

EE3242 - Project Management

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Lecture 5

Project Schedule Management

What is a Project Schedule?

- Detailed plan that outlines all the tasks and activities required to complete a project within a specified timeframe
- Guides the project team on what needs to be done, when it needs to be done, and who is responsible for each task

Project Schedule Management

○ Project Schedule Management includes the processes required to manage the timely completion of the project

Processes of project schedule management

- 1 • Plan Schedule Management
- 2 • Define Activities
- 3 • Sequence Activities
- 4 • Estimate Activity Durations
- 5 • Develop Schedule
- 6 • Control Schedule

1. Plan schedule management

- Process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling **the project schedule**
- **Key benefit:** provides guidance and direction on how the project schedule will be managed throughout the project

Plan schedule Management- Overview

Plan Schedule Management

Inputs

- .1 Project charter
- .2 Project management plan
 - Scope management plan
 - Development approach
- .3 Enterprise environmental factors
- .4 Organizational process assets

Tools & Techniques

- .1 Expert judgment
- .2 Data analysis
- .3 Meetings

Outputs

- .1 Schedule management plan

Output – Schedule Management Plan

- Component of the project management plan that establishes the criteria and the activities for developing, monitoring, and controlling the schedule of a project.
- schedule management plan can establish the following,
 - i. Project schedule model development
 - ii. Release and iteration length
 - iii. Level of accuracy
 - iv. Units of measure
 - v. Organizational procedures links
 - vi. Project schedule model maintenance
 - vii. Control thresholds
 - viii. Rules of performance measurement
 - ix. Reporting formats

Processes of project schedule management

- 
- 1 • Plan Schedule Management
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2. Define Activities

- Process of identifying and documenting the specific actions to be performed to produce the project deliverables.
- **Key benefit:** decomposes work packages into schedule activities that provide a basis for estimating, scheduling, executing, monitoring, and controlling the project work

Define Activities - Overview

Define Activities

Inputs

- .1 Project management plan
 - Schedule management plan
 - Scope baseline
- .2 Enterprise environmental factors
- .3 Organizational process assets

Tools & Techniques

- .1 Expert judgment
- .2 Decomposition
- .3 Rolling wave planning
- .4 Meetings

Outputs

- .1 Activity list
- .2 Activity attributes
- .3 Milestone list
- .4 Change requests
- .5 Project management plan updates
 - Schedule baseline
 - Cost baseline

Tools and Techniques

Rolling wave planning

- Iterative planning technique in which the work to be accomplished in the near term is planned in detail, while work further in the future is planned at a higher level

Tools and Techniques

ROLLING WAVE PLANNING

PLAN DETAIL:



Further out = Less detail

Near-term = Detailed

Outputs

1. Activity list- includes the **scheduled activities required on the project**.

- For projects that use rolling wave planning etc., the activity list will be updated periodically as the project progresses.
- Includes an **activity identifier** (Specific number for each activity) and a **scope of work description** for each activity in sufficient detail to ensure that project team members understand what work is required to be completed.

2. Activity attributes – extend the description of the activity by identifying **multiple components associated with each activity**. The components for each activity evolve over time.

Outputs

3. Milestone list - identifies all project milestones and indicates whether the milestone is mandatory or optional.
(A milestone is a **significant point or event in a project**)

4. Change requests and Project Management Plan updates
– Any change to the project management plan goes through the organization's change control process via a change request.

Processes of project schedule management

- 1 • Plan Schedule Management
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- 3 • **Sequence Activities**
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3. Sequencing Activities

- Process of identifying and documenting relationships among the project activities
- **Key benefit:** of this process is that it defines the logical sequence of work to obtain the greatest efficiency given all project constraints

Sequencing Activities - Overview

Sequence Activities

Inputs

- .1 Project management plan
 - Schedule management plan
 - Scope baseline
- .2 Project documents
 - Activity attributes
 - Activity list
 - Assumption log
 - Milestone list
- .3 Enterprise environmental factors
- .4 Organizational process assets

Tools & Techniques

- .1 Precedence diagramming method
- .2 Dependency determination and integration
- .3 Leads and lags
- .4 Project management information system

Outputs

- .1 Project schedule network diagrams
- .2 Project documents updates
 - Activity attributes
 - Activity list
 - Assumption log
 - Milestone list

