



# 2002 Business Managers' Conference

Session 1 – Topic 5

Fundamentals of Scheduling

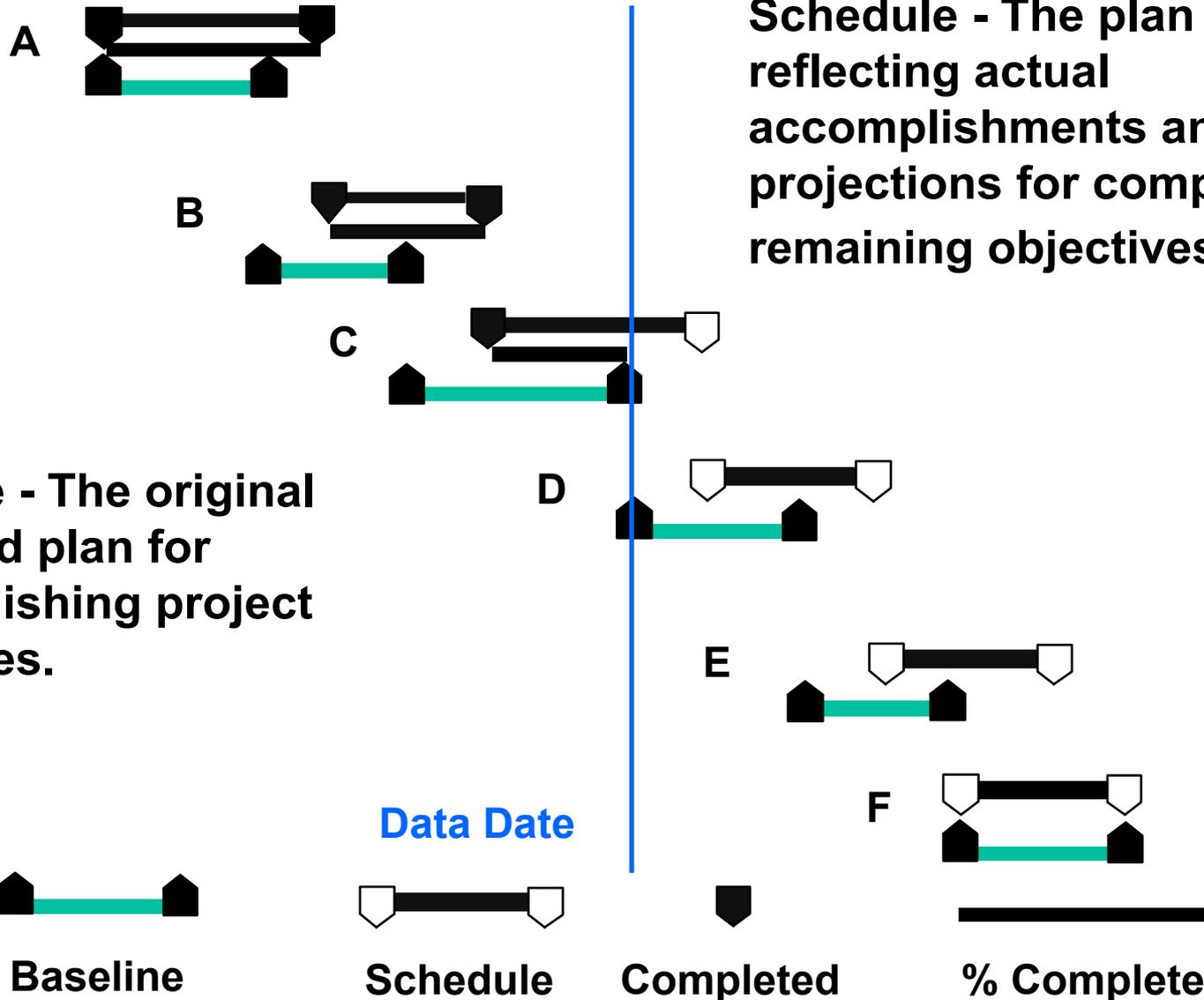
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703 805 - 5259

