ((6,1), 5, 24) ((6,1), 5, 24) ((6,3), 7, 24) ((6,1), 7, 24) ((6,3), 7, 24)

Node selected: ((7, 9), 10, 0)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 6), 6, 2) ((9, 8), 7, 0) ((8, 6), 8, 2) ((9, 8), 9, 0) ((7, 9), 10, 0)]Successors: [((5, 8), 11, 16) ((9, 8), 11, 0) ((8, 7), 11, 2) ((6, 7), 11, 8)]

Fringe: [((9, 4), 9, 1), ((7, 9), 10, 0), ((9, 6), 9, 1), ((9, 4), 9, 1), ((7, 9), 10, 0), ((9, 4), 9, 1), (1) ((7, 9), 10, 0) ((7, 8), 7, 4) ((8, 7), 9, 2) ((9, 8), 11, 0) ((7, 6), 7, 4) ((9, 8), 11, 0) ((7, 6), 7, 4)(8, 2), (8, 4), ((8, 2), 8, 4), ((8, 6), 10, 2), ((8, 0), 6, 6), ((8, 2), 8, 4), ((8, 2), 8, 4)((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 4), 8, 4) ((7, 7), 8, 4) ((8, 4), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2)10, 2) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 6), 10, 2) ((7, 4), 5, 8) ((7, 8), 9, 4) ((7, 8), 9, 4)((8,7), 11, 2) ((7,6), 9, 4) ((7,8), 9, 4) ((7,8), 9, 4) ((8,7), 11, 2) ((7,5), 6, 8) ((7,3), 9, 4)6, 8) ((7, 7), 10, 4) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 7), 10, 4) ((8, 0), 8, 6) ((7, 7), 10, 4)((7, 7), 10, 4) ((8, 2), 10, 4) ((7, 4), 7, 8) ((6, 7), 7, 8) ((7, 4), 7, 8) ((7, 4), 7, 8) ((7, 5), 7, 8)8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 5), 8, 8)(7, 0), (7, 0), (7, 0), (6, 7), (9, 8), (7, 2), (7, 2), (7, 4), (7, 4), (7, 4), (7, 4), (8, 8)((6,7), 9, 8) ((6,9), 9, 8) ((6,7), 9, 8) ((7,4), 9, 8) ((6,7), 9, 8) ((7,4), 9, 8) ((6,7), 9, 8)8) ((7, 1), 6, 12) ((7, 1), 6, 12) ((7, 5), 10, 8) ((7, 3), 10, 8) ((7, 0), 7, 12) ((7, 0), 7, 12)((6, 7), 11, 8) ((7, 2), 7, 12) ((6, 7), 11, 8) ((7, 1), 8, 12) ((7, 1), 8, 12) ((7, 1), 8, 12) ((6, 7), 11, 8)(6, 5), 7, 16 (6, 5), 7, 16 (6, 5), 9, 16 (6, 5), 9, 16 (6, 5), 9, 16 (6, 5), 9, 169, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((6, 3), 5, 24) ((6, 1), 5, 24) ((6, 1), 5, 24) ((6, 3), 5, 24) ((67, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((5, 2), 3, 48) ((5, 3), 4, 24) ((6, 1), 7, 24) ((6, 2), 3, 48) ((6, 3), 7, 24) ((6,(4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 3, 256)3,640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)

Node selected: ((9, 4), 9, 1)

Path: [((0,0), 0, 3072) ((2,1), 1, 640) ((4,0), 2, 128) ((6,1), 3, 24) ((8,2), 4, 4) ((9,4), 5, 1) ((8,6), 6, 2) ((9,4), 7, 1) ((8,6), 8, 2) ((9,4), 9, 1)]Successors: [((7,3), 10, 8) ((7,5), 10, 8) ((8,6), 10, 2) ((8,2), 10, 4)]

