1.

(a)

State : Start → A → C → D → B → Goal.

Path : Start → A → C → D → Goal.

(b)

State : Start → A → B → D → C → Goal

Path : Start → D → Goal.

(c)

State : Start → A → B → D → C → Goal.

Path : Start → A → C → Goal.

(d)

State : Start → D → Goal.

Path : Start → D → Goal.

(e)

State : Start → A → D → B → C → Goal.

Path : Start → A → C → Goal.

2.

Bug : the solution may be suboptimal.

Why : A^* only guarantee the node took out from the fringe is optimal. If we add a node to closed when we insert it to the fringe, we believe the successors of an optimal node are optimal, which is wrong.

3.

(1)

Variable : T_i, class i taught by which teacher.

Domain : $T_1 \in \{A, C\}$

$T_2 \in \{A\}$

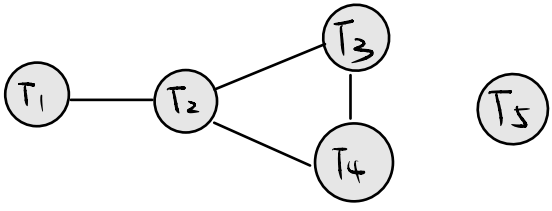
$T_3 \in \{B, C\}$

$T_4 \in \{B, C\}$

$T_5 \in \{A, B\}$

Constraint : $T_1 \neq T_2$, $T_2 \neq T_3$, $T_2 \neq T_4$, $T_3 \neq T_4$

(2)



(3)

Domain : $T_1 \in \{C\}$

$T_2 \in \{A\}$

$T_3 \in \{B, C\}$

$T_4 \in \{B, C\}$

$T_5 \in \{A, B\}$

(4)

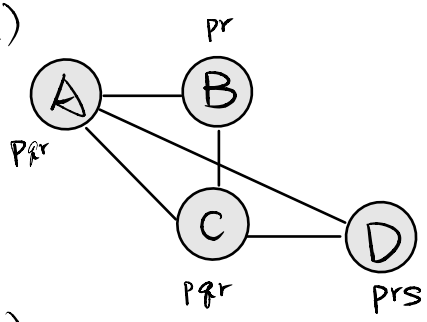
$T_1 = C$, $T_2 = A$, $T_3 = B$, $T_4 = C$, $T_5 = A$

(5)

Since there are no loop or seperated nodes, we can easily solve it by assigning root.

4.

(a)



(b)

Alice : pizza

Bob : ramen

Chris : pizza

David : ramen.

(c)

Alice : quesadillas, ramen, sushi

Bob : pizza

Chris : quesadillas, ramen

David : pizza