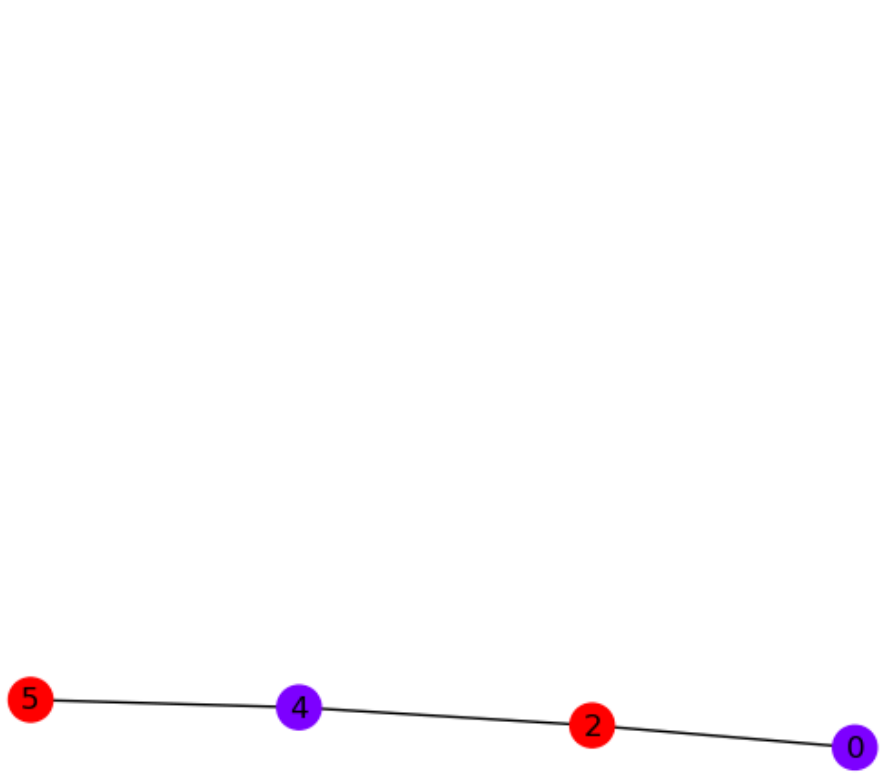
QUESTION 3:WRITE A CODE IN PYTHON TO DEMONSTRATE THE CONCEPT OF COLORING OF A GRAPH WHERE THE NUMBER OF VERTICES IS USER INPUT

In [2]:
```
import networkx as nx
import matplotlib.pyplot as plt
import random

def generate_random_graph(num_vertices):
    G = nx.erdos_renyi_graph(num_vertices, 0.2)  # Generate a random graph (
    return G

def greedy_coloring(graph):
    colors = {}

    for node in graph.nodes():
        neighbor_colors = set(colors.get(neighbor, None) for neighbor in gra

        for color in range(len(graph.nodes)):
            if color not in neighbor_colors:
                colors[node] = color
                break

    return colors

def draw_colored_graph(graph, colors):
    node_colors = [colors[node] for node in graph.nodes()]
    nx.draw(graph, with_labels=True, node_color=node_colors, cmap=plt.cm.rai
    plt.show()

# Get the number of vertices from the user
num_vertices = int(input("Enter the number of vertices for the graph: "))

# Generate a random graph
graph = generate_random_graph(num_vertices)

# Get the greedy coloring
coloring = greedy_coloring(graph)

# Draw the graph with node colors
draw_colored_graph(graph, coloring)
```

```
Enter the number of vertices for the graph: 6
```


3
1
5
4
2
0