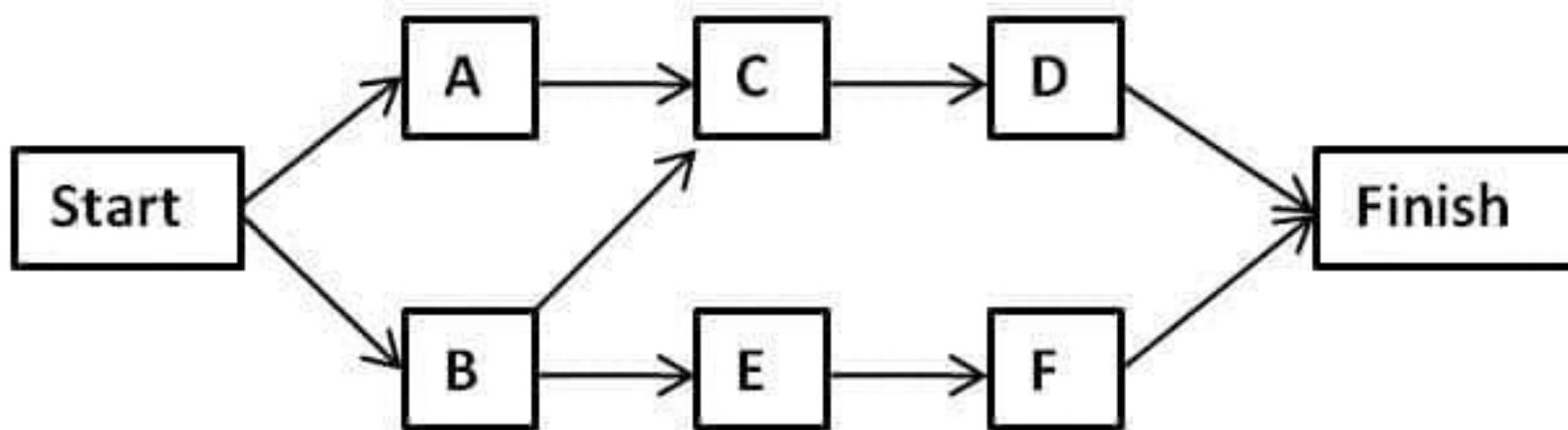
Tools and Techniques

1. Precedence diagramming method (PDM)

- Technique used for constructing a schedule model in which activities are represented by nodes and are graphically linked by one or more logical relationships to show the sequence in which the activities are to be performed

Tools and Techniques

1. Precedence diagramming method (PDM) – cont.

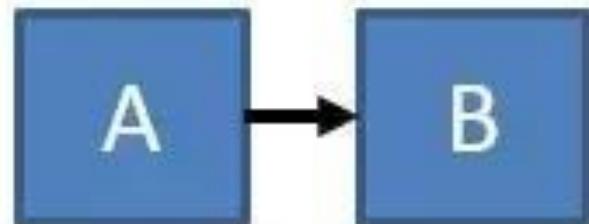


Precedence Diagram Method (PDM)

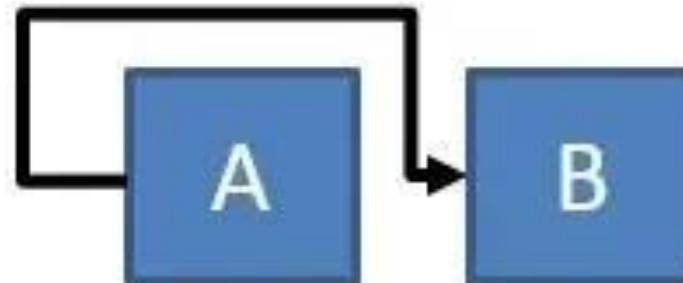
1. Precedence diagramming method (PDM) – cont.

- PDM includes four types of dependencies or logical relationships
 - Finish-to-start (FS)
 - Finish-to-finish (FF)
 - Start-to-start (SS)
 - Start-to-finish (SF)
- **Predecessor activity** - activity that logically comes **before** a dependent activity in a schedule.
- **Successor activity** - dependent activity that logically comes **after** another activity in a schedule.

