

cpts350 hw7

1. Let G be a color graph where each node has a color and multiple nodes can share the same color. In particular, there is a designated initial node. An ω -path is an infinite walk on G that starts from the initial.

(1). Design an algorithm that decides where there is an ω -path on which $\Box(\text{yellow} \vee \Diamond \text{blue})$ holds.

(2). Design an algorithm that decides where there is an ω -path on which $\Box \Diamond(\text{yellow} \vee \Diamond \text{blue})$ holds.

2. Let G be a color graph where each node has a color and multiple nodes can share the same color. In particular, there is a designated initial node. An ω -path is an infinite walk on G that starts from the initial. Design an algorithm to decide whether there is an ω -path on which it passes red nodes for infinitely many times and passes blue nodes for only finitely many times.

3. Let G be a color graph where each node has a color and multiple nodes can share the same color. In particular, there is a designated initial node. An ω -path is an infinite walk on G that starts from the initial. A good ω -path is one where there are infinitely many prefixes, each of which satisfies the following condition: the number of red nodes equals the number of blue nodes. Design an algorithm to decide whether there is a good ω -path.

4. Let G be a color graph where each node has a color and multiple nodes can share the same color. In particular, there is a designated initial node. An ω -path is an infinite walk on G that starts from the initial. A bad ω -path is one where there are infinitely many prefixes, each of which satisfies the following condition: the number of red nodes is a multiple of 5. Design an algorithm to decide whether there is a bad ω -path.