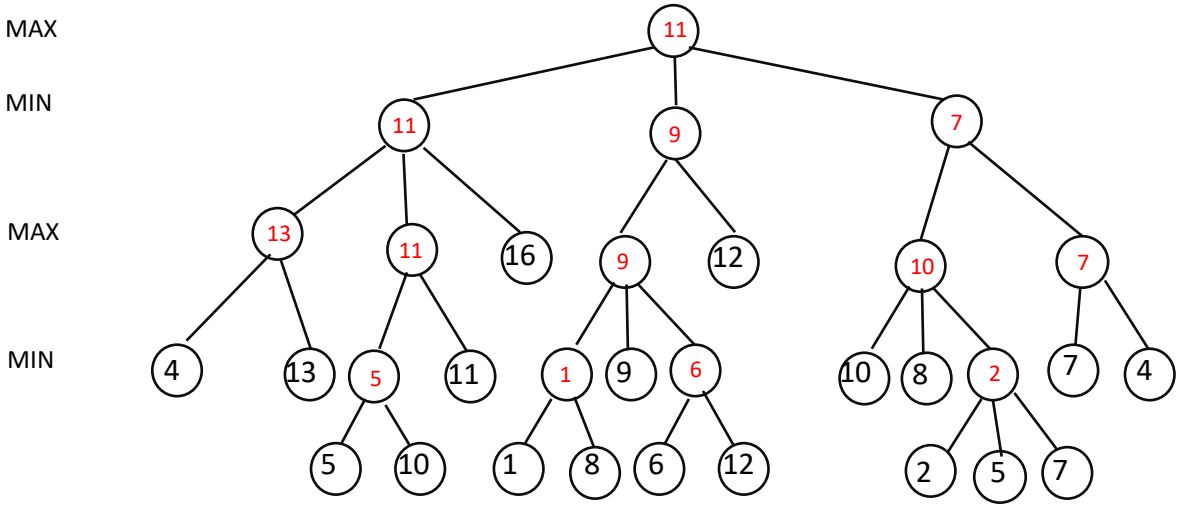
Assignment Three

Part 1: Adversarial Search

a)



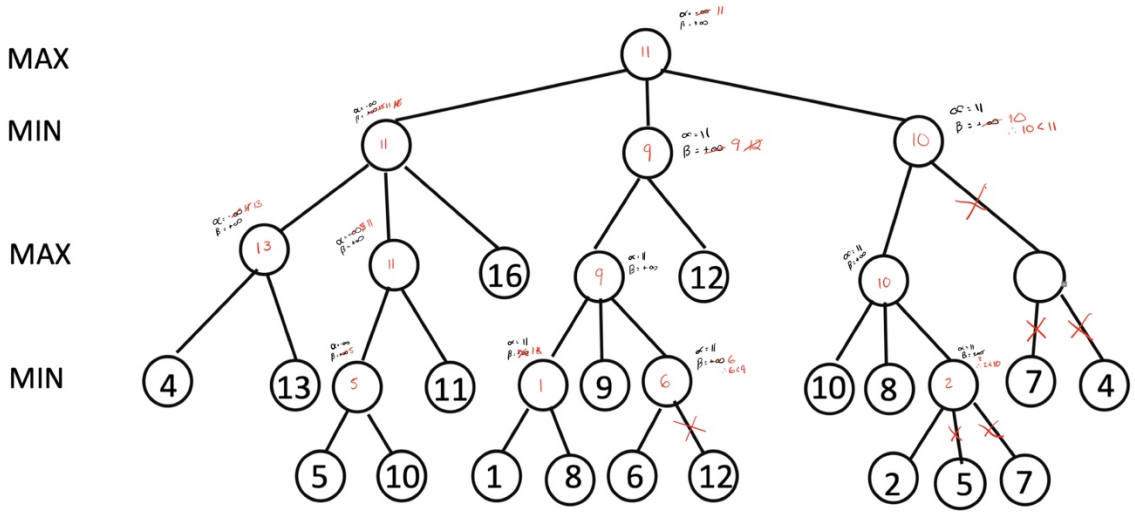

Min(5,10) = 5
Min(1,8) = 1
Min(6,12) = 6
Min(2,5,7) = 2

Max(4,13) = 13
Max(5, 11) = 11
Max(1, 9, 6) = 9
Max(10, 8 , 2) = 10
Max(7, 4) = 7