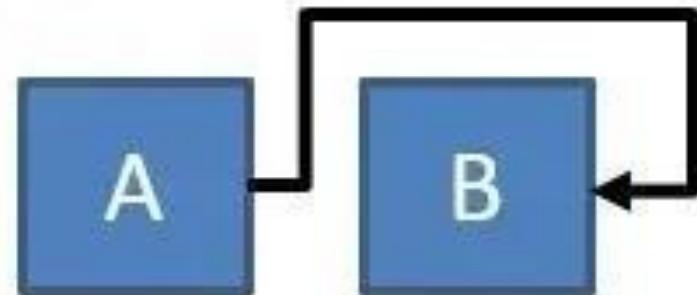
1. Precedence diagramming method (PDM) – cont.



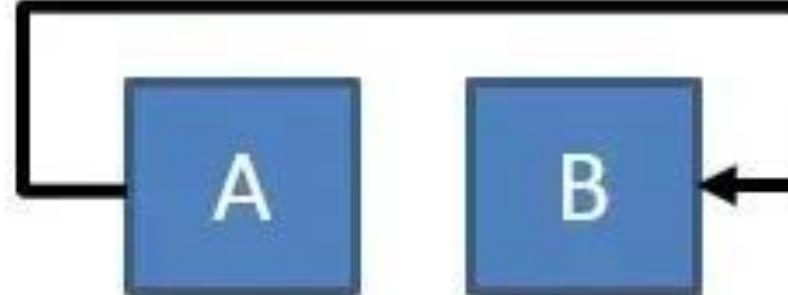
Finish to Start



Start to Start



Finish to Finish



Start to Finish

Tools and Techniques

2. Dependency determination and integration

Dependencies may be characterized by the following attributes:

- mandatory or discretionary
- internal or external

Dependency has four attributes, but two can be applicable at the same time in the following ways:

- mandatory external dependencies
- mandatory internal dependencies
- discretionary external dependencies
- discretionary internal dependencies

