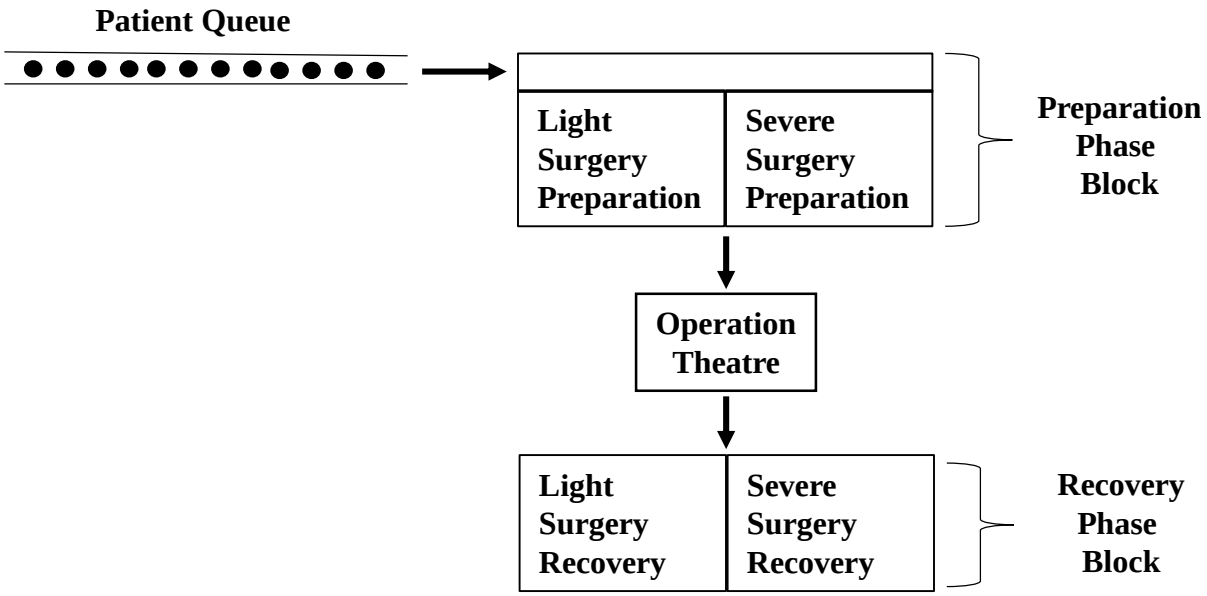
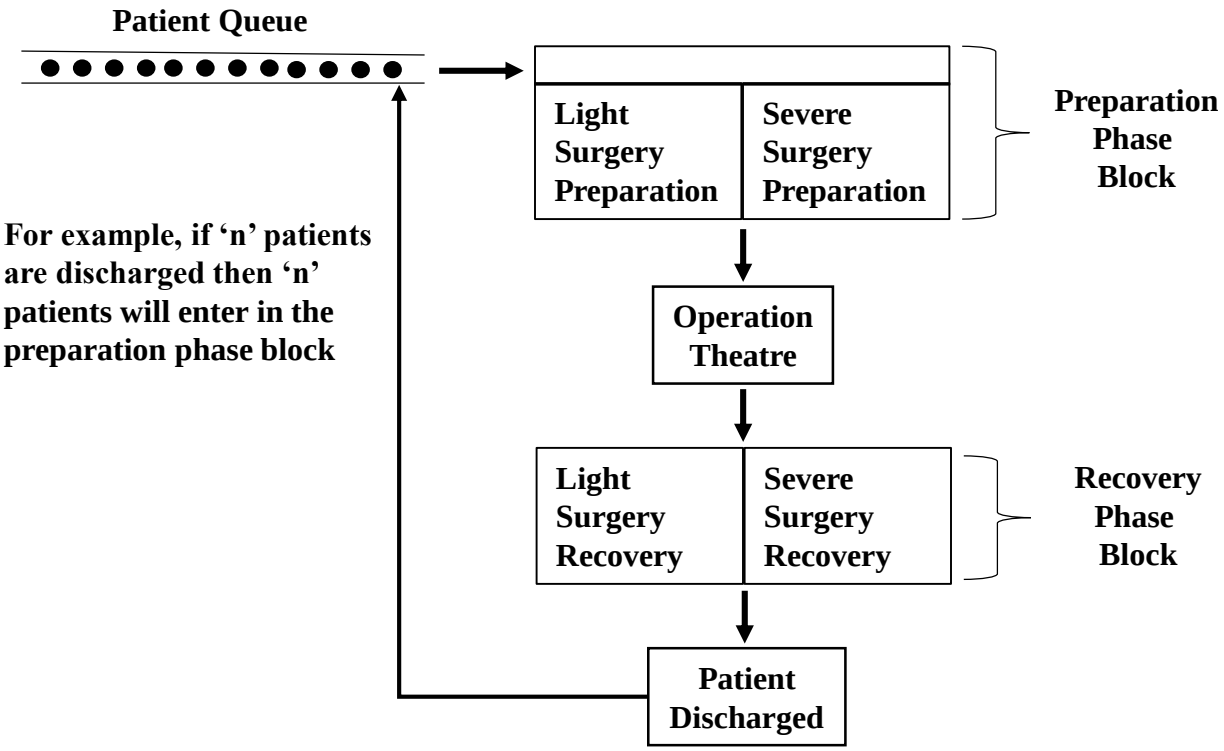
Exercise 1 - General set up

