東京工業大学
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Complex Network

Quiz 10

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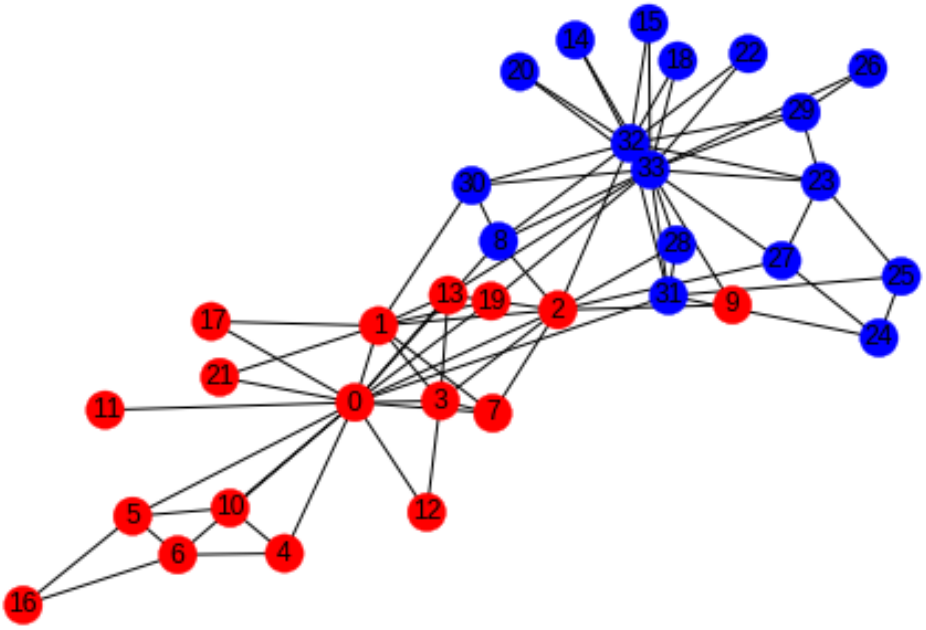
Code

```
import networkx as nx
import matplotlib.pyplot as plt
import numpy as np
import numpy.linalg as LA
from networkx.algorithms.community import greedy_modularity_communities
from networkx.algorithms.community import kernighan_lin_bisection

G = nx.karate_club_graph()


colors = ['red', 'blue', 'green', 'purple', 'brown', 'yellow']
pos = nx.spring_layout(G)



lst_b = kernighan_lin_bisection(G)
print(lst_b)
color_map_b = ['black'] * nx.number_of_nodes(G)
# fill in this part
for idx in lst_b[0]:
  color_map_b[idx] = 'red'
for idx in lst_b[1]:
  color_map_b[idx] = 'blue'

nx.draw_networkx_edges(G, pos)
nx.draw_networkx_nodes(G, pos, node_color=color_map_b)
nx.draw_networkx_labels(G, pos)
plt.axis('off')
plt.show()



lst_c = list(greedy_modularity_communities(G))
color_map_c = ['black'] * nx.number_of_nodes(G)
# fill in this part
for idx in lst_c[0]:
  color_map_c[idx] = 'red'
for idx in lst_c[1]:
  color_map_c[idx] = 'blue'
for idx in lst_c[2]:
  color_map_c[idx] = 'green'

nx.draw_networkx_edges(G, pos)
nx.draw_networkx_nodes(G, pos, node_color=color_map_c)
nx.draw_networkx_labels(G, pos)
plt.axis('off')
plt.show()
```

Results

(a.) kernighan lin bisection



(b.) greedy modularity communities