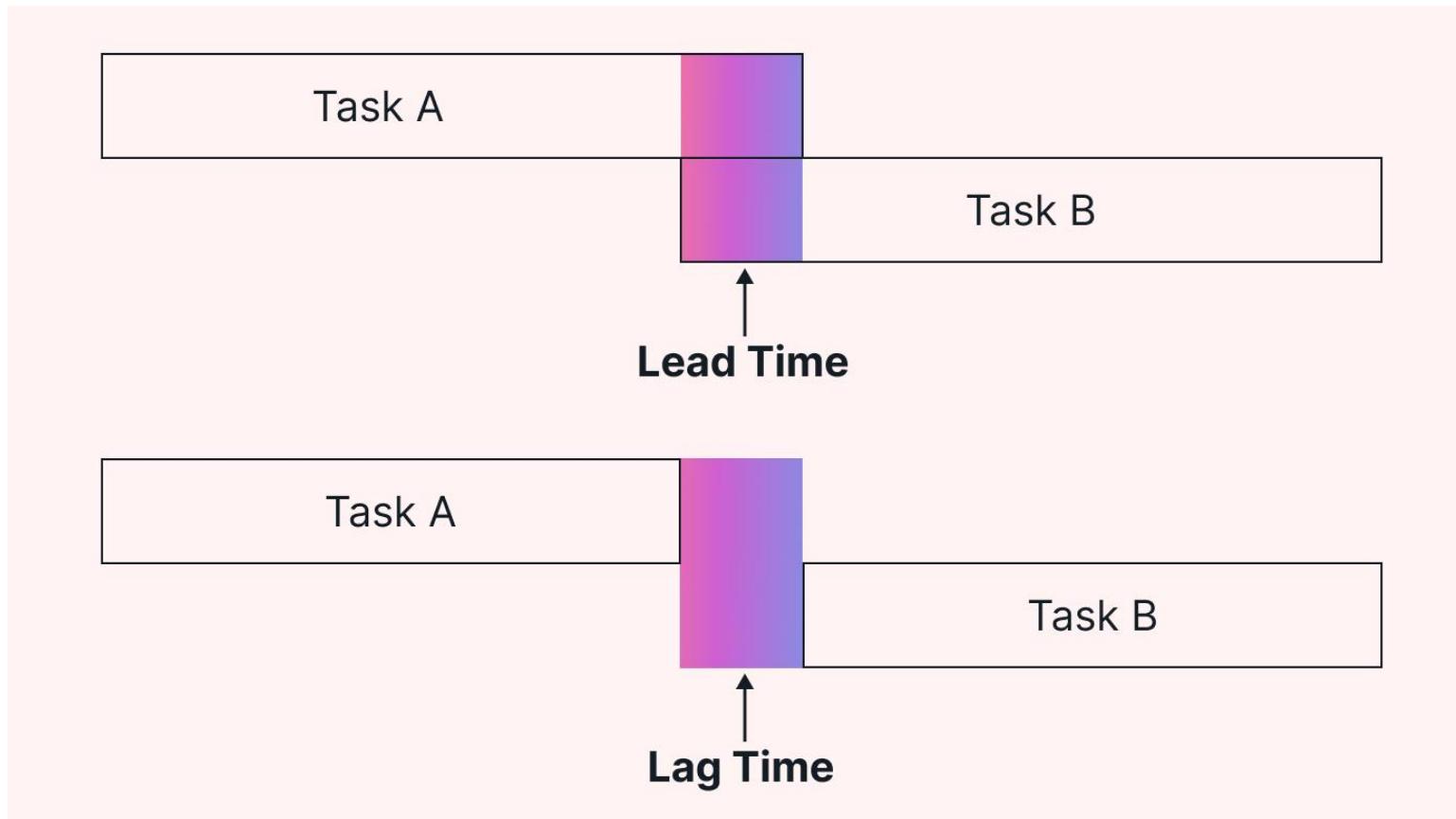
Tools and Techniques

3. Leads and lags

Lead - amount of time a successor activity can be advanced with respect to a predecessor activity.

Lag - amount of time a successor activity will be delayed with respect to a predecessor activity.