Fringe: [((7,9),10,0),((9,6),9,1),((9,4),9,1),((7,9),10,0),((9,4),9,1),((7,9),10,0),((7,8),7,4),((8,7),9,2),((9,8),11,0),((7,6),7,4),((9,8),11,0),((7,3),4,8),((7,7),8,4),((8,2),8,4),((8,6),10,2),((8,6),10,2),((8,6),10,2),((8,4),8,4),((7,7),8,4),((8,4),8,4),((8,2),8,4),((8,6),10,2),((8,6),10,2),((8,6),10,2),((8,6),10,2),((8,6),10,2),((8,6),10,2),((8,6),10,2),((7,4),5,8),((7,8),9,4),((7,8),9,4),((7,8),9,4),((7,8),9,4),((7,8),9,4),((7,8),9,4),((7,8),9,4),((7,8),9,4),((7,7),10,4),((7

```
 \begin{array}{l} ((7,4),9,8) \; ((6,7),9,8) \; ((6,9),9,8) \; ((6,7),9,8) \; ((7,4),9,8) \; ((6,7),9,8) \; ((7,4),9,8) \\ 8) \; ((6,7),9,8) \; ((7,1),6,12) \; ((7,1),6,12) \; ((7,5),10,8) \; ((7,3),10,8) \; ((7,5),10,8) \\ ((7,3),10,8) \; ((7,0),7,12) \; ((7,0),7,12) \; ((6,7),11,8) \; ((7,2),7,12) \; ((6,7),11,8) \; ((7,1),8,12) \; ((7,1),8,12) \; ((7,1),8,12) \; ((6,5),7,16) \; ((6,5),7,16) \; ((5,8),9,16) \; ((6,5),9,16) \; ((6,5),9,16) \; ((6,5),9,16) \; ((6,5),9,16) \; ((6,5),9,16) \; ((5,8),11,16) \; ((5,8),11,16) \; ((6,3),5,24) \; ((6,1),5,24) \; ((6,1),5,24) \; ((6,3),7,24) \; ((6,1),7,24) \; ((6,3),7,24) \; ((6,3),7,24) \; ((6,3),7,24) \; ((6,3),7,24) \; ((6,3),7,24) \; ((6,3),7,24) \; ((6,3),7,24) \; ((6,3),7,24) \; ((6,3),7,24) \; ((6,3),3,3,2) \; ((6,3),3,3,3) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,10,8) \; ((6,7),9,10,8) \; ((6,7),10,8) \; ((6,7),10,8) \; ((6,7),10,8) \; ((6,7),10,8) \; ((6,7),10,8) \; ((6,7),10,8) \; ((6,7),10,8) \; ((6,7),10,8) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5),9,10) \; ((6,5)
```

Node selected: ((7, 9), 10, 0)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 6), 6, 2) ((9, 4), 7, 1) ((8, 6), 8, 2) ((9, 8), 9, 0) ((7, 9), 10, 0)]Successors: [((5, 8), 11, 16) ((9, 8), 11, 0) ((8, 7), 11, 2) ((6, 7), 11, 8)]

```
Fringe: [((9, 6), 9, 1), ((9, 4), 9, 1), ((7, 9), 10, 0), ((9, 4), 9, 1), ((7, 9), 10, 0), ((7, 8), 7, 9), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), ((9, 4), 9, 1), (
4) ((8,7), 9, 2) ((9,8), 11, 0) ((7,6), 7, 4) ((9,8), 11, 0) ((9,8), 11, 0) ((7,3), 4, 8) ((7,3), 4, 8)
(8, 6), 10, 2) ((8, 4), 8, 4) ((7, 7), 8, 4) ((8, 4), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 6), 10, 2)
(2), (8, 4), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6), (8, 6)
4) ((8,7), 11, 2) ((7,6), 9, 4) ((7,8), 9, 4) ((7,8), 9, 4) ((8,7), 11, 2) ((8,7), 11, 2) ((7,8), 9, 4)
5), 6, 8) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 7), 10, 4) ((8, 0), 8, 1)
6) ((7,7), 10, 4) ((7,7), 10, 4) ((8,2), 10, 4) ((8,2), 10, 4) ((7,4), 7, 8) ((6,7), 7, 8) ((7,4), 7, 8)
(7, 5), (7, 8), (7, 4), (7, 8), (7, 5), (7, 8), (7, 10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (10), (
((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 0), 5, 12) ((6, 7), 9, 8) ((7, 2), 5, 12) ((7, 4), 9, 8)
9, 8) ((6, 7), 9, 8) ((7, 4), 9, 8) ((6, 7), 9, 8) ((6, 9), 9, 8) ((6, 7), 9, 8) ((7, 4), 9, 8) ((6, 7), 9, 8)
7), 9, 8) ((7, 4), 9, 8) ((6, 7), 9, 8) ((7, 1), 6, 12) ((7, 1), 6, 12) ((7, 5), 10, 8) ((7, 3), 10, 10)
8) ((7, 5), 10, 8) ((7, 3), 10, 8) ((7, 0), 7, 12) ((7, 0), 7, 12) ((6, 7), 11, 8) ((7, 2), 7, 12)
((6,7), 11, 8) ((6,7), 11, 8) ((7,1), 8, 12) ((7,1), 8, 12) ((7,1), 8, 12) ((6,5), 7, 16) ((6,5), 7, 16)
(5), (5), (5), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), (6), 
11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((6, 3), 5, 24) ((6, 1), 5, 24) ((6, 1), 5, 24) ((6, 3), 5, 24)
7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((5, 2), 3, 48) ((5, 3), 4, 24) ((6, 1), 7, 24) ((6, 2), 3, 48) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((6, 
(4, 2), (4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 2, 3, 256)
3,640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)
```

