



SNS COLLEGE OF TECHNOLOGY

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An Autonomous Institution

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DEPARTMENT CIVIL ENGINEERING

19CEB302 – CONSTRUCTION MANAGEMENT

III YEAR / V SEMESTER

Unit 3 : CONSTRUCTION SCHEDULING

Topic 3 : Construction Scheduling





Construction Scheduling



Construction scheduling is intended to match the

- Resources of equipment
- Materials
- labor with project work tasks over time.

Good scheduling can eliminate problems due to

- Production bottlenecks
- Facilitate the timely procurement of necessary materials

Poor scheduling can result in

- Considerable waste as laborers and equipment wait for the availability of needed resources or the completion of preceding tasks.



Construction Scheduling

- Many owners require detailed construction schedules to be submitted by contractors as a means of monitoring the work progress.
- The actual work performed is commonly compared to the schedule to determine if construction is proceeding satisfactorily.
- After the completion of construction, similar comparisons between the planned schedule and the actual accomplishments may be performed to allocate the liability for project delays due to changes requested by the owner, worker strikes or other unforeseen circumstances.



Construction Scheduling



Critical path method (CPM) is a technique where you identify tasks that are necessary for project completion and determine scheduling flexibilities. A critical path in project management is the longest sequence of activities that must be finished on time in order for the entire project to be complete.

Program Evaluation and Review Technique (PERT) is a method used to examine the tasks in a schedule and determine a Critical Path Method variation (CPM). It analyzes the time required to complete each task and its associated dependencies to determine the minimum time to complete a project.



Construction Scheduling



Program Evaluation Review Technique (PERT) is a project management planning tool used to calculate the amount of time it will take to realistically finish a project. PERT charts are used to plan tasks within a project — making it easier to schedule and coordinate team members.



Planning for safety provisions



BASIS FOR COMPARISON	CPM	PERT
Meaning	CPM is a statistical technique of project management that manages well defined activities of a project.	PERT is a project management technique, used to manage uncertain activities of a project.
What is it?	A method to control cost and time.	A technique of planning and control of time.
Orientation	Activity-oriented	Event-oriented
Evolution	Evolved as Construction project	Evolved as Research & Development project
Model	Deterministic Model	Probabilistic Model
Focuses on	Time-cost trade-off	Time
Estimates	One time estimate	Three time estimates
Appropriate for	Reasonable time estimate	High precision time estimate
Management of	Predictable activities	Unpredictable Activities
Nature of jobs	Repetitive nature	Non-repetitive nature
Critical and Non-critical activities	Differentiated	No differentiation
Suitable for	Non-research projects like civil construction, ship building etc.	Research and Development Project
Crashing concept	Applicable	Not Applicable



Scheduling in Project Management



- Scheduling in project management is the listing of activities, deliverables, and milestones within a project.
- A schedule also usually includes a planned start and finish date, duration, and resources assigned to each activity.
- Effective project scheduling is a critical component of successful time management.

PROCESS

- Creating and developing the Work Breakdown Structure (WBS)
- Defining work packages and major project deliverables
- Creating the tasks list
- Assigning relationships to the tasks
- Determining and assigning resources
- Analyzing the critical path of the project