Tools and Techniques



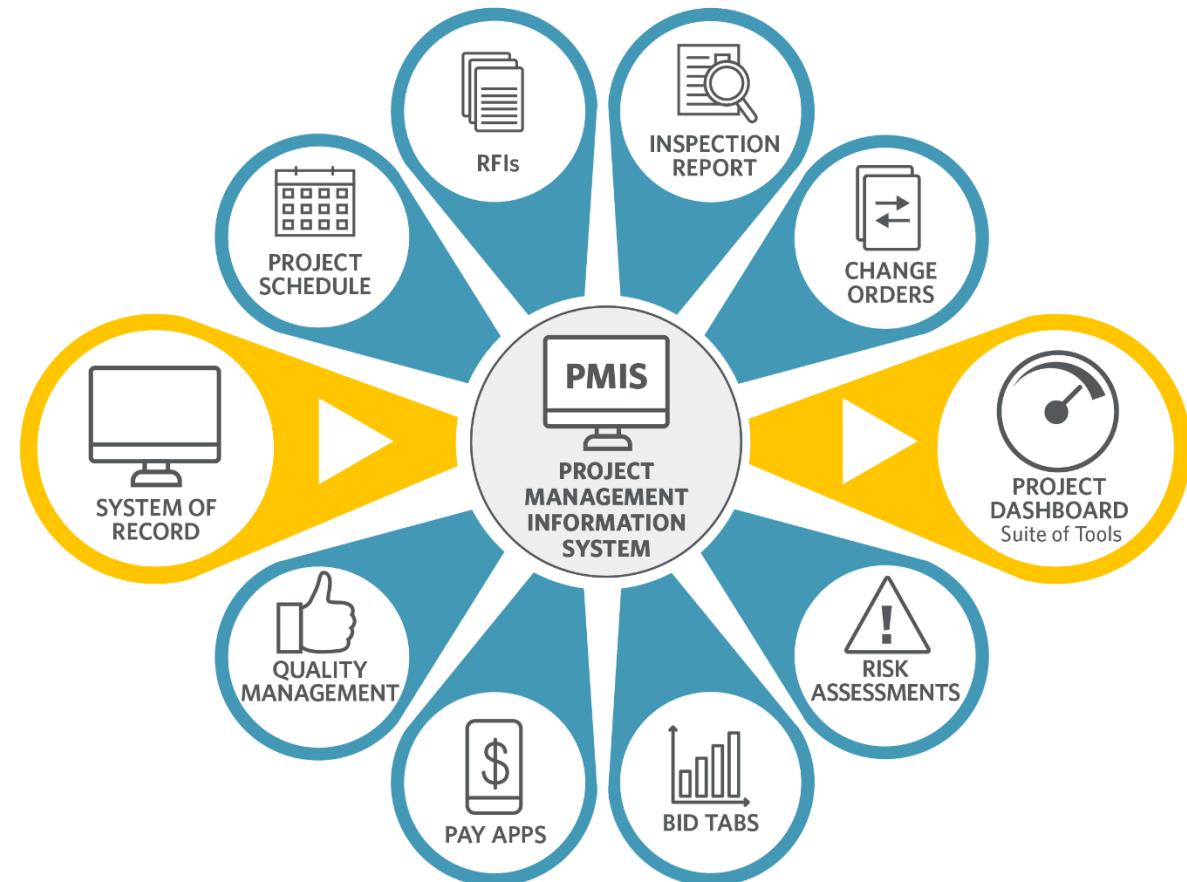
Tools and Techniques

4. Project management information systems (PMIS)

- Provides access to information technology (IT) software tools, such as scheduling software tools, work authorization systems, configuration management systems, information collection and distribution systems, as well as interfaces to other online automated systems such as corporate knowledge base repositories.

Tools and Techniques

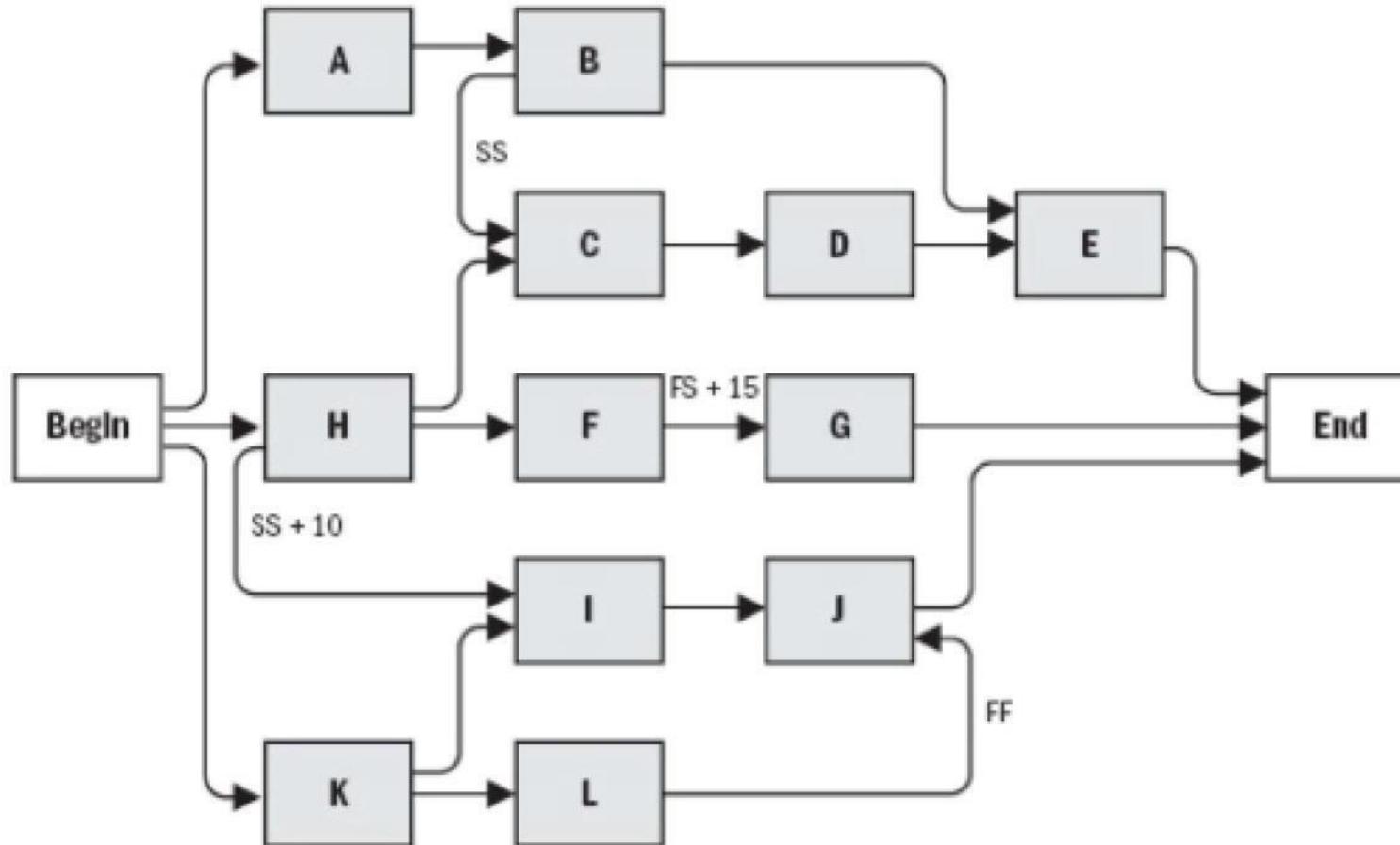
4. Project management information systems (PMIS)



