Lo

		Fitness	Rank
Student 1 =	011 111 100 001	= 7 =	(2)
Student 2 =	001 010 110 100	= 5 =	(4)
// 3 =	111 100 101 101	= 8 =	(1)
// 4 =	011 000 100 111	= 6 =	(3)

Crossover

Rank (1) and (2)

011 111 | 100 001
111 100 | 101 101

Rank (1) and (3)

111 100 | 101 101
011 000 | 100 111

offspring

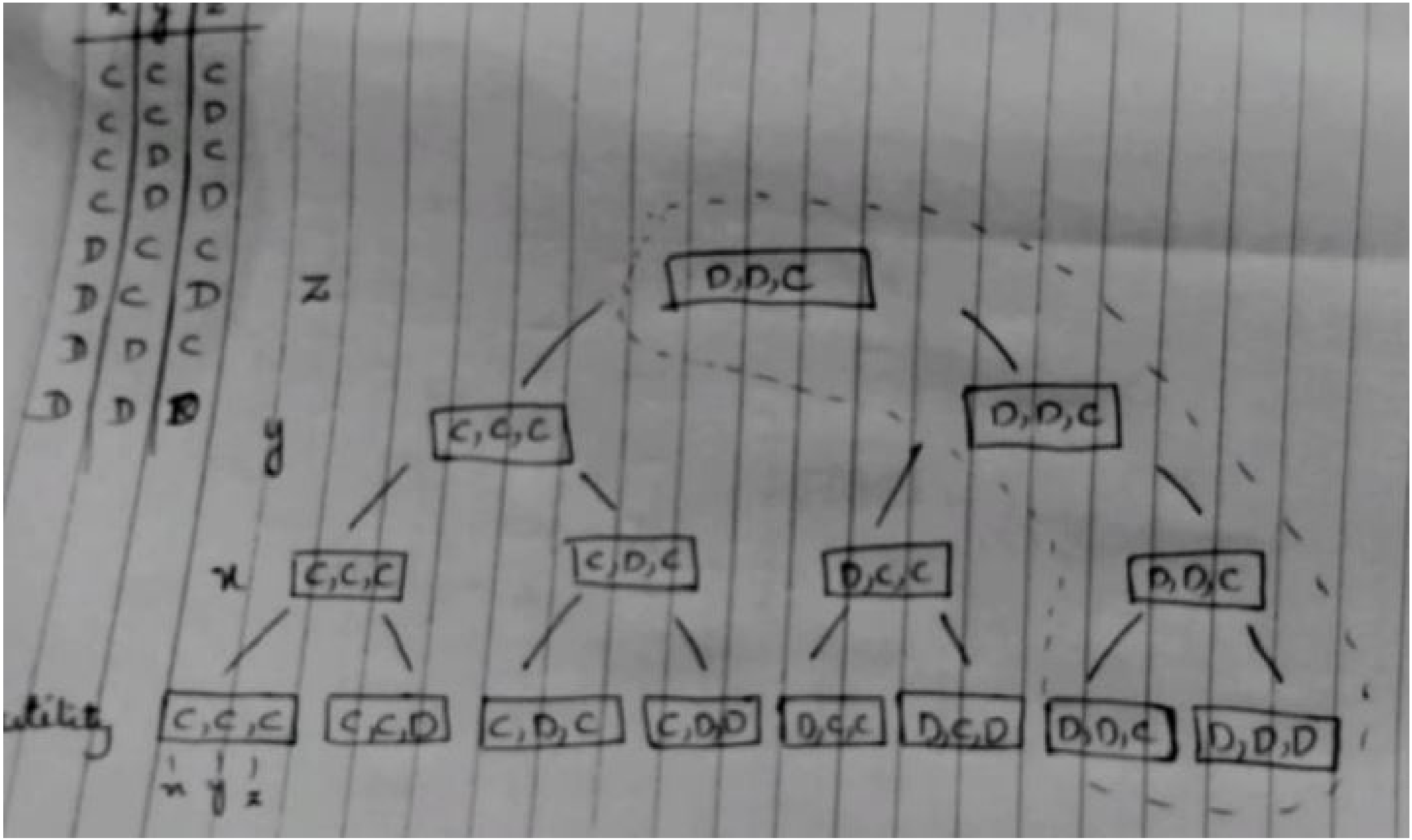
011 111 101 10(1) mutate
111 100 100 00(1) mutate

offspring

111 100 100 111
011 000 101 101

011 111 101 100 = 8 (2)
111 100 100 000 = 5 (4)
111 100 100 111 = 8 (1)
011 000 101 101 = 6 (3)

Continue to perform crossovers and Mutation.


x
y
z
C C C
C C D
C D C
C D D
D C C
D C D
D D C
D D D
D,D,C
C,C,C
D,D,C
C,C,C
C,D,C
D,C,C
D,D,C
C,C,C
C,C,D
C,D,C
C,D,D
D,C,C
D,C,D
D,D,C
D,D,D
1 1 1
x y z

Q:2 CSP

Variables

C_1 = {A, B, C}, As ~~Prof~~ Prof C can only teach class 1

Variables Domain

C_1 = {C}

C_2 = {B, C}, Prof B & C can teach C_2

C_3 = {A, B, C}, All Prof can teach C_3

C_4 = {A, B, C}

C_5 = {B, C} = only B & C can teach C_5

Binary constraints

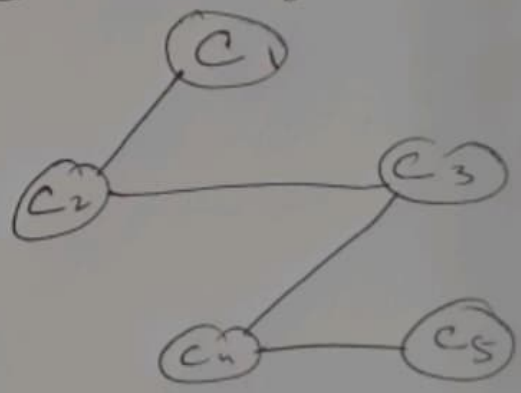
$C_1 \neq C_2$

$C_2 \neq C_3$

$C_3 \neq C_4$

$C_4 \neq C_5$

(b) constrain graph



(c) Arc consistency

Variable		Domain
C_1	=	{C}
C_2	=	{B} → Remove C from C2 Dom
C_3	=	{A, C} → Remove B from C
C_4	=	{A, B, C} ← consistent Arc
C_5	=	{A, B, C} ← consistent Arc

Qno 05 Solution:

P(positive|covid19) = 0.99

P(covid19) = 0.6

P(positive) = 0.6 * 0.99 + 0.4 *0.01 = 0.598

$$P(\text{Covid19}|\text{positive}) = \frac{P(\text{positive}|\text{covid19}) \times P(\text{covid19})}{P(\text{positive})}$$

$$P(\text{Covid19}|\text{positive}) = \frac{0.99 \times 0.6}{0.598} = 0.993$$