Node selected: ((9, 6), 9, 1)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 0), 4, 6) ((9, 5, 2) ((8, 4), 6, 4) ((9, 6), 7, 1) ((8, 8), 8, 0) ((9, 6), 9, 1)]Successors: [((7, 5), 10, 8) ((7, 7), 10, 4) ((8, 8), 10, 0) ((8, 4), 10, 4)]

Fringe: [((9,4),9,1)((7,9),10,0)((9,4),9,1)((7,9),10,0)((8,8),10,0)((7,8),7,4)((8,7),9,2)((9,8),11,0)((7,6),7,4)((9,8),11,0)((9,8),11,0)((7,3),4,8)((7,7),8,4)((8,2),8,4)((8,6),10,2)((8,0),6,6)((8,2),8,4)((8,2),8,4)((8,6),10,2)((8,6),10,2)((8,4),8,4)((7,7),8,4)((8,4),8,4)((8,2),8,4)((8,6),10,2)((8,6),10,2)((8,6),10,2)((8,6),10,2)((8,6),10,2)((8,6),10,2)((7,4),5,8)((7,8),9,4)((7,8),9,4)((8,7),11,2)((7,6),9,4)((7,8),9,4)((7,8),9,4)((8,7),11,2)((8,7),11,2)((7,5),6,8)((7,3),6,8)((7,7),10,4)((7,3),6,8)((7,7),10,4)((8,2),10,4)((8,2),10,4)((8,4),10,4)((7,7),10,4)

 $\begin{array}{l} ((7,4),7,8) \; ((6,7),7,8) \; ((7,4),7,8) \; ((7,4),7,8) \; ((7,5),8,8) \; ((7,3),8,8) \; ((7,5),8,8) \\ 8) \; ((7,3),8,8) \; ((7,5),8,8) \; ((7,3),8,8) \; ((7,5),8,8) \; ((7,3),8,8) \; ((7,0),5,12) \; ((6,7),9,8) \; ((7,2),5,12) \; ((7,4),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((6,7),9,8) \; ((7,1),6,12) \; ((7,5),10,8) \; ((7,3),10,8) \; ((7,5),10,8) \;$

Node selected: ((9, 4), 9, 1)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 2), 6, 4) ((9, 4), 7, 1) ((8, 6), 8, 2) ((9, 4), 9, 1)]

Successors: [((7, 3), 10, 8), ((7, 5), 10, 8), ((8, 6), 10, 2), ((8, 2), 10, 4)]

Fringe: [((7, 9), 10, 0), ((9, 4), 9, 1), ((7, 9), 10, 0), ((8, 8), 10, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 6), 7, 4), ((9, 8), 11, 0), ((9, 8), 11, 0), ((7, 3), 4, 8), ((7, 7), 8, 4), ((8, 2), 8, 4), ((8, 6), 10, 2), ((8, 0), 6, 6), ((8, 2), 8, 4), ((8, 2), 8, 4), ((8, 6), 10, 2), ((8,

 $16) \ ((5,8),9,16) \ ((6,5),9,16) \ ((6,5),9,16) \ ((6,5),9,16) \ ((6,5),9,16) \ ((5,8),11,16) \ ((5,8),11,16) \ ((6,3),5,24) \ ((6,1),5,24) \ ((6,1),5,24) \ ((6,3),7,24) \ ((6,1),7,24) \ ((6,3),7,24) \ ((6,3),7,24) \ ((6,3),7,24) \ ((5,2),3,48) \ ((5,3),4,48) \ ((4,2),2,128) \ ((4,2),4,128) \ ((4,0),4,128) \ ((3,3),2,256) \ ((3,2),3,256) \ ((2,1),3,640) \ ((3,3),2,256) \ ((3,2),3,256) \ ((2,1),3,640) \ ((3,3),2,256) \ ((3,2),3,256) \ ((3,2$