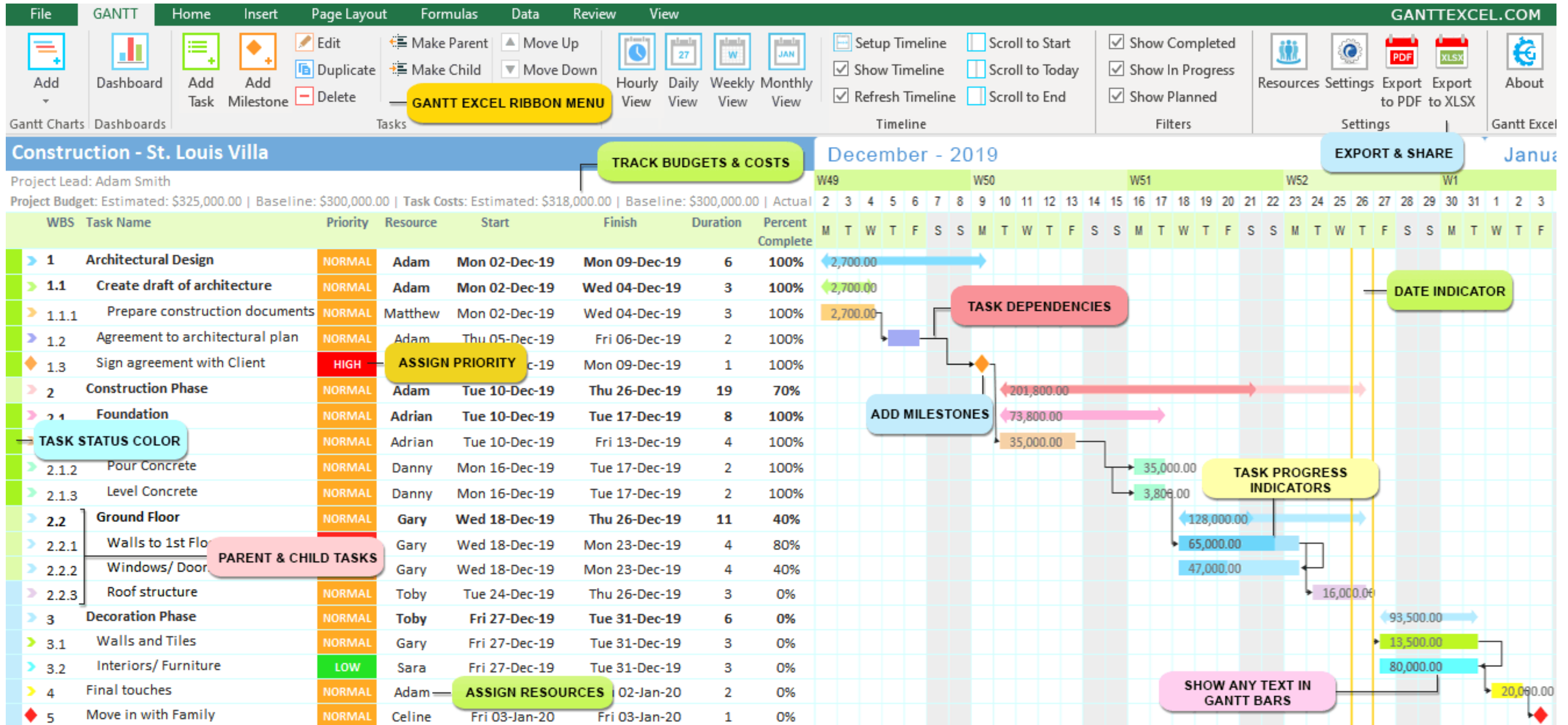
Benefits of project scheduling



- Assists with tracking, reporting, and communicating progress
- Ensures everyone is on the same page with tasks, dependences and deadlines
- Highlights issues and concerns, such as a lack of resources
- Identifies task relationships
- Monitors progress and identify issues early