# Baseline Versus Schedule



**Schedule - The plan reflecting actual accomplishments and projections for completing remaining objectives.**

**Baseline - The original approved plan for accomplishing project objectives.**

**Data Date**

**Baseline**

**Schedule**

**Completed**

**% Complete**

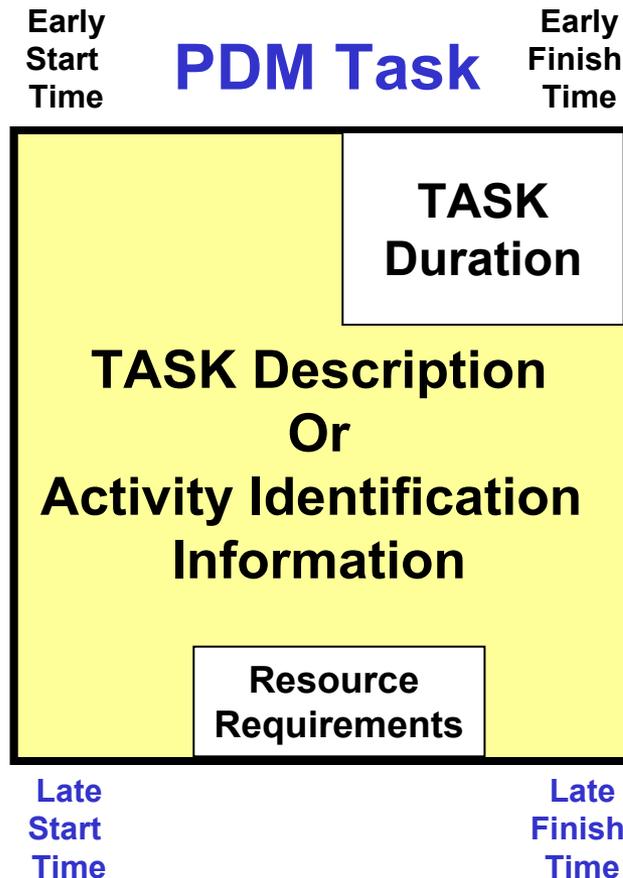
# **As a Program Manager why do you care about scheduling ?**

- **Predicts future problems and supports developing alternatives**
- **Identifies key milestones, activities and relationships**
- **Establishes a baseline tool for progress measurement**
- **Provides current status and forecasts completion dates**
- **Schedule slips may result in funding cuts**
- **Schedule status reported to OSD & Congress via DAES and SAR reports**
- **Program schedule is a key consideration at milestone decisions**

# Network Scheduling Process

- **Tasks**
  - **Identify everything needing to be done**
  - **Should trace to the WBS**
- **Duration**
  - **Identify the duration of each task**
  - **Measure of duration (calendar days vs business days)**
- **Order**
  - **Identify what must happen before each task**
  - **Establish criteria for starting a task**
- **Constraints**
  - **Limitations to what may be done (i.e. facilities)**

# Precedence Diagram Method (PDM) Task Relationships

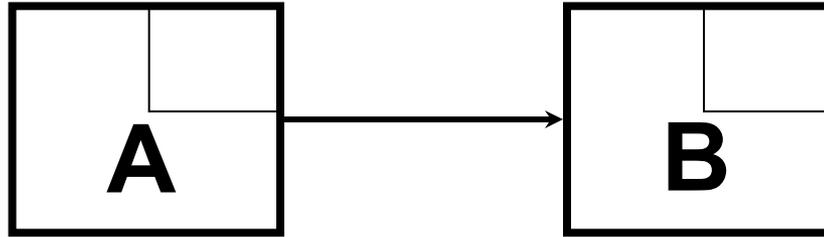


## Task Relationships

- Finish to Start
- Finish to Finish
- Start to Start
- Start to Finish
- Percent Complete
- Constraints

# Task Relationships

## *Finish to Start*



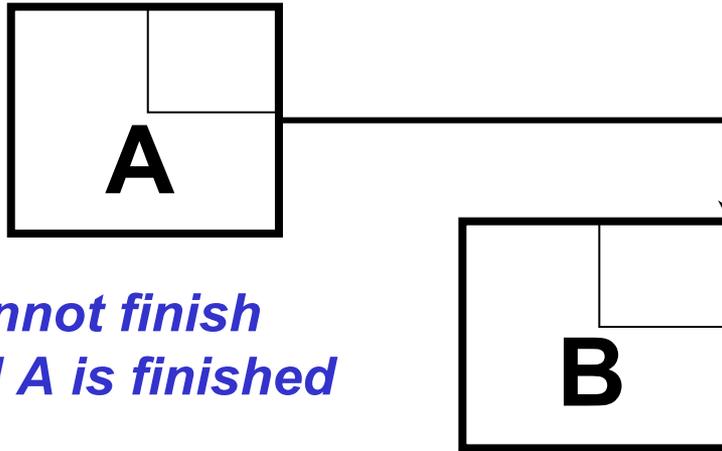
*B cannot start until A is finished*

ID	Task Name	Duration	% Complete	Week 1							Sun	Mon	
				Sun	Mon	Tue	Wed	Thu	Fri	Sat			
1													
2	TASK A	2 days	50%	3/12	[Bar from Mon to Tue]		3/13						
3	TASK B	2 days	0%			3/14	[Bar from Wed to Thu]		3/15				
4													