Problem 1

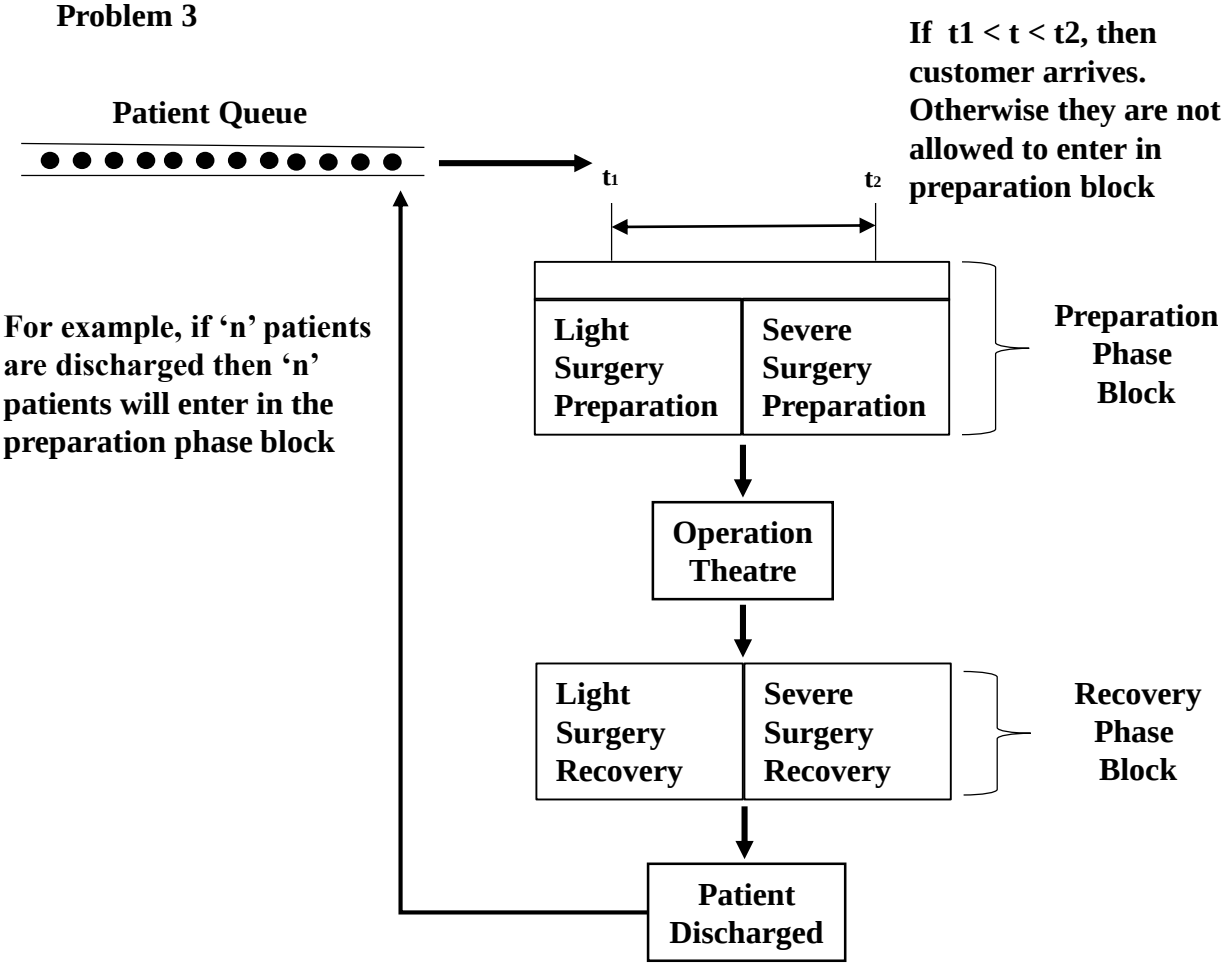


Problem 2



For example, if 'n' patients are discharged then 'n' patients will enter in the preparation phase block

Problem 3



Problem 4

While considering problem 1, the following process will be needed to run surgery facilities in the hospital.

Preparation process

The process contain initial phase for surgery. Patients will come in the preparation phase for their surgery and will be discriminated on the basis of the level of surgery i.e. light or severe. They will be given initial preparatory cure so that they become ready for the next process of operation. Initially there are no limitations in the preparation process. Any number of patients can arrive at the preparation block and at any time without any dependency on anything for their treatment.

Operation Theatre process

Those patients which were prepared in the initial phase for the surgery are brought in the operation theatre and surgery is being done. For now we are assuming that the surgery will take uniform time for both the light and severe surgery patients as they were prepared for that in the initial process

Recovery Process

This step is made for the post operation activity. In other words, patients are being kept under observation after the surgery process in order to cure possible complications after the surgery. The recovery block similar to preparation block is divided into two block i.e. light surgery recovery and the severe surgery recovery.

Problem 5

The fact of the limited capacity in the recovery room will not impact the preparation phase as according to initial condition there is an infinite capacity of patients who can arrive and get their preparation done but this event will impact further processes of surgery and recovery.

The recovery immediately after the surgery is compulsory and if there is a limited space in the recovery block, then patients cannot be sent to the surgery room until there is enough space in the recovery room for the patients. So, operation theatre will only be open for surgery if there is space available for the patients in the recovery room.

Problem 6

Now if there if there is a finite capacity in the preparatory phase then there exist two possible situation. The first situation is that the finite preparatory space is proportional to the recovery space or it is greater than the recovery space. There is no logical reason for having the preparatory space lesser than the recovery space because the recovery block will then definitely be non – utilized completely at any point of time.

So, if the space in preparatory phase is proportional to the recovery space then each patient who has been prepared for the surgery can be sent instantly after the preparation as there will always be space available for the recovery of that patient. But on the other hand, if the preparatory space is greater than the recovery space, then patient should have to wait for the possible space in the recovery room before going into the surgery.