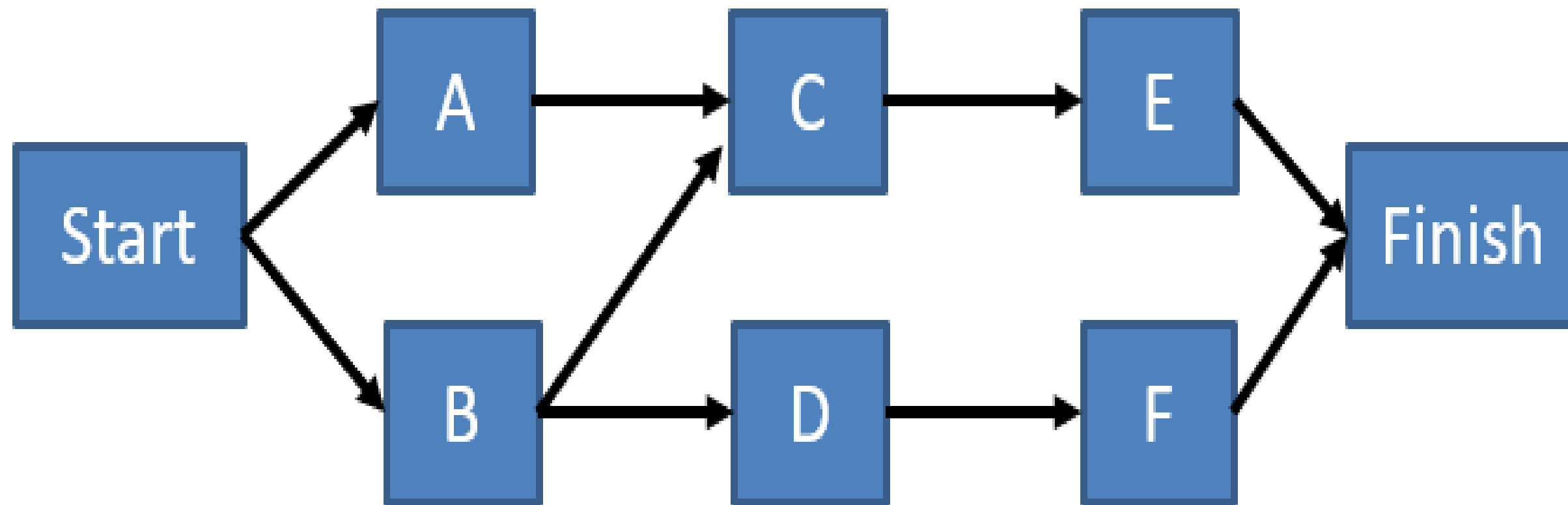
Scheduling in Project Management





Network

A network is a graphical and logical model or plan which lists out the sequence of various operations which are required to be performed for the final achievement of the project objectives.





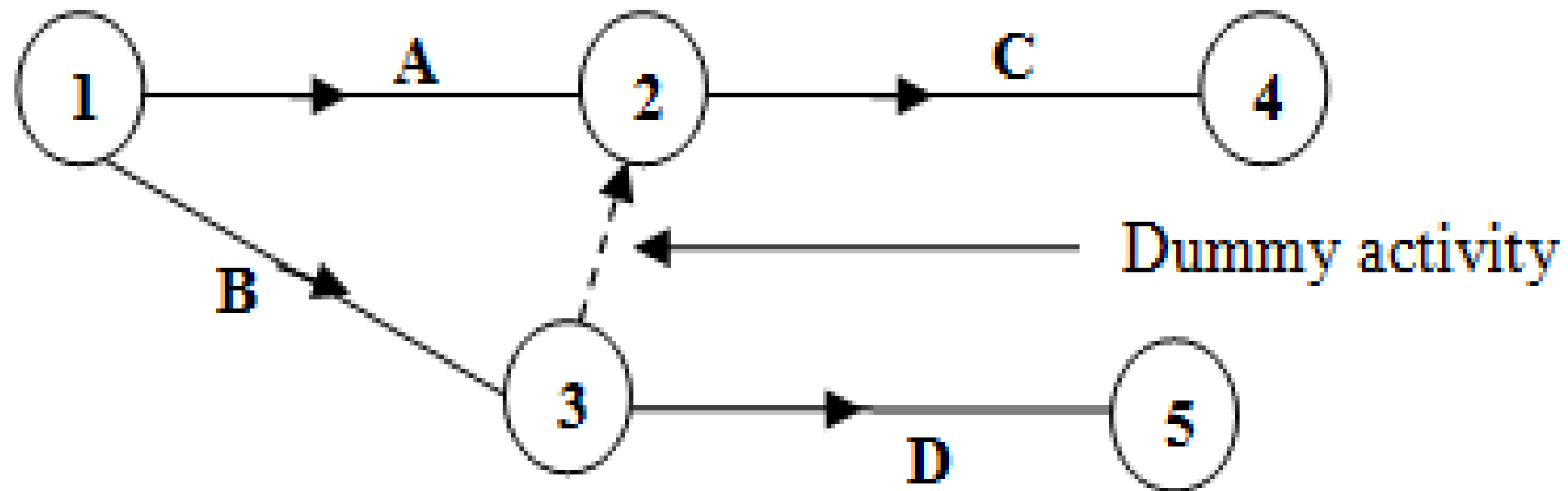
Network - Objective

- Integrated construction management of project
- Determines project duration-accurately
- Effect of schedule delays well in advance
- Facilitates optimization of resources
- Progress reporting and progress control
- Enabling to take better decisions



Activity

Any individual operation, which utilizes resources and has a beginning and an end is called an activity. An arrow is used to depict an activity with its head indicating the direction of progress in the project.





Event

The beginning and end points of an activity are called events or nodes or connector. This is usually represented by circle in a network.

