Q3) After lot of scribbling I reached the conclusion that since a node can have atmos 2 edges.
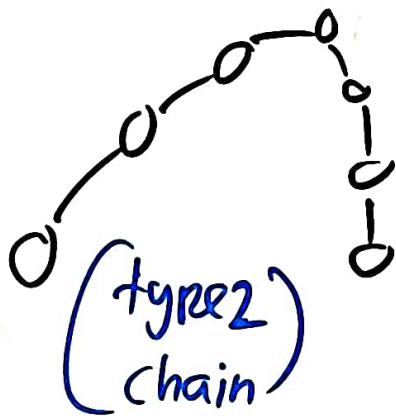

this situation is not possible.

(type1 cycle)

→ Only way a node can have atmos 2 connections is a cycle.

(type2) chain
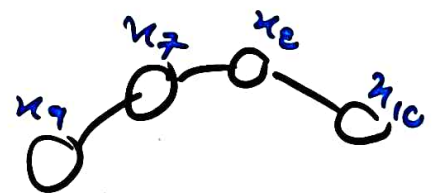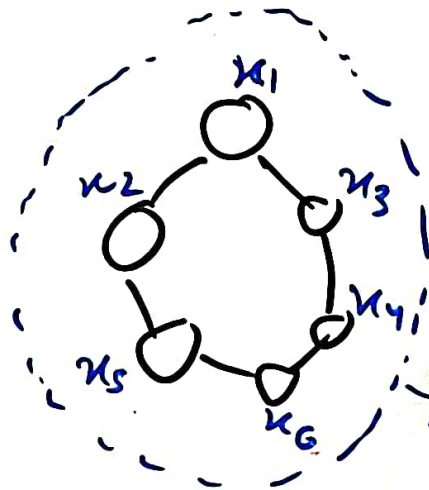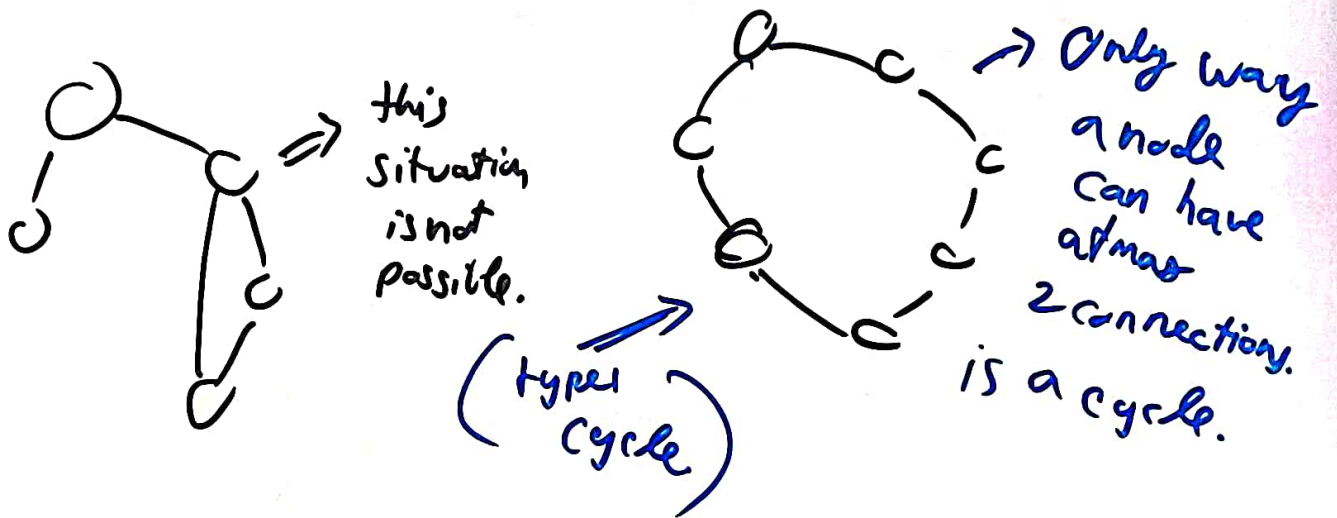
→ if you observe carefully in a circle every val is repeating 2 times.

$$V_1 \times V_2 + V_3 \times V_1$$
$$+ V_3 \times U_5 + V_2 \times V_4$$
$$+ V_4 \times V_6 + V_5 + V_7$$
$$\vdots$$