Node selected: ((7, 9), 10, 0)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 2), 6, 4) ((9, 4), 7, 1) ((8, 6), 8, 2) ((9, 8), 9, 0) ((7, 9), 10, 0)]Successors: [((5, 8), 11, 16) ((9, 8), 11, 0) ((8, 7), 11, 2) ((6, 7), 11, 8)]

((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)

Fringe: [((9, 4), 9, 1) ((7, 9), 10, 0) ((8, 8), 10, 0) ((7, 8), 7, 4) ((8, 7), 9, 2) ((9, 8), 11, 0) ((7, 6), 7, 4) ((9, 8), 11, 0) ((9, 8), 11, 0) ((9, 8), 11, 0) ((7, 3), 4, 8) ((7, 7), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 0), 6, 6) ((8, 2), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2)

10, 2) ((8, 4), 8, 4) ((7, 7), 8, 4) ((8, 4), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 2), 8, 4) ((8, 6), 10, 2)

(6), 4) ((8, 7), 11, 2) ((7, 6), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((8, 7), 11, 2) ((8, 7), 11, 2) ((8, 7), 11, 2)7), 11, 2) ((7, 5), 6, 8) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 7), 10, 4)4) ((8, 0), 8, 6) ((7, 7), 10, 4) ((7, 7), 10, 4) ((8, 2), 10, 4) ((8, 2), 10, 4) ((8, 4), 10, 4)((7, 7), 10, 4) ((8, 2), 10, 4) ((7, 4), 7, 8) ((6, 7), 7, 8) ((7, 4), 7, 8) ((7, 4), 7, 8) ((7, 5), 7, 8)8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8(7, 0), (7, 0), (7, 0), (6, 7), (6, 7), (7, 0), (7, 1), (7, 1), (7, 1), (7, 1), (7, 1), (8, 1), (9, 1), (10, 1), ((6,7),9,8) ((6,9),9,8) ((6,7),9,8) ((7,4),9,8) ((6,7),9,8) ((7,4),9,8) ((6,7),9,8)8) ((7, 1), 6, 12) ((7, 1), 6, 12) ((7, 5), 10, 8) ((7, 3), 10, 8) ((7, 5), 10, 8) ((7, 3), 10, 8)(6, 7), 12 (6, 7), 11, 8 (6, 7), 11, 8 (6, 7), 11, 8 (7, 1), 8, 12 (7, 1), 8, 128, 12) ((6, 5), 7, 16) ((6, 5), 7, 16) ((5, 8), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16)16) ((6, 5), 9, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((6, 3), 5, 11, 16)24) ((6, 1), 5, 24) ((6, 1), 5, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((6, 1), 7, 24)((6, 3), 7, 24) ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128)((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 3, 640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2, 256)2560) ((0, 0), 2, 3072)

Node selected: ((9, 4), 9, 1)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 0), 5, 3) ((8, 2), 6, 4) ((9, 4), 7, 1) ((8, 6), 8, 2) ((9, 4), 9, 1)]

Successors: [((7, 3), 10, 8) ((7, 5), 10, 8) ((8, 6), 10, 2) ((8, 2), 10, 4)]

Fringe: [((7, 9), 10, 0), ((8, 8), 10, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 6), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 6), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 6), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 6), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 8), 7, 2), ((8, 8), 10, 9), ((8, 8),4) ((9, 8), 11, 0) ((9, 8), 11, 0) ((9, 8), 11, 0) ((7, 3), 4, 8) ((7, 7), 8, 4) ((8, 2), 8, 4) ((8, 2), 8, 4)(6), (6), (6), (6), (6), (8), ((7,7), 8, 4) ((8, 4), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 6), 10, 2)10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((7, 4), 5, 8) ((7, 8), 9, 4) ((7, 8), 9, 4)((8,7), 11, 2) ((7,6), 9, 4) ((7,8), 9, 4) ((7,8), 9, 4) ((8,7), 11, 2) ((8,7), 11, 2) ((8,7), 11, 2)11, 2) ((7, 5), 6, 8) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 7), 10, 4)((8, 0), 8, 6) ((7, 7), 10, 4) ((7, 7), 10, 4) ((8, 2), 10, 4) ((8, 2), 10, 4) ((8, 4), 10, 4) ((7, 7), 10, 4)7), 10, 4) ((8, 2), 10, 4) ((8, 2), 10, 4) ((7, 4), 7, 8) ((6, 7), 7, 8) ((7, 4), 7, 8) ((7, 4), 7, 8)8) ((7,5), 8, 8) ((7,3), 8, 8) ((7,5), 8, 8) ((7,5), 8, 8) ((7,5), 8, 8) ((7,5), 8, 8)(7, 3), (7, 3), (7, 3), (7, 4), (7,(4), ((6,7), 9, 8) ((7, 1), 6, 12) ((7, 1), 6, 12) ((7, 5), 10, 8) ((7, 3), 10, 8) ((7, 5), 10, 8) ((7, 5), 10, 8)7, 12) ((7, 0), 7, 12) ((6, 7), 11, 8) ((7, 2), 7, 12) ((6, 7), 11, 8) ((6, 7), 11, 8) ((6, 7), 11, 8)8) ((7, 1), 8, 12) ((7, 1), 8, 12) ((7, 1), 8, 12) ((6, 5), 7, 16) ((6, 5), 7, 16) ((5, 8), 9, 16)((6, 5), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((5, 8), 11, 16) ((5, 8), 11, 16)((5, 8), 11, 16) ((5, 8), 11, 16) ((6, 3), 5, 24) ((6, 1), 5, 24) ((6, 1), 5, 24) ((6, 3), 7, 24)((6, 1), 7, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 4), 48)(2), (4, 2), (4, 128) ((4, 0), (4, 128) ((3, 3), (4, 2), (4,((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)