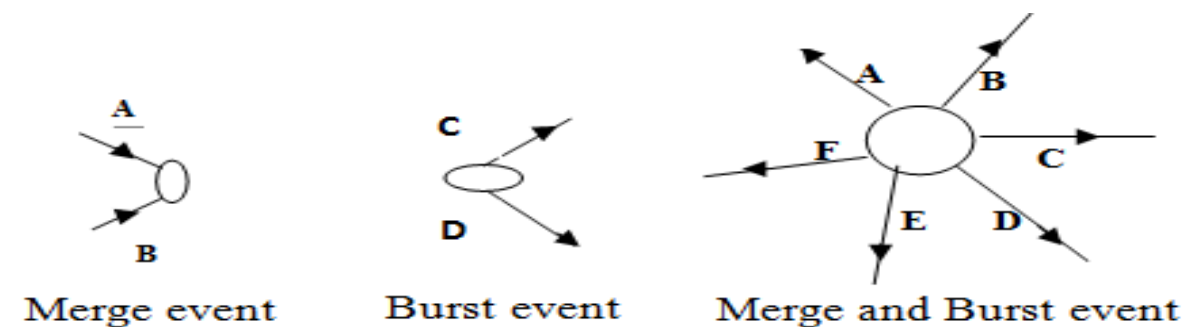
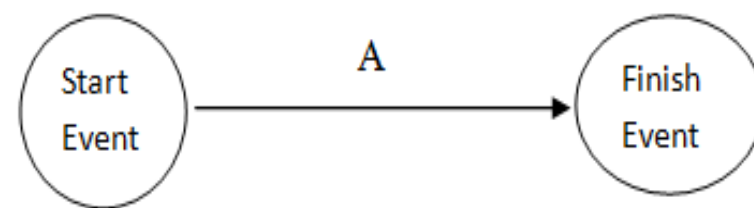
Tail Event: An event which marks the beginning of an activity.

Head Event: Event which marks the completion of an activity

Merge Event: When two or more activities come from an event it is known as merge event.

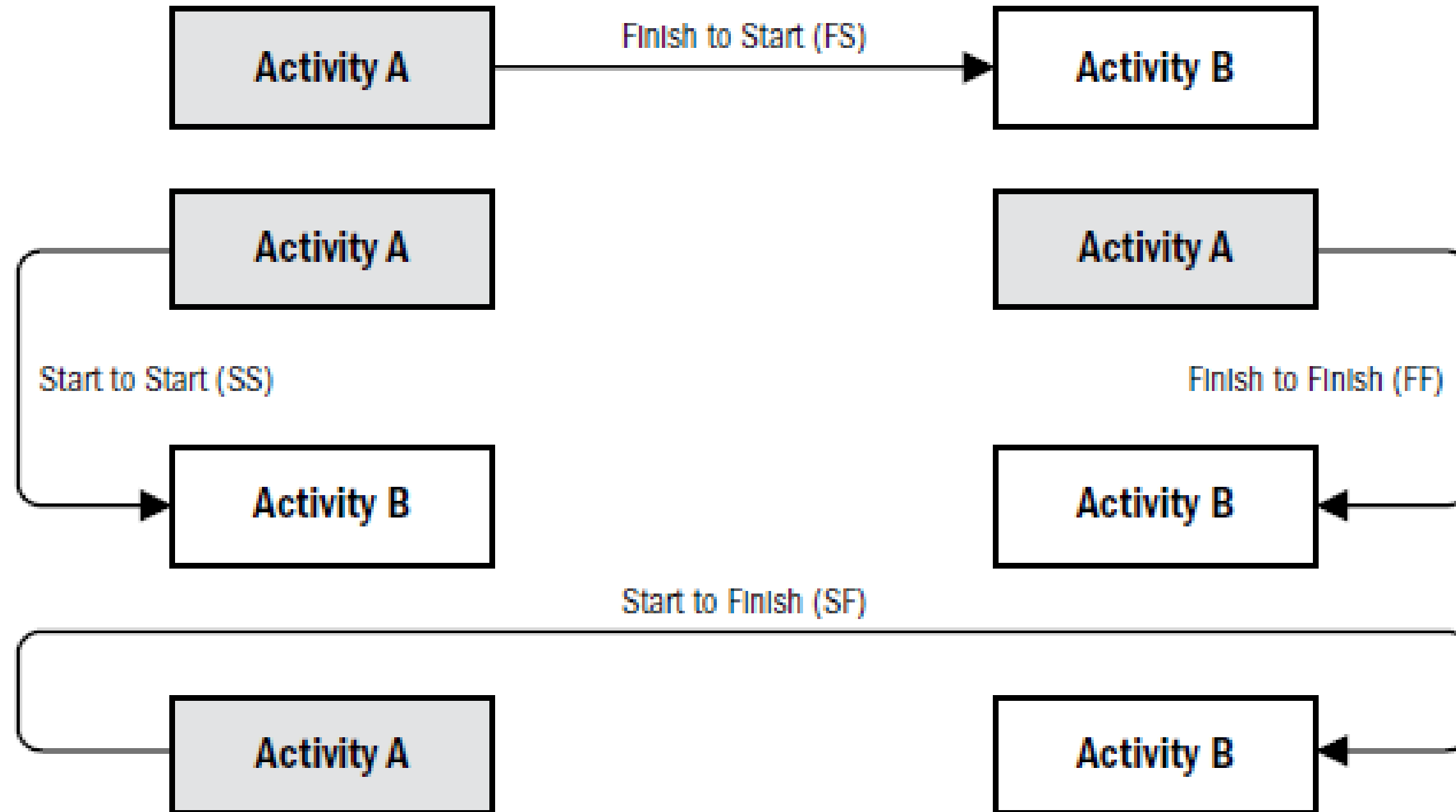
Burst Event: When more than one activity leaves an event is known as burst event.