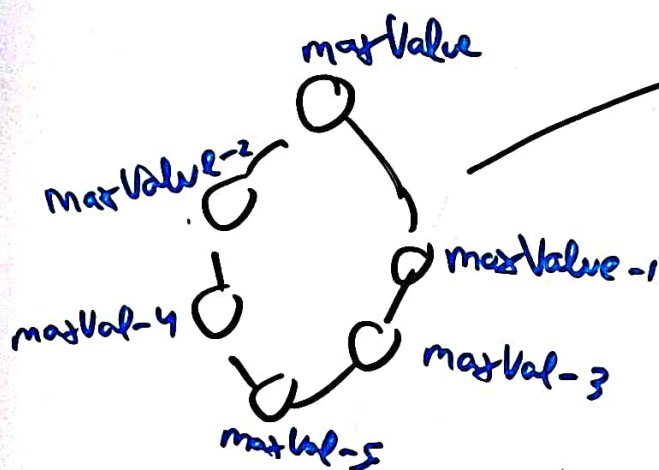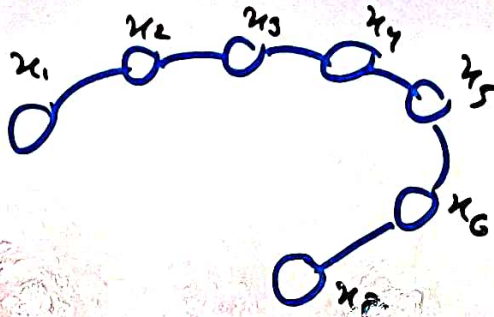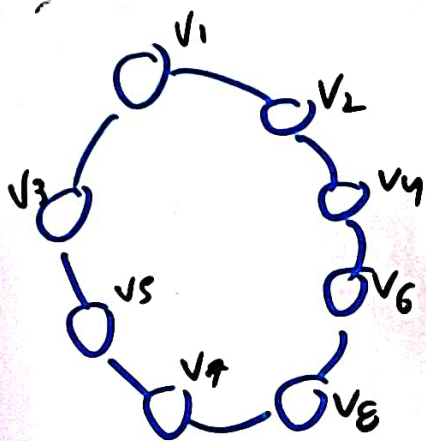$\Downarrow$
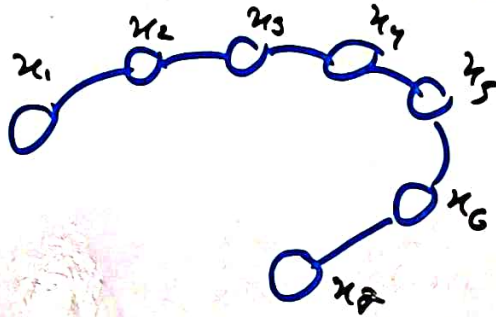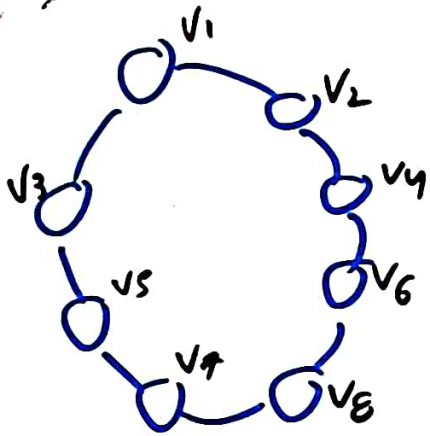
every
variable
is coming
2 times.

priority
of assigning
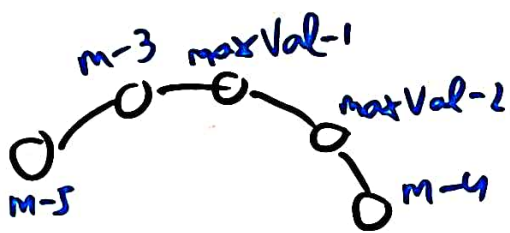max
values
goes to
cycle
first

$$\left\{ x_1 \cdot x_2 + x_2 \cdot x_3 + x_3 \cdot x_4 + x_5 \cdot x_6 + x_6 \cdot x_7 \right\}$$

$\Downarrow$

→ {only coming
once}

$\Downarrow$

then priority
to assign
chains.

V_1

V_2

V_3

V_4

V_5

V_6

V_7

V_8

x_1 x_2 x_3 x_4 x_5 x_6 x_8

maxValue

maxValue-2

maxValue-1

maxVal-4

maxVal-3

maxVal-5

→ Strategy for assigning values at the nodes. in cycle

m-3 maxVal-1

maxVal-2

M-5 m-4

→ In chain pick the middle element and keep spliting values accordingly