Node selected: ((7, 9), 10, 0)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 0), 5, 3) ((8, 2), 6, 4) ((9, 4), 7, 1) ((8, 6), 8, 2) ((9, 8), 9, 0) ((7, 9), 10, 0)]

Successors: [((5, 8), 11, 16) ((9, 8), 11, 0) ((8, 7), 11, 2) ((6, 7), 11, 8)]

Fringe: [((8, 8), 10, 0), ((7, 8), 7, 4), ((8, 7), 9, 2), ((9, 8), 11, 0), ((7, 6), 7, 4), ((9, 8), 11, 0)(9, 8), 11, 0) ((9, 8), 11, 0) ((9, 8), 11, 0) ((7, 3), 4, 8) ((7, 7), 8, 4) ((8, 2), 8, 4) ((8, 2), 8, 4)(6), (8, 0), (8, 0), (8, 2), (8, 4), (8, 2), (8, 4), (8, 6), (8, 6), (8, 6), (8, 6), (8, 4), (8, 4)((7,7), 8, 4) ((8, 4), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 6), 10, 2)10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((7, 4), 5, 8) ((7, 8), 9, 4) ((7, 8), 9, 4)((8,7), 11, 2) ((7,6), 9, 4) ((7,8), 9, 4) ((7,8), 9, 4) ((8,7), 11, 2) ((8,7), 11, 2) ((8,7), 11, 2)11, 2) ((8, 7), 11, 2) ((7, 5), 6, 8) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 3), 6, 8) ((7, 7), 10, 4)((7, 7), 10, 4) ((8, 0), 8, 6) ((7, 7), 10, 4) ((7, 7), 10, 4) ((8, 2), 10, 4) ((8, 2), 10, 4) ((8, 2), 10, 4)4), 10, 4) ((7, 7), 10, 4) ((8, 2), 10, 4) ((8, 2), 10, 4) ((7, 4), 7, 8) ((6, 7), 7, 8) ((7, 4), 7, 8)8) ((7, 4), 7, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8)8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 0), 5, 12) ((6, 7), 9, 8) ((7, 2), 5, 12) ((7, 4), 9, 8) ((6, 7), 9, 8) ((7, 1), 12) ((1, 1)(7, 9, 8) ((7, 4), 9, 8) ((6, 7), 9, 8) ((6, 9), 9, 8) ((6, 7), 9, 8) ((7, 4), 9, 8) ((6, 7), 9, 8) ((7, 4),(4), 8) ((7, 3), 10, 8) ((7, 5), 10, 8) ((7, 5), 10, 8) ((7, 3), 10, 8) ((7, 5), 10, 8) ((7, 3), 10, 8)((7, 0), 7, 12) ((7, 0), 7, 12) ((6, 7), 11, 8) ((7, 2), 7, 12) ((6, 7), 11, 8) ((6, 7), 11, 8) ((6, 7), 11, 8)7), 11, 8) ((6, 7), 11, 8) ((7, 1), 8, 12) ((7, 1), 8, 12) ((7, 1), 8, 12) ((6, 5), 7, 16) ((6, 5), 7, 16)7, 16) ((5, 8), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((5, 8), 11, 9)(5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((6, 3), 5, 24) ((6, 1), 5, 16)24) ((6, 1), 5, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24)((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256)((3, 2), 3, 256) ((2, 1), 3, 640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 2560)2, 3072)

