Problem statement:-

- We have 2 Plants
  - one takes 1 liter of water
  - other takes 0.5 liters of water
- maximum supplied water from motor is 1 liter/hr
- first plant needs water if moisture is less than 30%
- second plant " " " " " " " 5%
- we should consider watering both @ same time.
- If one plant is watered, we can not water it again before 12 Hrs

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[1] Define states:-

- motor provide water (one token means 0.5 liter) (MPW)
- motor does not provide water (MDPW)
- Plant 1 needs water (moisture less than 30%)
- Plant 2 needs water (moisture less than 5%)
- Plant 1 is watered in less than 12 HRs → W812P1
- Plant 2 is watered in less than 12 HRs → W812P2
- plant 1 is watered
- plant 2 is watered

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[2] Define Transitions:-

- motor provide to stop providing
- motor stop providing to providing
- Plant 1 from need water to is watered
- Plant 2 " " " " "
- Plant 1 from is watered to need water
- plant 2 " " " " " "
- 12 HR passed on watering plant 1
- 12 HR " " " " plant 2

1

3] Petri Net:-

→ lets use Divide and Conqure method, split each Part Alone

1] Motor Part:

- Motor Provid water (MPW)
- Motor doesn't Provide water

- Providing (P)
- Stop providing (SP)

Conditions for each Transition:

1- Providing:

- Plant 1 needs water (OR)
- Plant 2 needs water

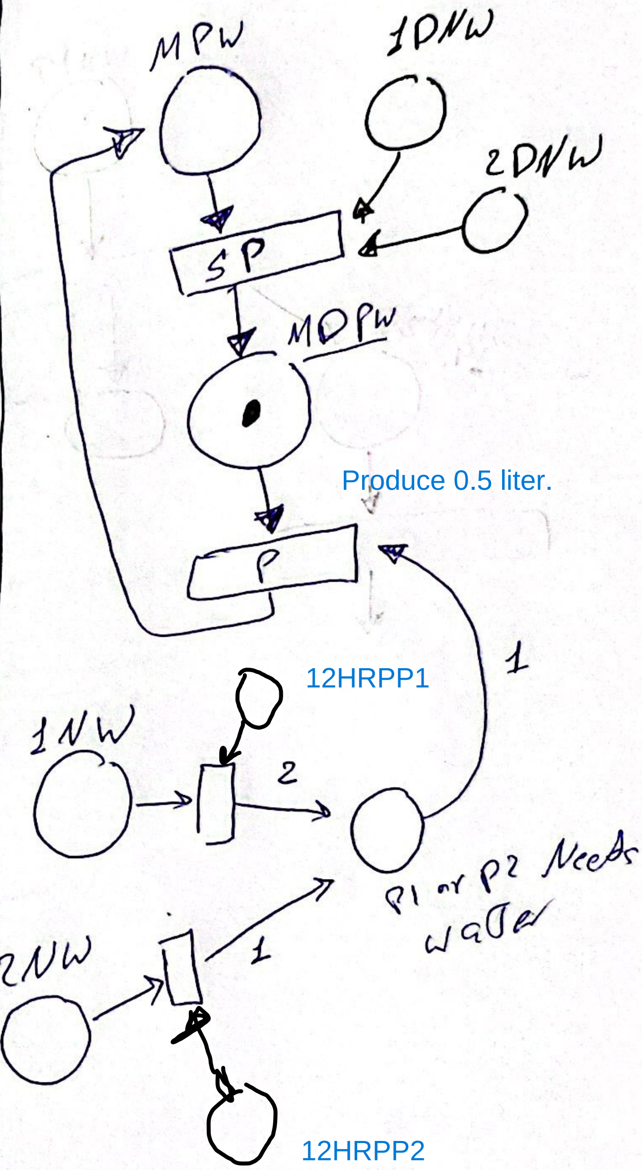
so if both needs in same time it will also work (ORing operation)

2. Stop Providing:

- Plant 1 does not need (1DNW) water (And)
- Plant 2 doesn't need water

→ so if any of them need this condition won't fire

3- Diagram:



Note: If both needs water, then the motor should provide 1.5 Liters, so if its maximum rate is 1 L/H then it should takes 1.5 hours to finish.