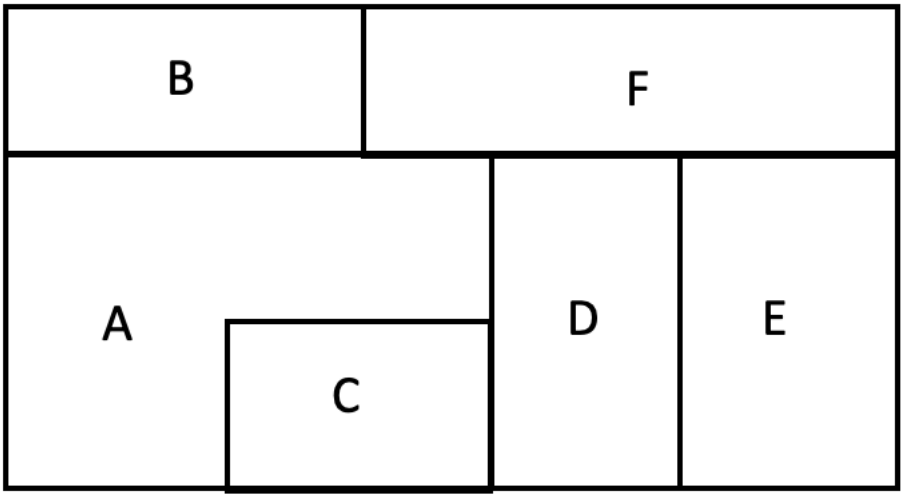
Min(13, 11, 16) = 11
Min(9, 12) = 9
Min(10, 7) = 7

Max(11, 9, 7) = 11

b)

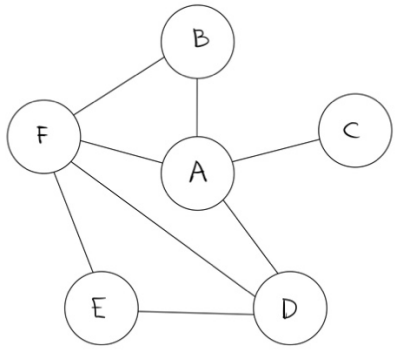



Part Two: Constraint Satisfaction Problem




b)

a) Variables: A, B, C, D, E, F
Domain = {Red, Green, Blue}
Constraints = { A!=B, A!=C, A!=D, A!=F, B!=F, C=Blue, D!=C, D!=E, D!=F, E!=F }




b)

c)

| **A** | **B** | **C** | **D** | **E** | **F** |
|---|---|---|---|---|---|
| R G B | R G B | **B** | R G B | R G B | R G B |
| R G | R G B | B | R G | R G B | R G B |
| **R** | R G B | B | R G | R G B | R G B |
| R | G B | B | **G** | R G B | G B |
| R | G B | B | G | R B | **B** |
| R | **G** | B | G | R | B |

d)

| COLOR | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| RED | | - | - | - | | - |
| GREEN | - | | - | | - | - |
| BLUE | - | - | | - | - | |

Steps:
C is assigned BLUE to remove RED and GREEN

A -> C: BLUE is assigned to C, remove BLUE from A
D -> C: BLUE is assigned to C, remove BLUE from D

A->B : ok
A->D: ok
A->F: ok
B->A: ok
D->A: ok
F->A: ok
F->E, E->F: OK

Assign A RED, remove GREEN

A->D, D->A: A is assigned RED, remove RED from D, Assign D GREEN

A->F, F->A: A is assigned RED, remove RED from F
A->B, B->A: A is assigned RED, remove RED from B

D->D, F->D: D is assigned GREEN, remove GREEN from F
Assign F BLUE

F->B, B->F: F is assigned BLUE, remove BLUE from B
Assign B GREEN

E->F, F->E: F is assigned BLUE, remove BLUE from E
E->D, D->E: D is assigned GREEN, remove GREEN from E
Assign E RED