

1 A Extra Examples on Shortest Path Task

2 A.1 Regular Marker Size

3 **prompt:** The image presented contains a graph. In this graph, are there nodes that are different in shape?

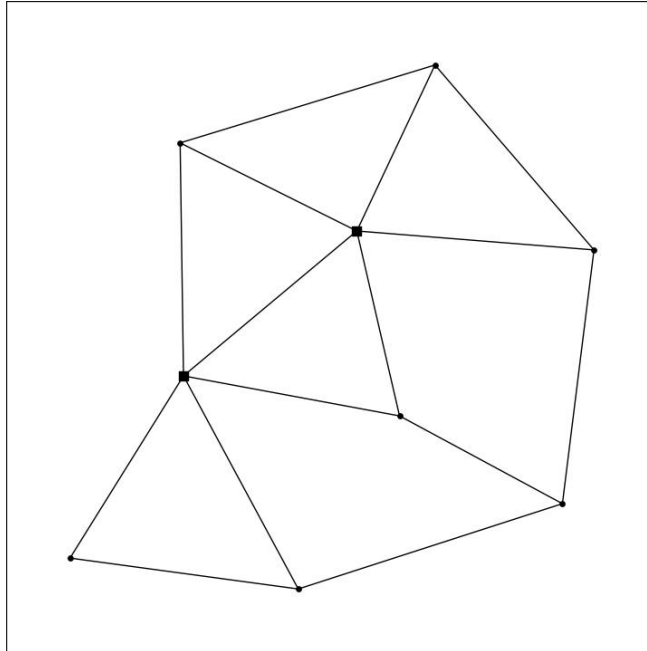


Figure 1: The input image, the answer is 'Yes'

GPT-4o Output:

In the graph you provided, there are two distinct types of nodes based on their shapes:

1. Square Nodes: There are two nodes in the graph that are represented as squares. These square nodes typically indicate that they have different properties or roles compared to the other nodes in the graph. In graph theory, this might imply that these nodes have a special significance, such as being points of articulation (nodes whose removal would increase the number of connected components of the graph).
2. Circular Nodes: The remaining nodes in the graph are represented as circles. These are the standard or regular nodes, and they do not have the same distinguishing features as the square nodes.

Claude 3.5 Sonnet Output:

Yes, there are nodes that differ in shape in this graph. Most of the nodes are represented by small circular dots, but there are two nodes that are depicted as small square shapes instead.

6 A.2 Path - Shortest: Larger Markers, Example 1

prompt: The image presented contains a graph. Two nodes are marked by square. Without using code, please answer what is the shortest path between the two square nodes in this graph. Please report your final answer as number in your very last word.

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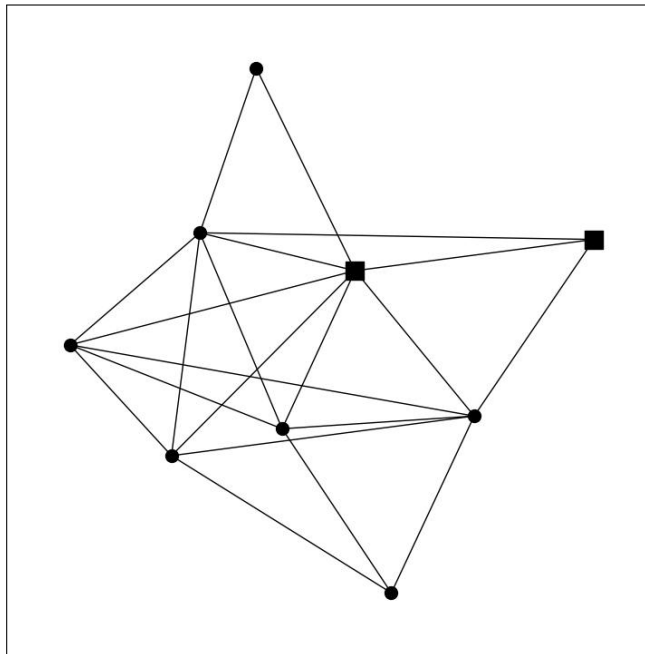


Figure 2: The input image, the answer is '1'

GPT-4o Output:

To find the shortest path between the two square nodes in the graph, we can visually inspect the connections (edges) between the nodes (vertices).