Industry	Applications
Construction	Oracle Primavera P6 Oracle Primavera Contract Manager Meridian Prolog Manager Meridian Proliance Aconex RIB iTWO RIB STRATIS Autodesk Contractware
Energy / Oil & Gas	Microsoft Project Server Microsoft Portfolio Server Oracle Primavera P6 Oracle Primavera Contract Manager
Information Systems	Microsoft Project Server Microsoft SharePoint Server Huddle ThoughtWorks Mingle Rally OnTime Scrum TechExcel DevSuite
Manufacturing & Retail	Microsoft Project Server Oracle Primavera P6 Oracle Primavera Contract Manager Huddle

Outputs

1. Project schedule network diagram



Outputs

2. Project documents updates

- Project documents that may be updated as a result of carrying out this process include but are not limited to:
 - i. Activity attributes
 - ii. Activity list
 - iii. Assumption log
 - iv. Milestone list

Processes of project schedule management

- 1 • Plan Schedule Management
- 2 • Define Activities
- 3 • Sequence Activities
- 4 • **Estimate Activity Durations**
- 5 • Develop Schedule
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4. Estimating Activity Durations

- Process of estimating the **number of work periods needed to complete individual activities with estimated resources.**
- **Key benefit:** provides the amount of time each activity will take to complete

Processes of project schedule management

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5. Developing schedule

- Process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create a schedule model for project execution and monitoring and controlling
- **Key benefit:** generates a schedule model with planned dates for completing project activities