Merge & Burst Event: An activity may be merged and burst at the same time.





Precedence Relationships

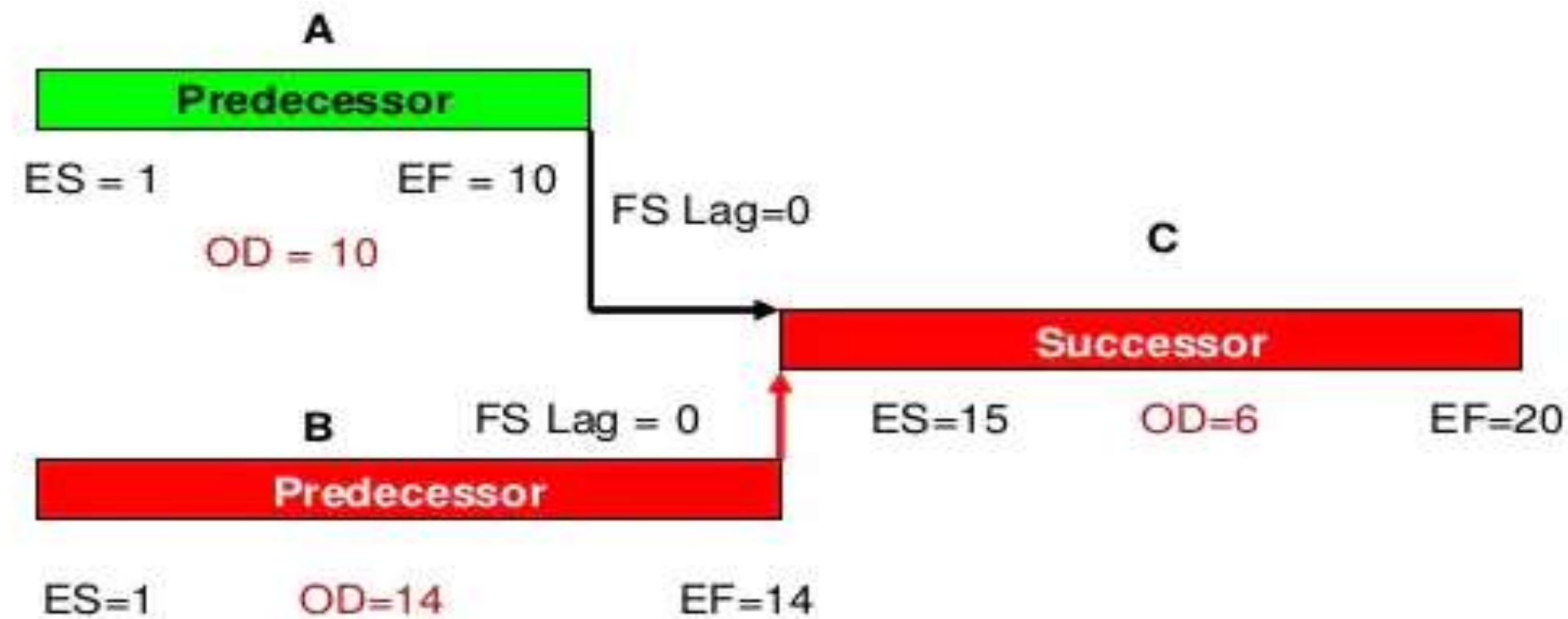




Interrelationship of Activities

Predecessor activity: activity that must be completed immediately prior to the start of another activity.

Successor activity: activity which cannot be started until one or more of other activities are completed but immediately succeed them are called successor activity.





Thank you...