∵ $A+B = \overline{\bar{A}\,\bar{B}}$

∴ P1 needs water or P2 needs water = !(P1 doesn't need water and P2 doesn't need water)

2) Plant 1 Part:

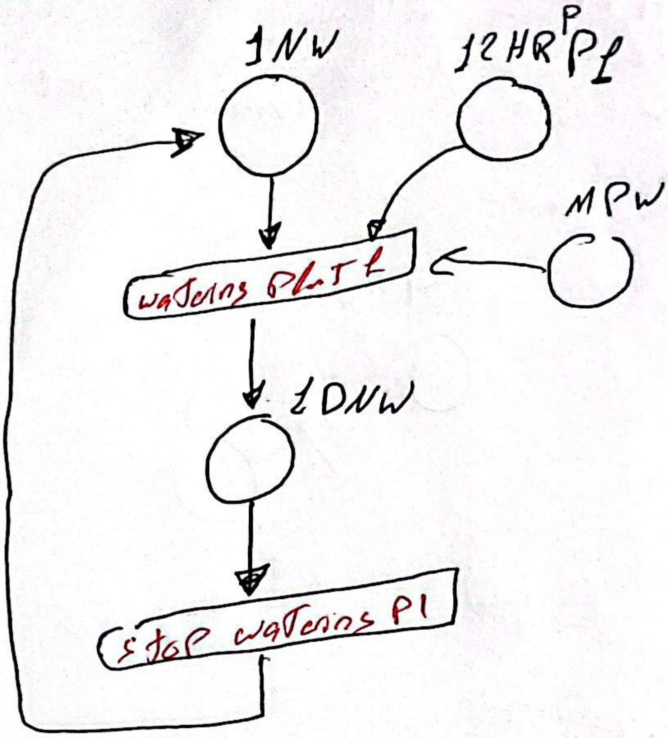
Places:

- Plant 1 needs water
- ~~plant 2 needs wat~~
- Plant 1 is watered
- 12 HR passed on watering plant 1

transitions:- (MPW)

- watering plant 1 : ↓
  - Plant 1 needs water
  - 12 HRs passed on last time to water it
- stop watering plant 1:
  - Plant 1 is watered

Diagrams



12 HRPP1

12 Hours have passed on watering plant 1

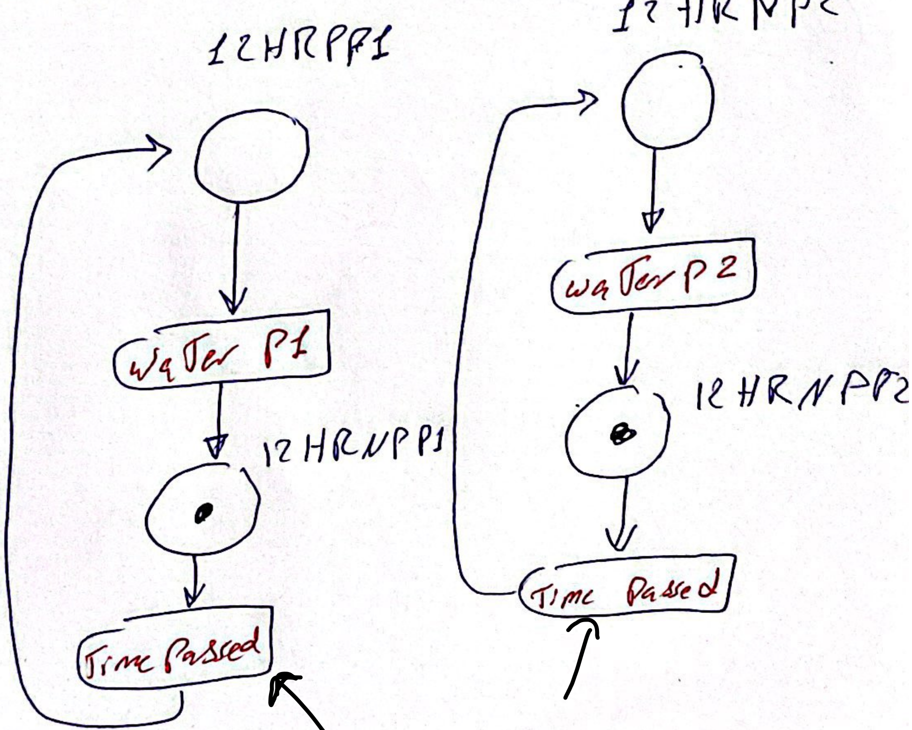
3) 12 HRs

- 12 HR PP1
- 12 HR NP P1
- 12 HR P P2
- 12 HR N P P2

Passing P1

passing P2

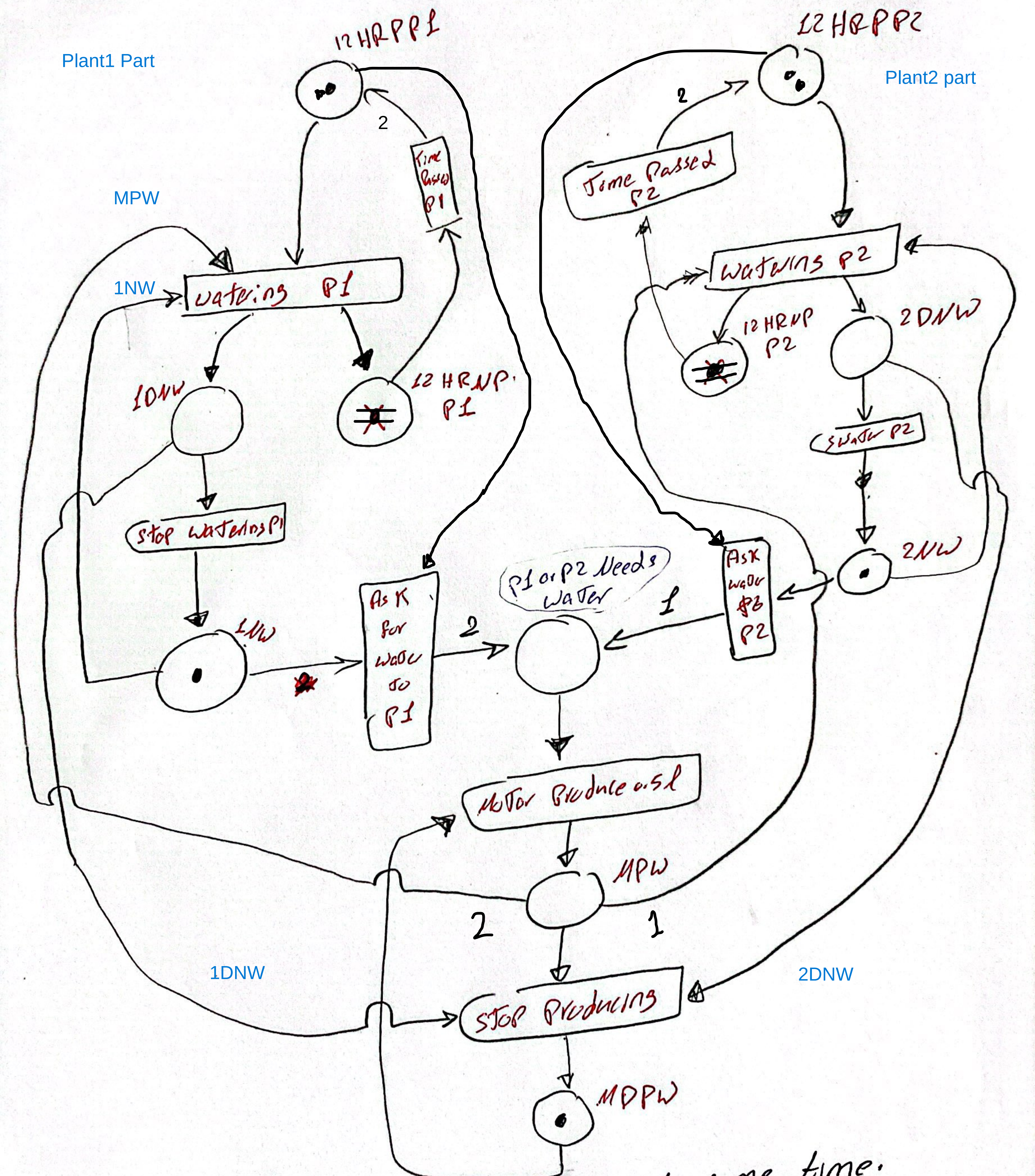
condition on time



here should be something like timer to tell wethere the time has passed or not.

Problem with whole Petri Networks

please look at last page before considering the diagrams to understand acrynoms.



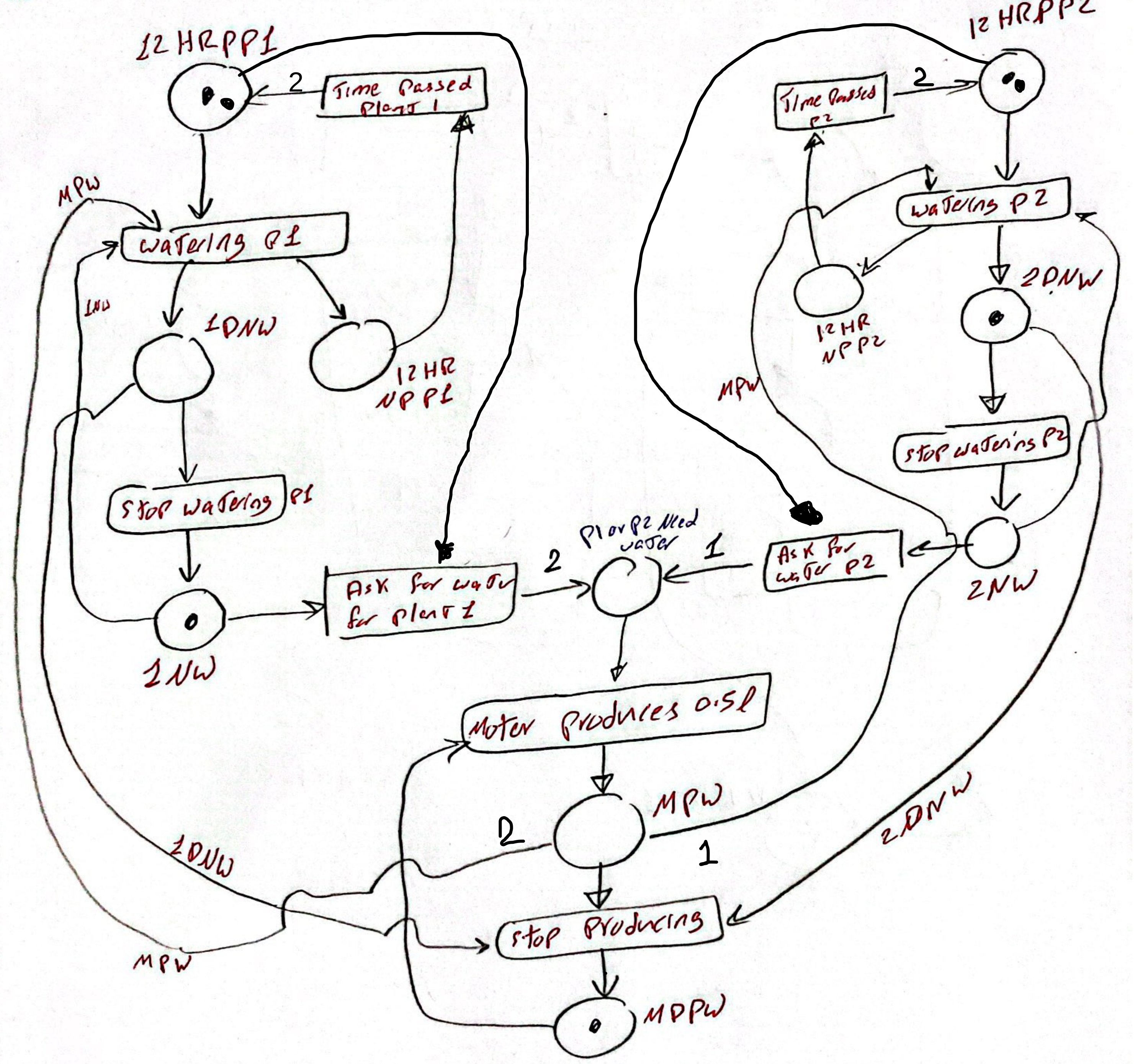
scenario that both start need water at same time.

P = {12HRPP1, 12HRNPP2, 1DNW, 1NW, P1ORP2NEEDWTR, MPW, MDPW, 12HRPP2 12HRNPP2, 2DNW, 2NW}

M0 = { 2, 0, 0, 1, 0, 0, 1, 2, 0, 0, 1}

Problem with whole Petrinetwork:

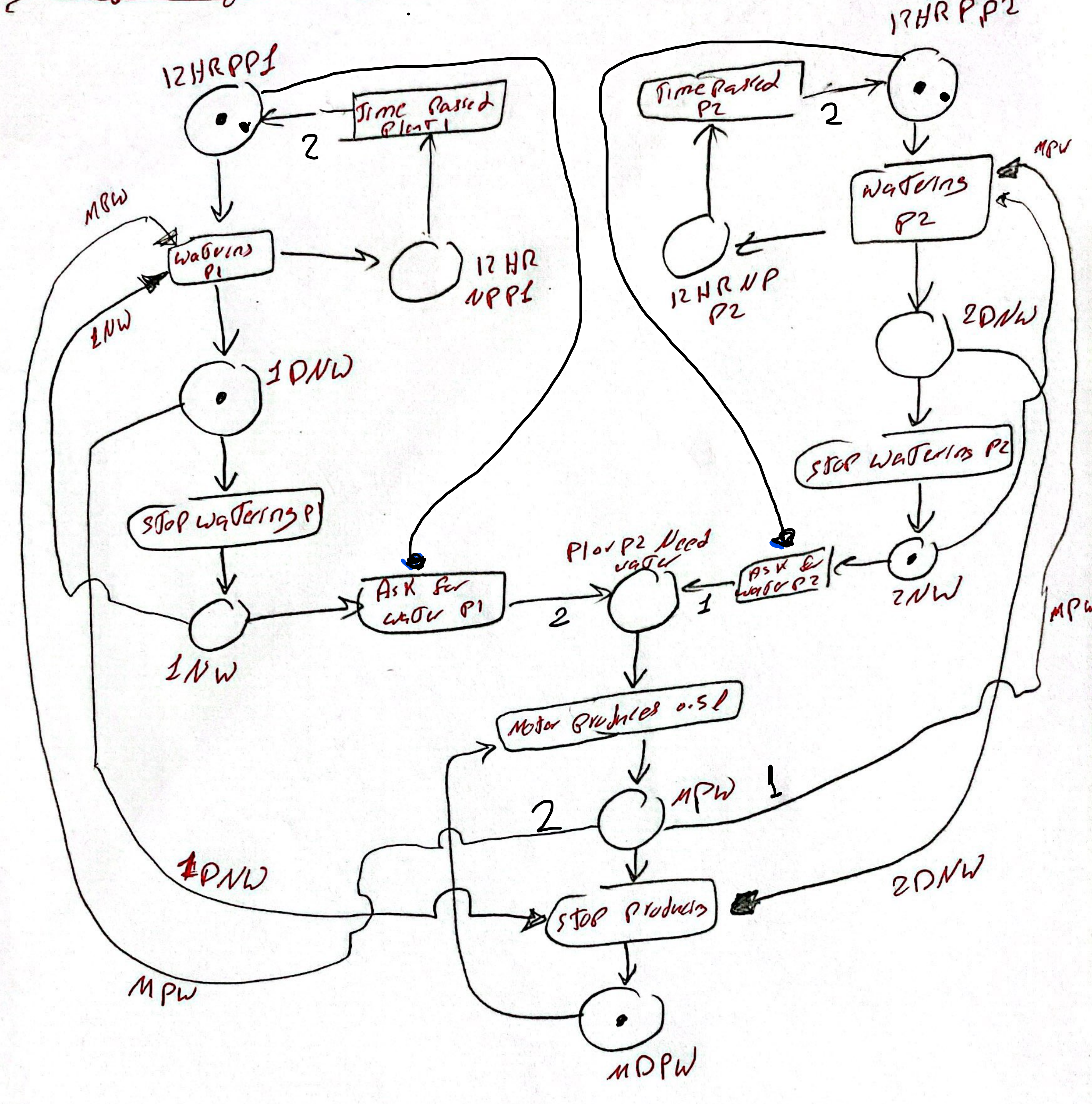
[2] scenario that P1 only needs water:-



P = {12HRPP1, 12HRNPP2, 1DNW, 1NW, P1ORP2NEEDWTR, MPW, MDPW, 12HRPP2 12HRNPP2, 2DNW, 2NW}

M0 = {2, 0, 0, 1, 0, 0, 1, 2, 0, 1, 0}

[3] scenario that P2 only needs water:-



P = {12HRPP1, 12HRNPP2, 1DNW, 1NW, P1ORP2NEEDWTR, MPW, MDPW, 12HRPP2 12HRNPP2, 2DNW, 2NW}

M0 = { 2, 0, 1, 0, 0, 0, 1, 2, 0, 0, 1}

Acrynom definitions:-

1. 12HRPP1: 12 Hours passed on watering plant 1
2. 12HRPP2: " " " " " " 2
3. 1DNW: Plant 1 doesn't need water
4. 2DNW: " 2 " " "
5. 1NW: plant 1 Needs water
6. 2NW: " " 2 " "
7. MPW: Motor produces water
8. MDPW: Motor does not produce water
9. 12HRNPP1: 12 Hours has not passed on watering P1
10. 12HRNPP2: " " " " " " " plant 2
11. P1: Plant 1
12. P2: Plant 2