COMP9020 - Assignment 2

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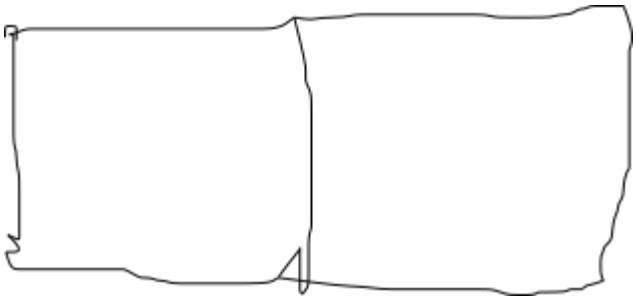
Question 1

(a) For graph G = (E, V) as follows:



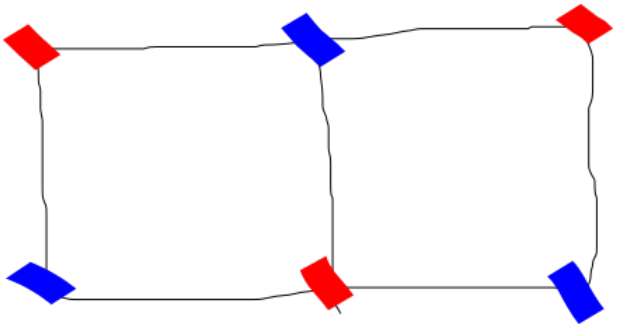
For every $e = (v, w) \in E$

$$c(v) \neq c(w)$$

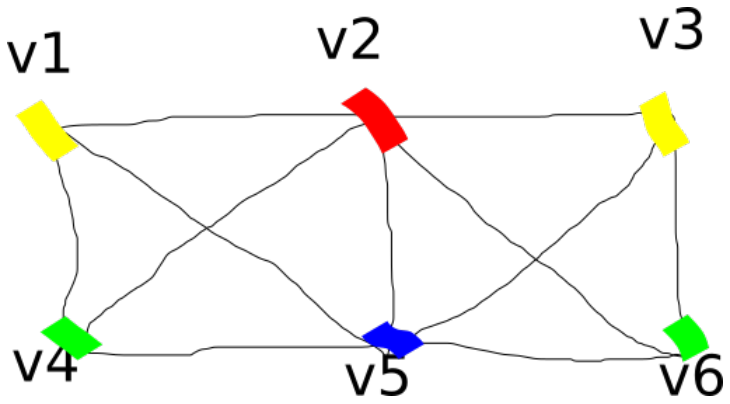
The mininum number of colors to sufficient effect such a mapping, denoted:

$$\chi(G)$$

(b) The minimum number of colors is 2, as follows:



(c) The connection of the graph changes, as follows:



Because v2 connect to v3, so they must be different colours, $c(v2) \neq c(v3)$ v2 and v3 connect to all other vertex, so other vertex must use different colours other than c(v2) and c(v3)

$$c(v1) \neq c(v2) \neq c(v3)$$

also, v1 connect to v4, so $c(v1) \neq c(v4)$, at lease we should use 4 different colors Because I can use 4 different colors as shows in graph, therefore:

$$\chi(G) = 4$$

Question 2

(a)

(b)

(c)