Starting from the square node on the left:

1. The first square node connects to its nearest circular node.
2. This circular node directly connects to the second square node.

Thus, the shortest path involves only one intermediate node, which means the path length is **2**. So, the answer is **2**.

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Claude 3.5 Sonnet Output:

I'll analyze the graph to find the shortest path between the two square nodes:

1. The graph shows several nodes connected by lines, with two nodes represented as squares and the rest as circles.
2. To find the shortest path, I'll count the minimum number of edges (lines) that need to be traversed to get from one square node to the other.
3. Starting from either square node, we can reach the other square node by traversing 3 edges:
 - From one square to a circle node
 - From that circle node to another circle node
 - From the second circle node to the other square
4. There's no way to connect the two square nodes using fewer than 3 edges.

Therefore, the shortest path between the two square nodes in this graph is 3.

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10 A.3 Path - Shortest: Larger Markers, Example 2

prompt: The image presented contains a graph. Two nodes are marked by square. Without using code, please answer what is the shortest path between the two square nodes in this graph. Please report your final answer as number in your very last word.

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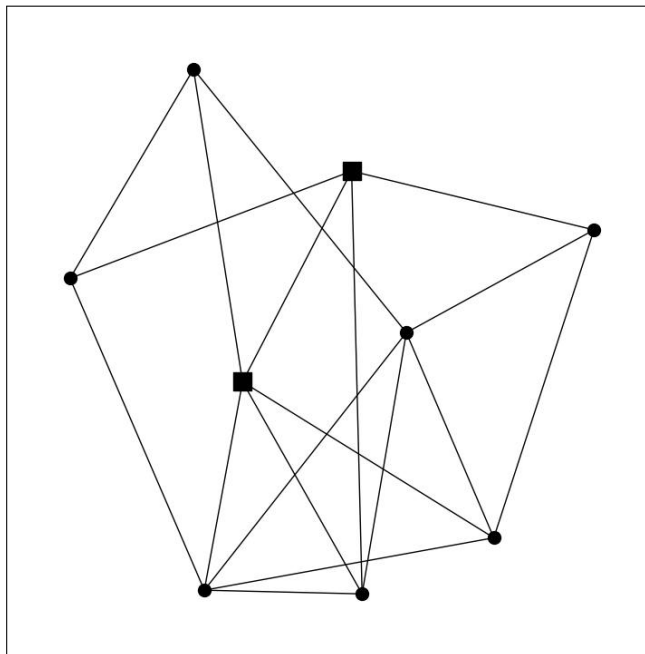


Figure 3: The input image, the answer is '1'

GPT-4o Output:

To find the shortest path between the two square nodes in the graph:

1. **Identify the Nodes:** The square nodes are two specific points on the graph.
2. **Trace Paths:**
 - From the first square node, trace the direct connections (edges) to other nodes.
 - Continue tracing until you reach the second square node.
 - Count the number of edges for each possible path.

After analyzing the graph visually:

- The shortest path between the two square nodes has **2** edges.

The shortest path length is **2**.

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Claude 3.5 Sonnet Output:

To find the shortest path between the two square nodes, I'll analyze the graph structure:

1. The graph has 8 nodes total: 2 square nodes and 6 circular nodes.
2. The square nodes are not directly connected to each other.
3. To reach from one square node to the other, we need to pass through circular nodes.

Examining possible paths:

- The shortest path appears to go through two circular nodes.
- There's a circular node connected to both square nodes, forming a path.

Therefore, the shortest path between the two square nodes involves traversing: Square node → Circular node → Circular node → Square node This path includes 3 edges (connections) between nodes. Final answer: The shortest path between the two square nodes is 3.

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