ID	Task Name	Duration	% Complete	Week 1							Week 2		
				Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	
1													
2	TASK A	2 days	50%		[Bar from Mon to Tue]								
3	TASK B	2 days	0%				[Bar from Wed to Thu]						
4													

# Task Relationships

## *Finish to Finish*



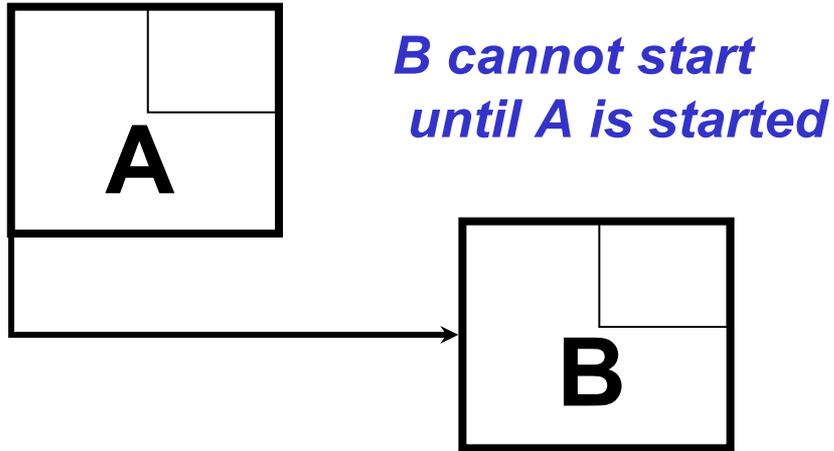
*B cannot finish until A is finished*

ID	Task Name	Duration	% Complete	Week 1							Sun	Mon
				Sun	Mon	Tue	Wed	Thu	Fri	Sat		
1												
2	TASK A	2 days	50%	3/12	[Progress bar]		3/13					
3	TASK B	2 days	0%	3/12	[Progress bar]		3/13					
4												

ID	Task Name	Duration	% Complete	Week 1							Week 2	
				Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon
1												
2	TASK A	2 days	50%		[Progress bar]							
3	TASK B	2 days	0%		[Progress bar]							
4												

# Task Relationships

## Start to Start

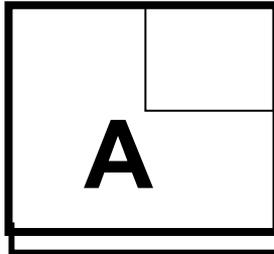


ID	Task Name	Duration	% Complete	Week 1							Sun	Mon
				Sun	Mon	Tue	Wed	Thu	Fri	Sat		
1												
2	TASK A	2 days	50%	3/12	[Red bar from Mon to Tue]		3/13					
3	TASK B	2 days	0%	3/12	[Red bar from Mon to Tue]		3/13					
4												

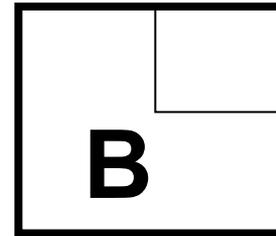
ID	Task Name	Duration	% Complete	Week 1							Week 2	
				Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon
1												
2	TASK A	2 days	50%		[Blue bar from Mon to Tue]							
3	TASK B	2 days	0%		[Blue bar from Mon to Tue]							
4												

# Task Relationships

## *Start to Finish*



*B cannot finish until A is started*

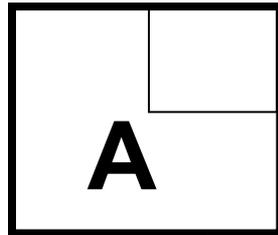


ID	Task Name	Duration	% Complete	Week 1							Sun	Mon
				Sun	Mon	Tue	Wed	Thu	Fri	Sat		
1												
2	TASK A	2 days	50%				3/15				3/16	
4	TASK B	2 days	0%		3/13			3/15				
3												

ID	Task Name	Duration	% Complete	Week 1							Week 2	
				Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon
1												
2	TASK A	2 days	50%									
3	TASK B	2 days	0%									
4												

