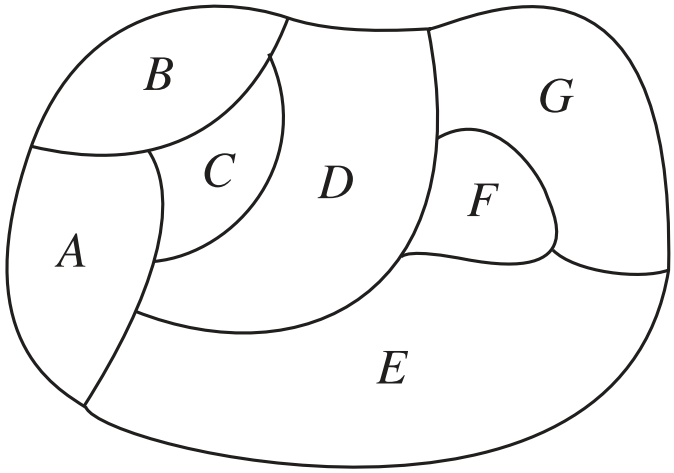
HOMEWORK 5

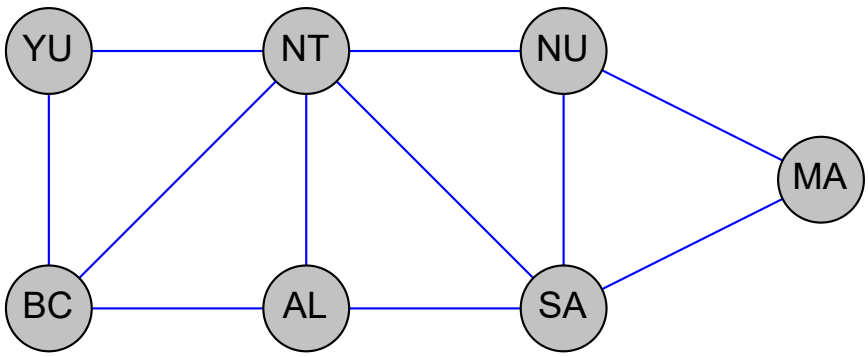
1. A map-coloring robot is assigned to color the following map. Adjacent regions must be colored a different color {R=Red, B=Blue, G=Green}.



   (a) Draw the constraint graph.

   (b) Find a solution by using backtracking search with appropriate heuristics.

2. Consider the map-coloring problem where there are 7 variables {AL, BC, MA, NT, NU, SA, YU} and their domains are {R=Red, G=Green, B=Blue}. The constraint graph is shown below.



(a) **Cross out** all values that would be eliminated by **Forward Checking**, after variable NT has just been assigned value G

AL	BC	MA	NT	NU	SA	YU
{R, G, B}	{R, G, B}	{R, G, B}	{**G**}	{R, G, B}	{R, G, B}	{R, G, B}

(b) AL and MA have been assigned values, but no constraint propagation has been done. **Cross out** all values that would be eliminated by **Arc Consistency** (AC-3)

AL	BC	MA	NT	NU	SA	YU
{**B**}	{R, G, B}	{**R**}	{R, G, B}	{R, G, B}	{R, G, B}	{R, G, B}