

WAP in python to demonstrate a coloring graph.

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In [4]: import networkx as nx
import matplotlib.pyplot as plt

def graph_coloring(graph):
    colors = {}

    for node in graph.nodes():
        neighboring_colors = {colors[neighbor] for neighbor in graph.neighbors(node)}
        available_colors = set(range(len(graph))) - neighboring_colors
        color = min(available_colors) if available_colors else len(graph)
        colors[node] = color

    return colors

# Take user input for edges
edges_input = input("Enter edges as space-separated pairs (e.g., '1 2 2 3 3 4')")
edges = [(int(edges_input[i]), int(edges_input[i + 1])) for i in range(0, len(edges_input), 2)]

# Create a graph from user input edges
G = nx.Graph()
G.add_edges_from(edges)

# Get the node colors using graph coloring algorithm
node_colors = graph_coloring(G)

# Draw the graph
pos = nx.spring_layout(G)
nx.draw(G, pos, with_labels=True, node_color=[node_colors[node] for node in G.nodes()])

# Display the graph
plt.show()
```

Enter edges as space-separated pairs (e.g., '1 2 2 3 3 4'): 1 2 1 3 2 4 3 4