# Task Relationships

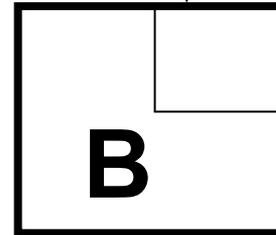
## *% Complete*



70%

*Remaining 40% of B cannot be started until 70% of A is completed*

40%

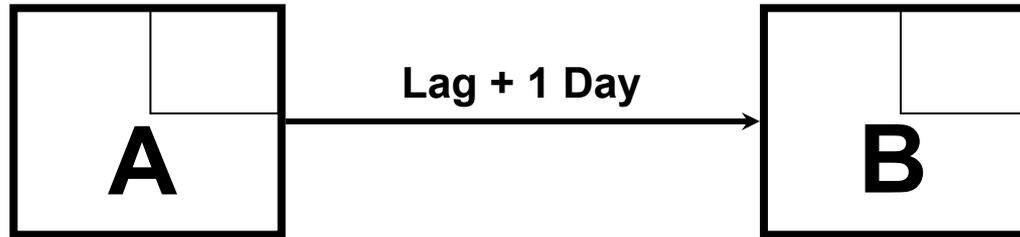


ID	Task Name	Duration	% Complete	Week 1							Sun	Mon
				Sat	Sun	Mon	Tue	Wed	Thu	Fri		
1												
2	Task A											
3	Task B											
4												

**MS Project does not support this type of Task Relationship**

# Task Relationships

## *Finish to Start with a Lag*



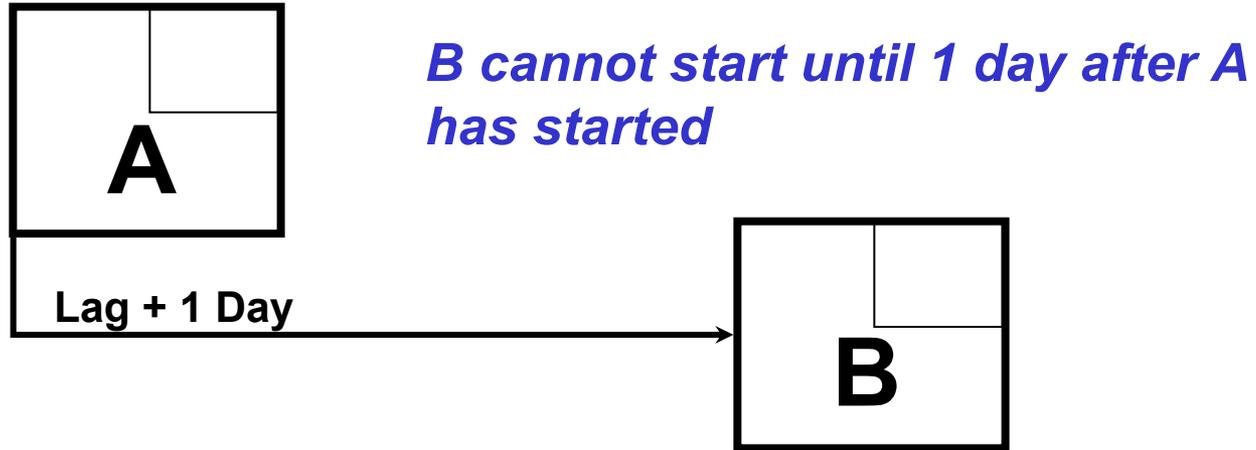
*B cannot start until 1 day after A is completed*

ID	Task Name	Duration	% Complete	Week 1							Sun	Mon
				Sun	Mon	Tue	Wed	Thu	Fri	Sat		
1												
2	TASK A	2 days	50%	3/12	[Progress bar from Mon to Tue]		3/13					
3	TASK B	2 days	0%				3/13	[Progress bar from Wed to Thu]		3/16		
4												

ID	Task Name	Duration	% Complete	Week 1							Week 2	
				Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon
1												
2	TASK A	2 days	50%		[Progress bar from Mon to Tue]							
3	TASK B	2 days	0%					[Progress bar from Thu to Fri]				
4												

# Task Relationships

## *Start to Start with a Lag*



ID	Task Name	Duration	% Complete	Week 1							Sun	Mon	
				Sun	Mon	Tue	Wed	Thu	Fri	Sat			
1													
2	TASK A	2 days	50%	3/12	[Bar]		3/13						
3	TASK B	2 days	0%		3/13	[Bar]		3/14					
4													

ID	Task Name	Duration	% Complete	Week 1							Week 2		
				Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	
1													
2	TASK A	2 days	50%		[Bar]								
3	TASK B	2 days	0%			[Bar]							
4													

