AI LAB EXP-2

DEVELOPING AGENT PROGRAMS FOR REAL WORLD PROBLEMS

Graph Coloring Problem

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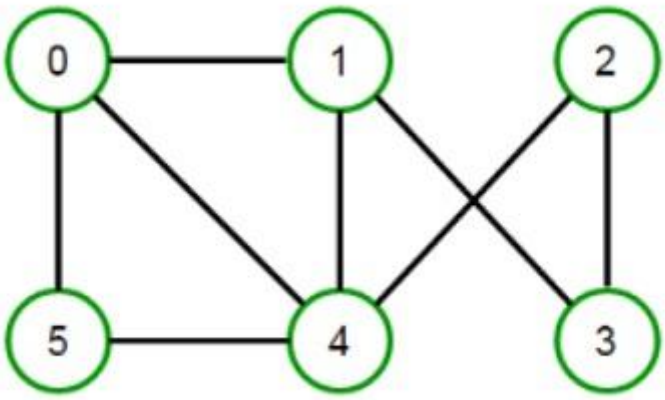
CODE: (vertex coloring)

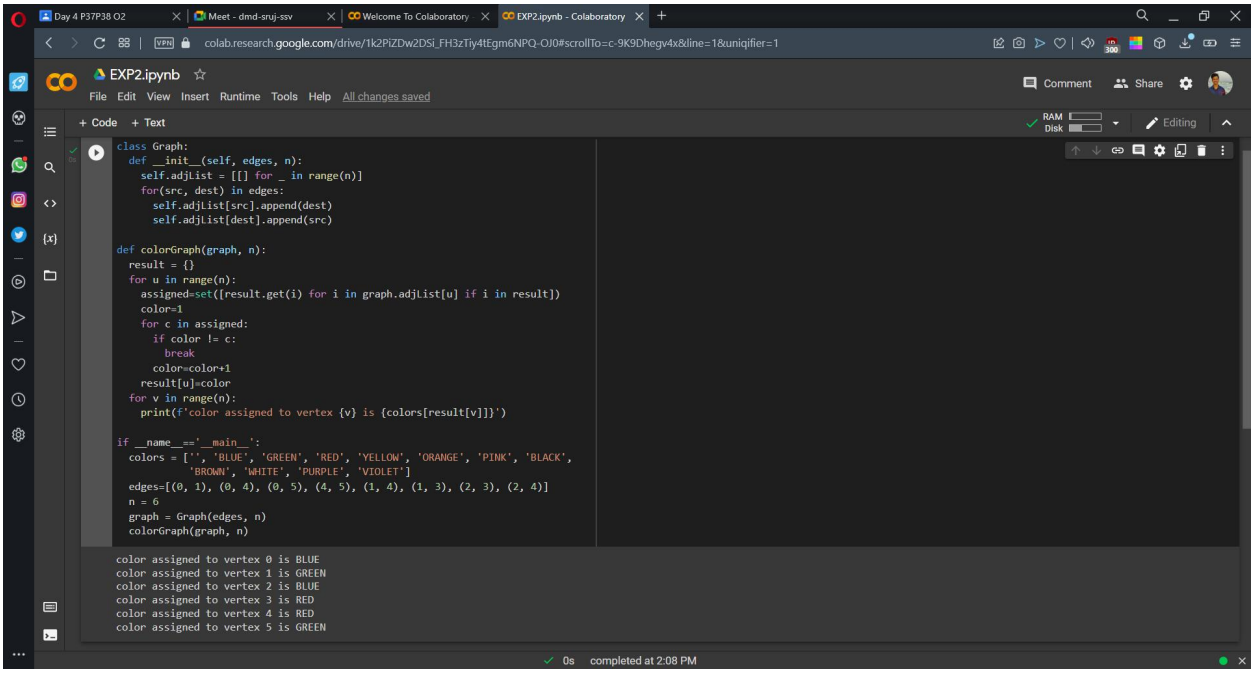
```
class Graph:
  def __init__(self, edges, n):
    self.adjList = [[] for _ in range(n)]
    for(src, dest) in edges:
      self.adjList[src].append(dest)
      self.adjList[dest].append(src)


def colorGraph(graph, n):
  result = {}
  for u in range(n):
    assigned=set([result.get(i) for i in graph.adjList[u] if i in result])
    color=1
    for c in assigned:
      if color != c:
        break
      color=color+1
    result[u]=color
  for v in range(n):
```

```
    print(f'color assigned to vertex {v} is {colors[result[v]]}')
if __name__=='__main__':
  colors = ['', 'BLUE', 'GREEN', 'RED', 'YELLOW', 'ORANGE', 'PINK', 'BLACK',
            'BROWN', 'WHITE', 'PURPLE', 'VIOLET']
  edges=[(0, 1), (0, 4), (0, 5), (4, 5), (1, 4), (1, 3), (2, 3), (2, 4)]
  n = 6
  graph = Graph(edges, n)
  colorGraph(graph, n)
```

GRAPH BEFORE VERTEX COLORING:



OUTPUT SCREENSHOT:




```
color assigned to vertex 0 is BLUE
color assigned to vertex 1 is GREEN
color assigned to vertex 2 is BLUE
color assigned to vertex 3 is RED
color assigned to vertex 4 is RED
color assigned to vertex 5 is GREEN
```

GRAPH BEFORE VERTEX COLORING: