TUTORIAL - 5

Q.1> Suppose there are two traffic lights (each has red, green and yellow lights) at a road junction. Model the behavior of these two lights using Petri Nets.

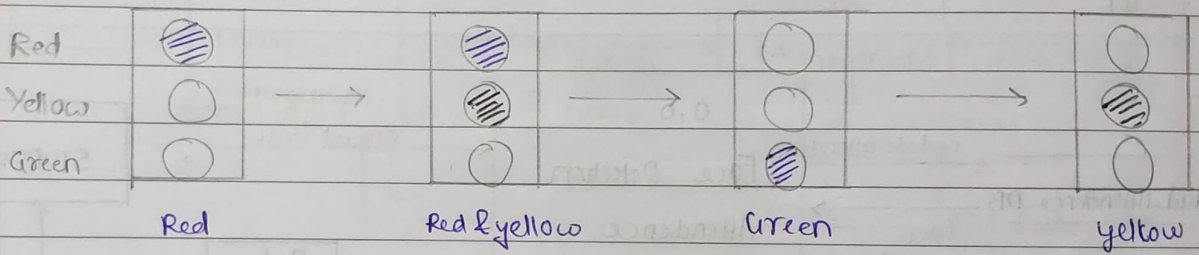
Note that characteristics of the combined system (of two lights) are:

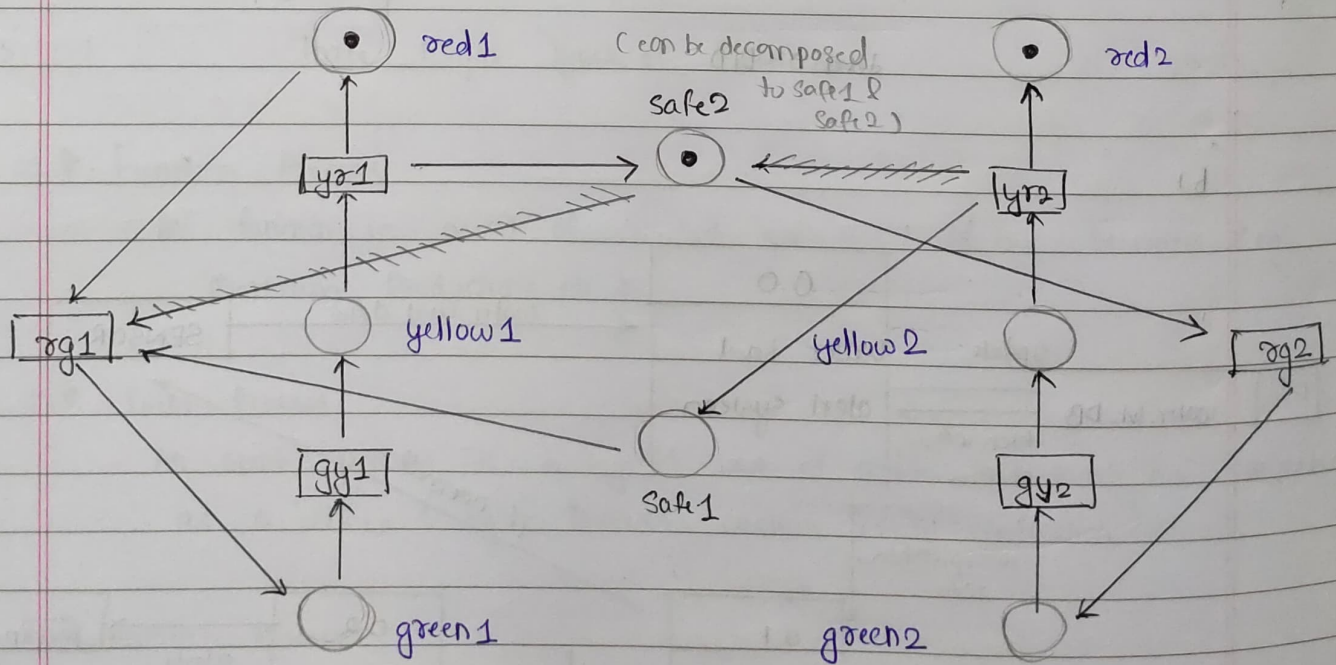
- they are mutually exclusive
- they should alternate.

Hint: they are not allowed to signal green at the same time.

A.1>

Modelling a Traffic Light



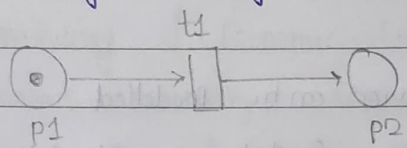


Two Safe Traffic Lights Petri Net

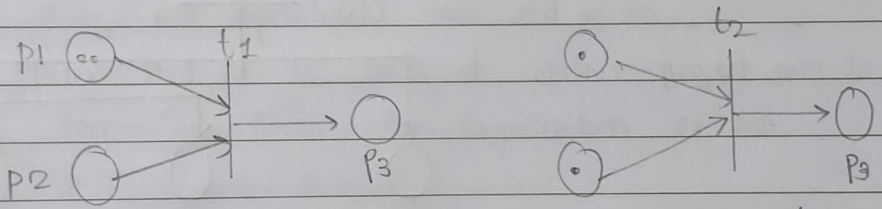
Q3.) Describe and define Petri Nets. Also mention advantages and applications.

A.3.)

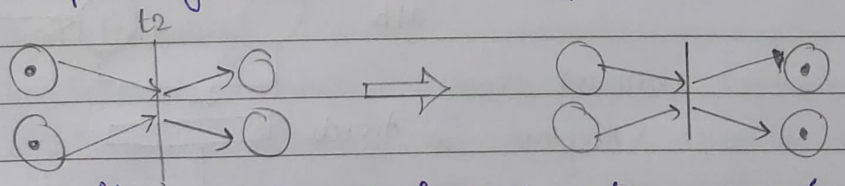
① A Petri Net is a network composed of places (○) and transitions (▯). Connections are directed and between a place and a transition or transition and a place (Eg: between "p1 & t1" or "t1 & p2"). Tokens (•) are dynamic objects.



② The state of petrinet is determined by distribution of tokens over the places. Eg: state as (1,0) for (p1, p2).
Transitions are active if each input places contain tokens.



③ An enabled transition may fire.
Firing corresponds to consuming tokens from input places and producing token's to output places.



Firing is Atomic (only one fires at a time, even if more than one is enabled).

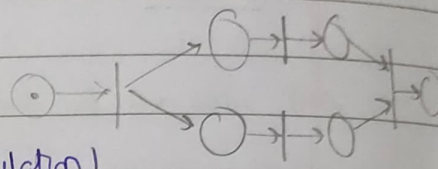
Advantages of Petri Nets

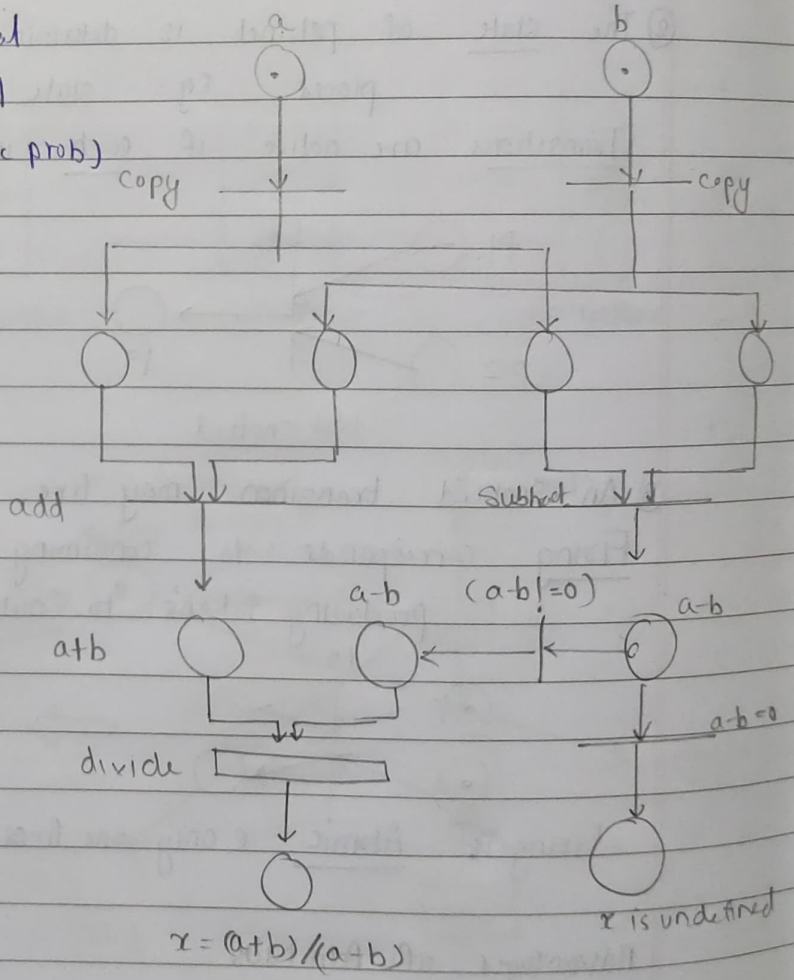
① Petri Net make it easier to understand overall system they represent, because of their graphical & precise nature of presentation.
② Deadlock and starvation can easily be found using Petri Net.
③ Petri Nets are equally suited for representation of hardware & software system

④ Petri nets helps to specify systems that contain parallel or concurrent activities.

Applications of Petri Net

① Representing State machines
② Formal Languages
③ Parallelism Behavior can be modelled.
④ Data Flow (flow of data via ~~etc~~ calculation)
⑤ Communication Protocol
⑥ Synchronization control (mutex, Read write sync prob)





Q.2> Explain the following categories of feasibility study with an example

A.2> As name suggest, feasibility study is the feasibility analysis or it is a measure of the software product in terms of how much beneficial product development will be for the organization in a practical point of view.

1.> Financial Feasibility / Economic Feasibility [Most Imp]

① In Economic Feasibility, cost & benefit of project is analyzed.

② Means under this feasibility study, a detailed analysis is carried out, what will be cost of project for development which includes all required cost for final development like hardware and software resources required, design and development cost, and operational cost and so on.

[COST-Benifit Analysis]

③ After that it is analyzed whether project will be beneficial in terms of finance for organization or not.

Eg: ① Is it under Budget?

② How much economic advantages we can get from it for our organisation.

③ You check advantages and ~~dist~~ disadvantages of project from economic point of view

2.> Technical Feasibility

① In Technical Feasibility current Resources hardware software along with required technology are analyzed / assessed to develop project.

② This technical feasibility study gives report whether there exist correct required resources and technologies which will be used for project development.

③ Along with this, feasibility study also analyzes technical skills and capabilities of technical team, existing technology can be used or not, maintenance and upgradation is easy or not for chosen technology etc.

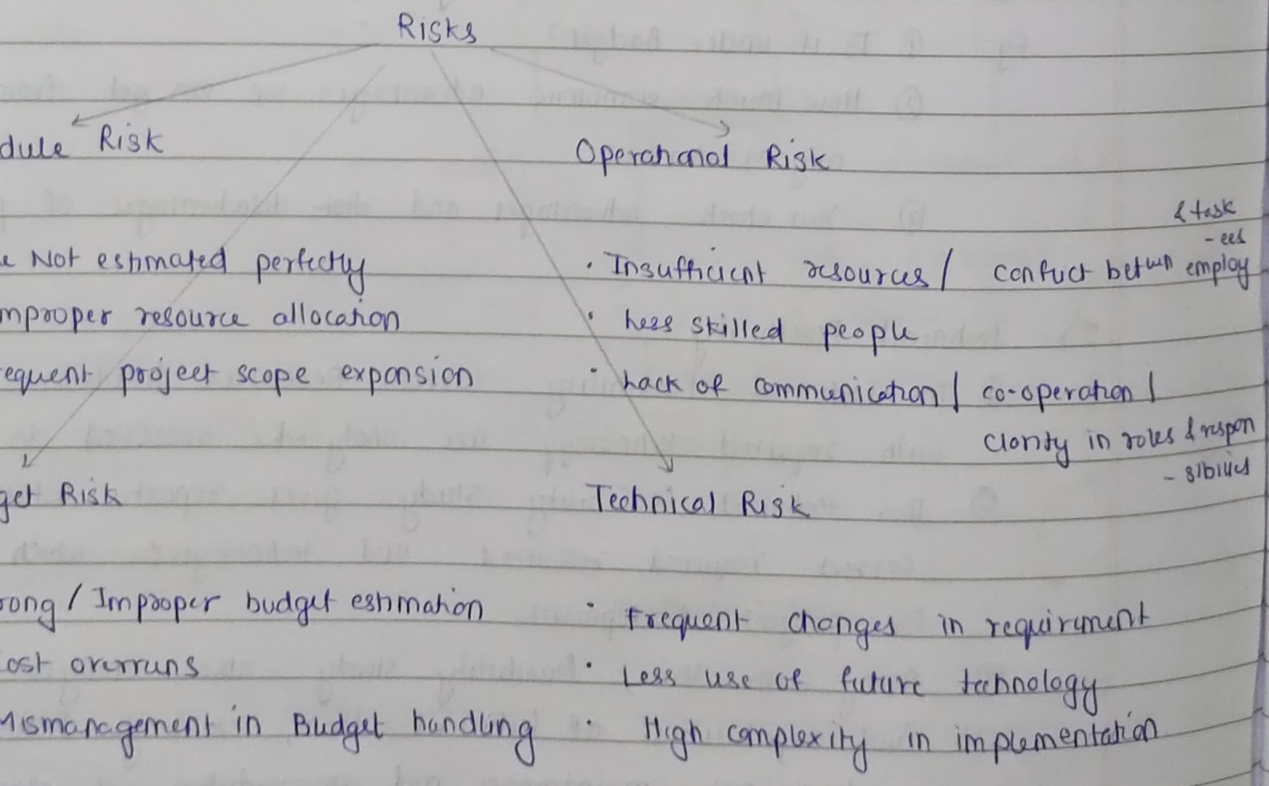
c.) Resource and Time feasibility

① In Schedule Feasibility study mainly timelines / deadlines is analyzed for proposed project which includes how many times teams will take to complete final project which has a great impact on the organization as purpose of project may fail, if it can't be completed on time.

② The project management must assess the availability of resources for the project. (Office/Tech/Subscriptions)

d.) Risk feasibility

① This is the risk of whether your engineers will be able to build what you are looking to implement in the given timeframe, with the combined skills of the team, and within the limitations of the technology being utilized.



e) Social / Legal feasibility

① In Legal feasibility study, project is analyzed from legal point of view.

② This includes
- Analyzing barriers of legal implementation of project
- Data protection Acts
- Social media Laws.
- Project Certificate
- License
- Copyright

③ In short, It is study to know if proposed project conform legal and ethical requirement.

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