Output

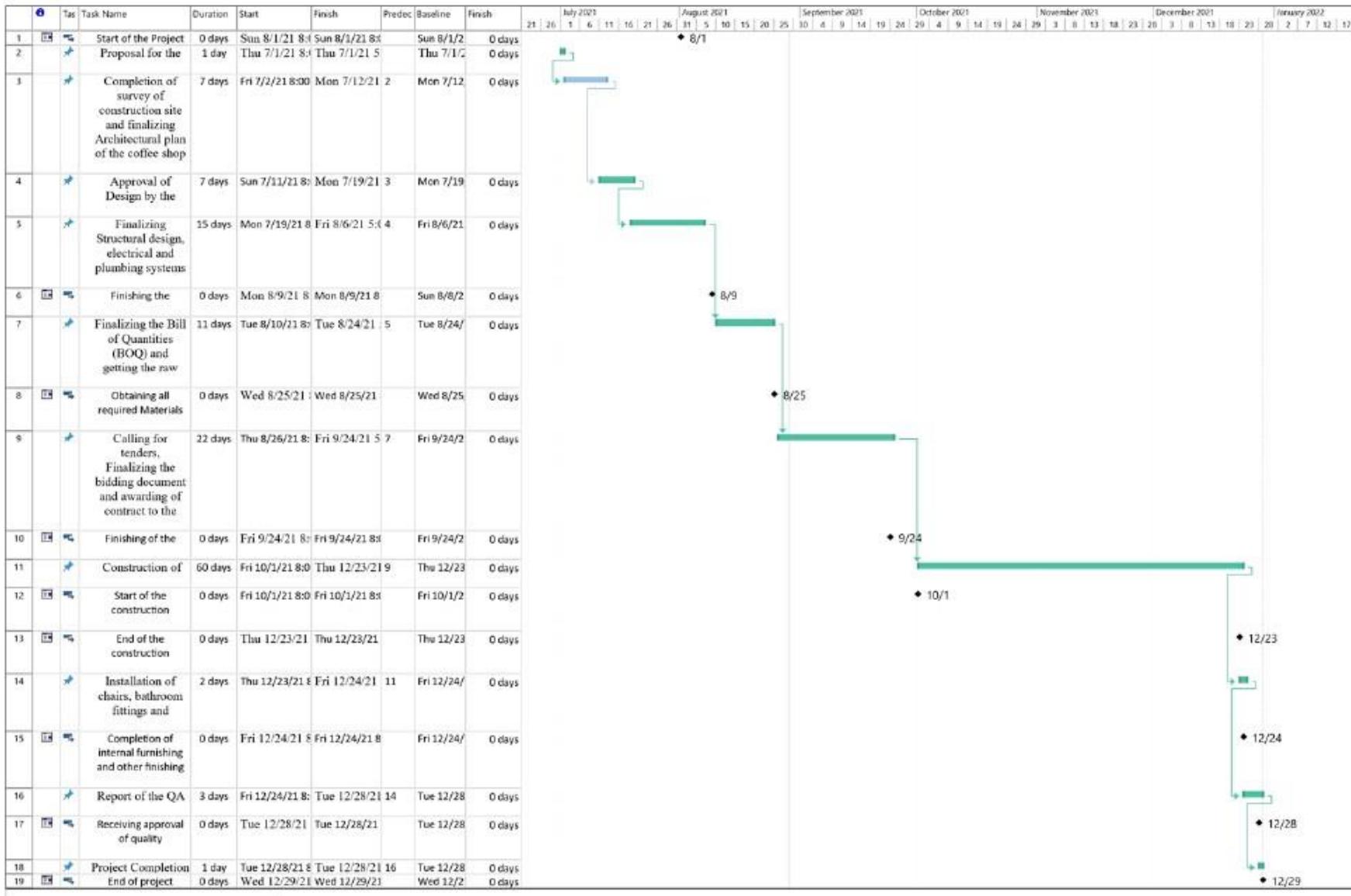
Schedule baseline

- Approved version of a schedule model that can be changed only through formal change control procedures and is used as a basis for comparison to actual results.
- It is accepted and approved by the appropriate stakeholders as the schedule baseline with baseline start dates and baseline finish dates.

Schedule baseline

Task Name	Duration	Start	Finish	Predecessors	Baseline Finish	Finish Variance
Start of the Project	0 days	Sun 8/1/21 8:00 AM	Sun 8/1/21 8:00 AM		Sun 8/1/21 5:00 PM	0 days
Proposal for the coffee shop	1 day	Thu 7/1/21 8:00 AM	Thu 7/1/21 5:00 PM		Thu 7/1/21 5:00 PM	0 days
Completion of survey of construction site and finalizing Architectural plan of the coffee shop to be built	7 days	Fri 7/2/21 8:00 AM	Mon 7/12/21 5:00 PM	2	Mon 7/12/21 5:00 PM	0 days
Approval of Design by the Interior Designer	7 days	Sun 7/11/21 8:00 AM	Mon 7/19/21 5:00 PM	3	Mon 7/19/21 5:00 PM	0 days

Schedule baseline



Processes of project schedule management

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6. Controlling schedule

- Process of monitoring the status of the project to update the project schedule and managing changes to the schedule baseline

- Activity 1 -

- What is Critical Path Method (CPM)?
- Explain the following with an example.
 - mandatory external dependencies
 - mandatory internal dependencies
 - discretionary external dependencies
 - discretionary internal dependencies

- Activity 2 -

Imagine you are the project manager for a new mobile app development project. Your goal is to launch the app within six months. Using the key aspects of project schedule management discussed, create a detailed example that includes the following elements:

- i. Project schedule model development
- ii. Release and iteration length
- iii. Level of accuracy
- iv. Units of measure
- v. Organizational procedures links
- vi. Project schedule model maintenance
- vii. Control thresholds
- viii. Rules of performance measurement
- ix. Reporting formats