

# CHAPTER 8

## SCHEDULING RESOURCES & COST

### # SCHEDULE :

Def — "Arrangements and planning to take place at a particular time."

### # RESOURCE :

Def — "An action or strategy which may be adopted in adverse circumstances."

### # RESOURCE SCHEDULE :

Def — "The set of actions and methodology used by organizations to efficiently assign the resource they have to jobs, tasks or projects they need to complete."

### # RESOURCE SCHEDULING PROBLEM :

A project manager listed the following constraints questions about the Resource scheduling as;

- (i) AVAILABILITY : will the assigned labor & Equipment be adequate & available to deal with the project ?
- (ii) OUTSOURCE : will outside contractor will be use ?
- (iii) FLEXIBILITY : How much flexibility do we have in using resources ?
- (iv) TIME FRAME : Is the original deadline realistic ?

## # RESOURCE SMOOTHING:

Def - "Complete the work by the required date while avoiding peaks & troughs of resource demand."

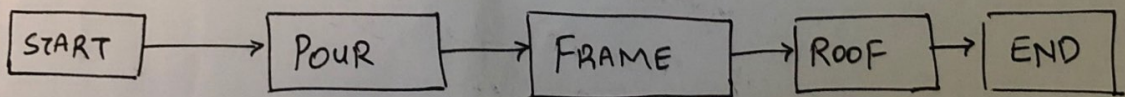
(Time limited Resource Scheduling)

## # RESOURCE LEVELING:

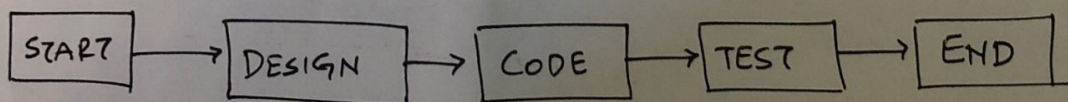
Def - "this is a Resource limited scheduling without the time-constraint."

## \* TECHNICAL CONSTRAINTS:

some of the projects have the Technical Constraint which takes the influence on the resource scheduling as,

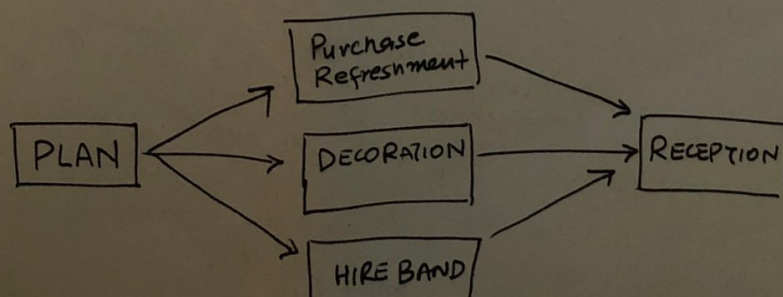


(a)



## \* RESOURCE CONSTRAINTS:

The absence or shortage of resources can drastically alter technical Constraints





## # TYPES OF RESOURCE CONSTRAINTS :

- (i) PEOPLE
- (ii) MATERIAL
- (iii) EQUIPMENT

### (i) - PEOPLE :

This is the most obvious and important project resource. Human resource usually classified by skills bring to the project.

e.g; Programmer  
 Mechanical Engineer  
 Welder  
 Inspector  
 Marketing director

### (ii) MATERIAL :

Project material cover a large spectrum: e.g;

- Chemical for Science project
- Concrete for Construction project
- Survey Data for Research project

Material availability & shortage have been blamed for the delay of many projects, when it is known that a lack of availability of material is important & probable, material should be included in the project network plan and schedule.

(iii) EQUIPMENT :

Equipment is usually presented by Type, Size & Quantity. In some cases equipment can be interchange-to improve schedules.

# CLASSIFICATION OF SCHEDULING PROBLEM:

Most of the scheduling methods available today require the project manager to classify the project as;

(i) TIME-CONSTRAIN PROJECT

(ii) RESOURCE-CONSTRAIN PROJECT

(i) TIME-CONSTRAINED PROJECT:

Def - "Time-Constrained project is one that must be completed by an imposed date."

If required sources can be added to ensure the project is completed by a specific date. Time is a critical-factor.

(ii) - RESOURCE-CONSTRAINED PROJECT:

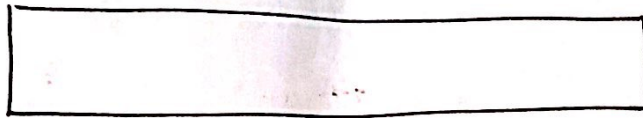
Def - "is one that assumes the level of resources available cannot be exceeded."

If the resources are inadequate, it will be acceptable to delay the project, but as little as possible.

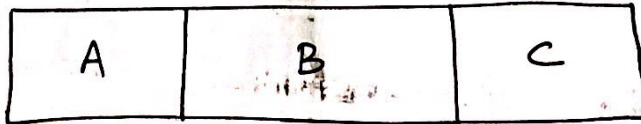
# SPLITTING ACTIVITIES :

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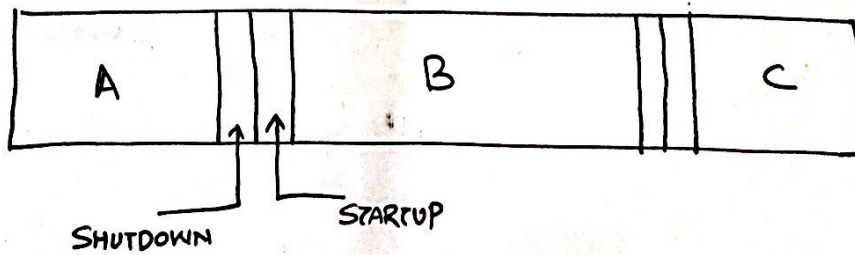
Def - " Splitting activities splits the continuous work included in an activity by interrupting the work & sending the resources to another activity for a period of time and then having the resource resume work on the original activity. "



Activity duration w/o splitting



Activity duration split into THREE segments



Activity duration split with Shutdown & Start-up