Node selected: ((8, 8), 10, 0)

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 0), 4, 6) ((9, 5, 2) ((8, 4), 6, 4) ((9, 6), 7, 1) ((8, 8), 8, 0) ((9, 6), 9, 1) ((8, 8), 10, 0)]

Successors: []

Fringe: [(7, 8), 7, 4)((8, 7), 9, 2)((9, 8), 11, 0)((7, 6), 7, 4)((9, 8), 11, 0)((9, 8), 11, 0)(0) ((9,8), 11, 0) ((9,8), 11, 0) ((7,3), 4, 8) ((7,7), 8, 4) ((8,2), 8, 4) ((8,6), 10, 2) ((8,6), 10, 2)(0), (6), (6), (8), ((8, 4), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2)10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((7, 4), 5, 8) ((7, 8), 9, 4) ((7, 8), 9, 4) ((8, 7), 11, 2)((7, 6), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((8, 7), 11, 2) ((8, 7), 11, 2) ((8, 7), 11, 2) ((8, 7), 11, 2)11, 2) ((7, 5), 6, 8) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 7), 10, 4)((8,0), 8, 6) ((7,7), 10, 4) ((7,7), 10, 4) ((8,2), 10, 4) ((8,2), 10, 4) ((8,4), 10, 4) ((7,7), 10, 4)7), 10, 4) ((8, 2), 10, 4) ((8, 2), 10, 4) ((7, 4), 7, 8) ((6, 7), 7, 8) ((7, 4), 7, 8) ((7, 4), 7, 8)8) ((7,5), 8, 8) ((7,3), 8, 8) ((7,5), 8, 8) ((7,5), 8, 8) ((7,5), 8, 8) ((7,5), 8, 8)8, 8) ((7, 3), 8, 8) ((7, 0), 5, 12) ((6, 7), 9, 8) ((7, 2), 5, 12) ((7, 4), 9, 8) ((6, 7), 9, 8) ((7, 4), 9, 8)(4), ((6,7), 9, 8) ((7, 1), 6, 12) ((7, 1), 6, 12) ((7, 5), 10, 8) ((7, 3), 10, 8) ((7, 5), 10, 8) ((7, 5), 10, 8)7, 12) ((7, 0), 7, 12) ((6, 7), 11, 8) ((7, 2), 7, 12) ((6, 7), 11, 8) ((6, 7), 11, 8) ((6, 7), 11, 8)8) ((6,7), 11, 8) ((7,1), 8, 12) ((7,1), 8, 12) ((7,1), 8, 12) ((6,5), 7, 16) ((6,5), 7, 16)((5, 8), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((5, 8), 11, 16) ((5, 8), 11, 16)

```
8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((6, 3), 5, 24) ((6, 1), 5, 24) ((6, 1), 5, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((6, 3), 7, 24) ((5, 2), 3, 48) ((5, 3), 4, 48) ((4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 3, 640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072) ]

Node selected: ((7, 8), 7, 4)
```

Path: [((0,0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 6), 6, 2) ((7, 8), 7, 4)]

