Assignment 3

Write a python program to demonstrate coloring of graph (Such that no two adjacent vertices are same color).

In [17]:
```
import networkx as nx
import matplotlib.pyplot as plt

# Define the graph
G = nx.Graph()
G.add_edges_from([(0, 1), (0, 2), (1, 2), (1, 3), (2, 3), (3, 4), (4, 1)])

# Find a coloring
coloring = nx.greedy_color(G, strategy="largest_first")

# Print the coloring
print("Vertex colors:")
for node, color in coloring.items():
    print(f"Vertex {node}: Color {color}")

# Draw the graph with vertex colors
plt.figure(figsize=(4, 3))
pos = nx.spring_layout(G)  # Positions for all nodes
node_colors = [coloring[node] for node in G.nodes()]  # Get colors of nodes
nx.draw(G, pos, with_labels=True, node_color=node_colors, cmap=plt.cm.rainb
plt.title('Graph with Coloring')
plt.show()
```

```
Vertex colors:
Vertex 1: Color 0
Vertex 2: Color 1
Vertex 3: Color 2
Vertex 0: Color 2
Vertex 4: Color 1
```