Assignment Three

Part 1: Adversarial Search

a)

11

MAX

MIN

MAX

MIN

4

13

5

10

11

16

1

8

9

6

12

12

10

8

2

5

7

7

4

9

7

11

9

7

11

13

10

6

2

1

5

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)Diagram, schematic

Description automatically generated

Part Two: Constraint Satisfaction Problem

b)A picture containing calendar

Description automatically generated

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)Shape

Description automatically generated

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