Successors: [((5, 7), 8, 32) ((5, 9), 8, 16) ((9, 9), 8, 0) ((9, 7), 8, 0) ((8, 6), 8, 2) ((6, 6), 8, 16)]

```
Fringe: [((9,7), 8, 0), ((9,9), 8, 0), ((8,6), 8, 2), ((8,7), 9, 2), ((9,8), 11, 0), ((7,6), 7, 9, 2), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8), 11, 0), ((9,8
(9, 8), 11, 0) ((9, 8), 11, 0) ((9, 8), 11, 0) ((9, 8), 11, 0) ((7, 3), 4, 8) ((7, 7), 8, 4) ((8, 8), 11, 0)
(8, 6), (8, 6), (10, 2), ((8, 0), 6, 6), ((8, 2), 8, 4), ((8, 2), 8, 4), ((8, 6), 10, 2), ((8, 6), 10, 2)
(8, 4), 8, 4) ((7, 7), 8, 4) ((8, 4), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 2), 8, 4) ((8, 6), 10, 2)
10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((7, 4), 5, 8) ((7, 8), 9, 4)
((7, 8), 9, 4) ((8, 7), 11, 2) ((7, 6), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((8, 7), 11, 2) ((8, 7), 11, 2)
11, 2) ((8, 7), 11, 2) ((8, 7), 11, 2) ((7, 5), 6, 8) ((7, 3), 6, 8) ((7, 7), 10, 4) ((7, 3), 6, 8)
((7, 7), 10, 4) ((7, 7), 10, 4) ((8, 0), 8, 6) ((7, 7), 10, 4) ((7, 7), 10, 4) ((8, 2), 10, 4) ((8, 2), 10, 4)
2), 10, 4) ((8, 4), 10, 4) ((7, 7), 10, 4) ((8, 2), 10, 4) ((8, 2), 10, 4) ((7, 4), 7, 8) ((6, 7), 7, 7)
8) ((7, 4), 7, 8) ((7, 4), 7, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8)
8, 8) ((7, 3), 8, 8) ((7, 5), 8, 8) ((7, 3), 8, 8) ((7, 0), 5, 12) ((6, 7), 9, 8) ((7, 2), 5, 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 12) ((7, 2), 
(4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), (4), 
((6,7), 9, 8) ((7, 4), 9, 8) ((6,7), 9, 8) ((7, 1), 6, 12) ((7, 1), 6, 12) ((7, 5), 10, 8) ((7, 3), 10, 10)
10, 8) ((7, 5), 10, 8) ((7, 3), 10, 8) ((7, 5), 10, 8) ((7, 5), 10, 8) ((7, 3), 10, 8) ((7, 5), 10, 8)
8) ((7, 3), 10, 8) ((7, 0), 7, 12) ((7, 0), 7, 12) ((6, 7), 11, 8) ((7, 2), 7, 12) ((6, 7), 11, 8)
((6,7), 11, 8) ((6,7), 11, 8) ((6,7), 11, 8) ((7,1), 8, 12) ((7,1), 8, 12) ((7,1), 8, 12) ((6,7), 11, 8)
(6, 5), 7, 16 (6, 5), 7, 16 (6, 6), 8, 16 (5, 9), 8, 16 (5, 8), 9, 16 (6, 5), 9, 16 (6, 5), 9, 16
9, 16) ((6, 5), 9, 16) ((6, 5), 9, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16) ((5, 8), 11, 16)
11, 16) ((5, 8), 11, 16) ((6, 3), 5, 24) ((6, 1), 5, 24) ((6, 1), 5, 24) ((6, 3), 7, 24) ((6, 1), 10)
7, 24) ((6, 3), 7, 24) ((6, 1), 7, 24) ((6, 3), 7, 24) ((5, 7), 8, 32) ((5, 2), 3, 48) ((5, 3), 4, 32)
48) ((4, 2), 2, 128) ((4, 2), 4, 128) ((4, 0), 4, 128) ((3, 3), 2, 256) ((3, 2), 3, 256) ((2, 1), 128)
3,640) ((1, 3), 2, 1024) ((1, 2), 1, 1280) ((0, 2), 2, 2560) ((0, 0), 2, 3072)
```

Node selected: ((9, 7), 8, 0)

Path: [((0,0), 0, 3072) ((2,1), 1, 640) ((4,0), 2, 128) ((6,1), 3, 24) ((8,2), 4, 4) ((9,4), 5, 1) ((8,6), 6, 2) ((7,8), 7, 4) ((9,7), 8, 0)]

Successors: [((7, 6), 9, 4), ((7, 8), 9, 4), ((8, 9), 9, 0), ((8, 5), 9, 2)]

Fringe: [((9, 9), 8, 0) ((8, 9), 9, 0) ((8, 6), 8, 2) ((8, 7), 9, 2) ((9, 8), 11, 0) ((7, 6), 7, 9, 2)]

Fringe: [(9, 9), 8, 0) ((8, 9), 9, 0) ((8, 6), 8, 2) ((8, 7), 9, 2) ((9, 8), 11, 0) ((7, 6), 7, 4) ((9, 8), 11, 0) ((9, 8), 11, 0) ((9, 8), 11, 0) ((9, 8), 11, 0) ((8, 5), 9, 2) ((7, 3), 4, 8) ((7, 7), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 4), 8, 4) ((7, 7), 8, 4) ((8, 4), 8, 4) ((8, 2), 8, 4) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 6), 10, 2) ((8, 7), 11, 2) ((7, 6), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((8, 7), 11, 2) ((8, 7), 11, 2) ((8, 7), 11, 2) ((8, 7), 11, 2) ((8, 7), 11, 2) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((7, 8), 9, 4) ((8, 8), 10, 4)

