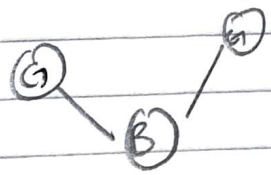
Assignment 3

1)

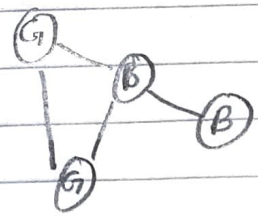
i) kProper (adjList, BlueV, GreenV)

```
bool checker = true
For each element in the adjList (i)
  for each item adj to i (j)
    If BlueV contains i and BlueV contains j
                    or
       GreenV contains i and GreenV contains j
          check = false
    end if
  end fo
end for
return checker
```

ii) Can be colored proper

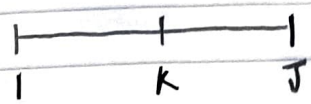


Cannot be colored proper



iii) An algorithm to determine whether a graph can be properly colored needs to check if two unique lists have a common element. The running time for this algorithm would be O(E) because we need to go through the entire adjmatrix

B)



1) $D_{ij} = Max(D_{ik}, D_{kj})$

2) $D_{ij} = Max(P_{ik}, P_{kj}$ A[m], A[n]

3) $D_{ij} = Max(D_{ik}, P_{kj},$ A[k] + A[k+1] A[k-1] + A[k])

C) m = largest number between i and k
n = largest number between k and j

Combinational: Given n items with the weights $w_1, w_2, \ldots, w_n$ and k people to carry these items find the most even distribution

Decision: Given n items weights $w_1, w_2, \ldots, w_n$ and k people to carry the items find some number w, is there a distribution where any person k_n carries at most w

This can be transfered to the bin problem because if you were to change the weights to sizes, and people to bin size the problems would be the same.