 $4) \ ((8,2),10,4) \ ((7,4),7,8) \ ((6,7),7,8) \ ((7,4),7,8) \ ((7,4),7,8) \ ((7,5),8,8) \ ((7,3),8,8) \ ((7,3),8,8) \ ((7,5),8,8) \ ((7,3),8,8) \ ((7,5),8,8) \ ((7,3),8,8) \ ((7,5),8,8) \ ((7,3),8,8) \ ((7,5),8,8) \ ((7,3),8,8) \ ((7,5),8,8) \ ((7,3),8,8) \ ((7,5),8,8) \ ((7,3),8,8) \ ((7,5),8,8) \ ((7,3),8,8) \ ((7,5),8,8) \ ((7,4),9,8) \ ((6,7),9,8) \ ((6,7),9,8) \ ((6,7),9,8) \ ((6,7),9,8) \ ((6,7),9,8) \ ((6,7),9,8) \ ((6,7),9,8) \ ((6,7),9,8) \ ((6,7),9,8) \ ((6,7),9,8) \ ((6,7),9,8) \ ((7,4),9,8) \ ((6,7),9,8) \ ((7,4),9,8) \ ((6,7),9,8) \ ((7,5),10,8) \ ((7,3),10,8) \ ((7,4),9,8) \ ((6,7),9,8) \$

Node selected: ((9, 9), 8, 0)

Path: [((0, 0), 0, 3072) ((2, 1), 1, 640) ((4, 0), 2, 128) ((6, 1), 3, 24) ((8, 2), 4, 4) ((9, 4), 5, 1) ((8, 6), 6, 2) ((7, 8), 7, 4) ((9, 9), 8, 0)]

Busqueda: Grafo Estrategia: A*

Nodos generados: 186 Nodos expandidos: 44

Factor de ramificacion: 1.726165771484375

Profun: 8 Coste: 8

3. Apendices

3.1. Diagrama de clases

Para poder entender como está estructura la lógica del programa se muestra un diagrama básico de ello que se puede ver en la figura 3.

3.2. Ejecución

El programa se entrega en un archivo .jar autoejecutable, para ello basta con entregar abrir una terminal y escribir la siguiente línea de código

$$java - jar IA_{-}p1.jar$$

lo que arrancará una interfaz gráfica para la configuración de los parámetros del programa, mientras que en la terminal se imprimirá los mensajes que se solicita en el boletín de prácticas.

Referencias

- [1] Moret, Alonso, Cabrero, Guijarro, Mosqueira. Fundamentos de Inteligencia Artificial. Servicio de Publicaciones UDC. 2004
- [2] Russell, Norvig. Inteligencia Artificial: Un Enfoque Moderno. Pearson Prentice Hall. 2004

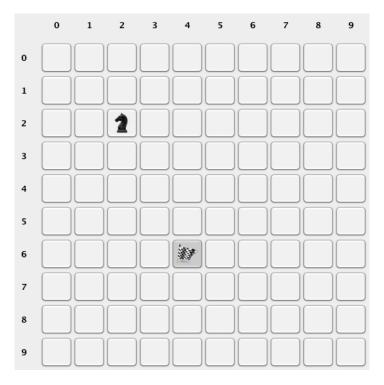


Figura 1: Situación empleada para los ejemplos de ejecución

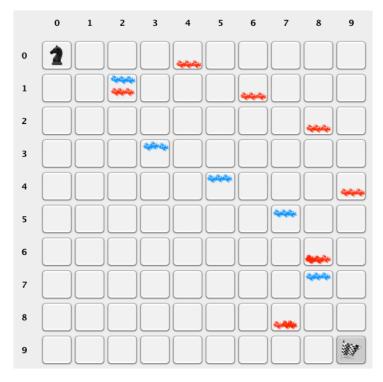


Figura 2: Situación empleada para usar en con la heurística $h_4(n)$ donde las casillas intermedias que emplea están marcadas con rojo mientras que un camino óptimo está marcado en color azul

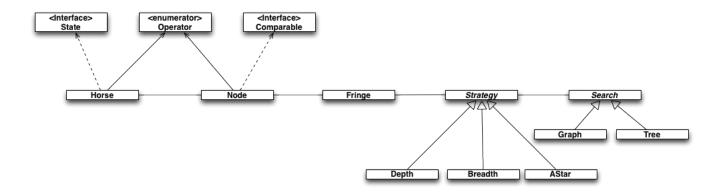


Figura 3: Diagrama de clases diseñado para realizar el programa