# Task Relationships

## *Finish to Start with Negative Lag*

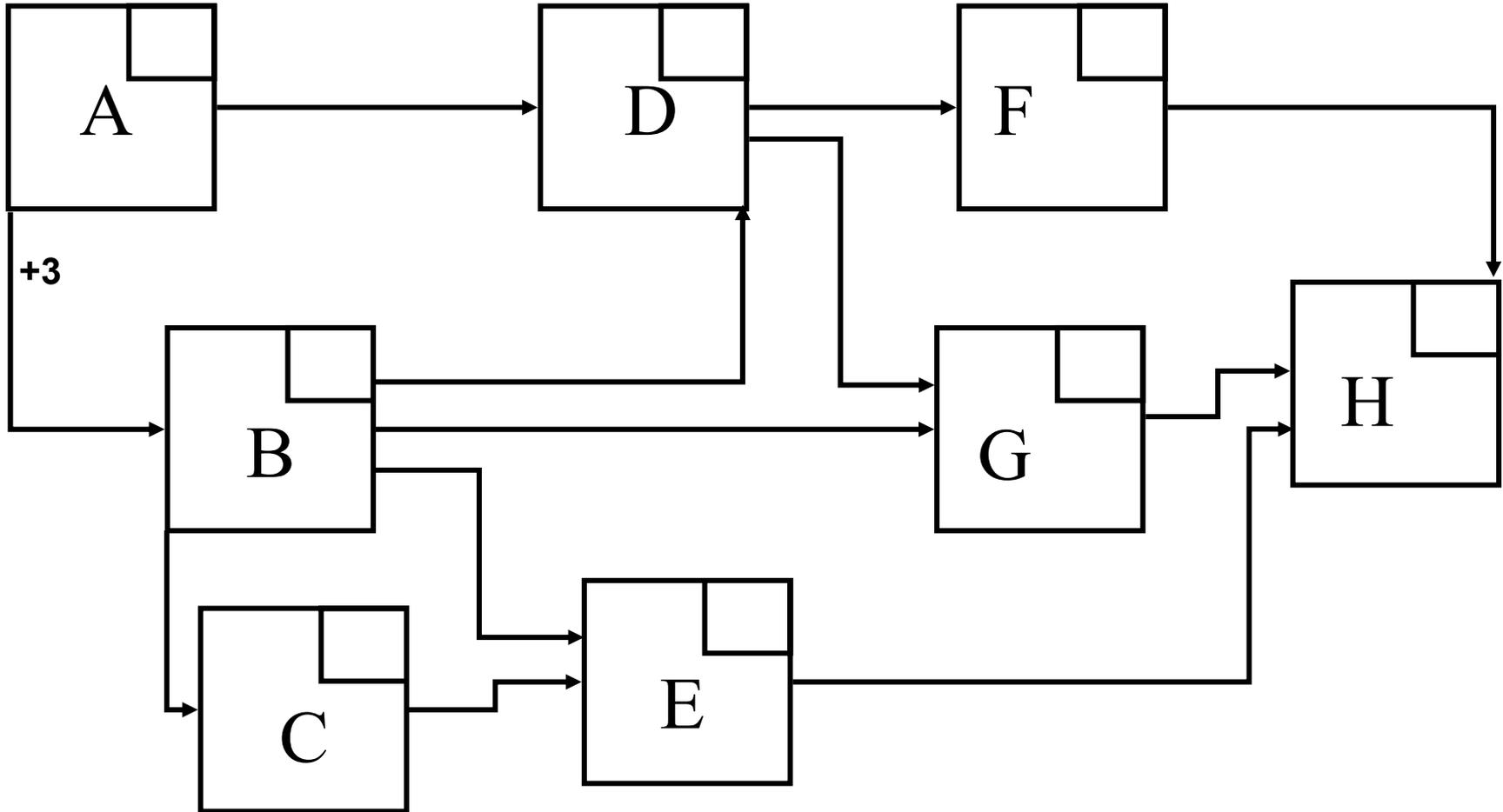


*B cannot start until 1 day before A is completed*

ID	Task Name	Duration	% Complete	Week 1							Sun	Mon
				Sun	Mon	Tue	Wed	Thu	Fri	Sat		
1												
2	TASK A	2 days	50%	3/12	[Red bar from Mon to Tue]		3/13					
3	TASK B	2 days	0%		3/15	[Red bar from Tue to Wed]		3/14				
4												

ID	Task Name	Duration	% Complete	Week 1							Week 2	
				Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon
1												
2	TASK A	2 days	50%		[Blue bar from Mon to Tue]							
3	TASK B	2 days	0%			[Blue bar from Tue to Wed]						
4												

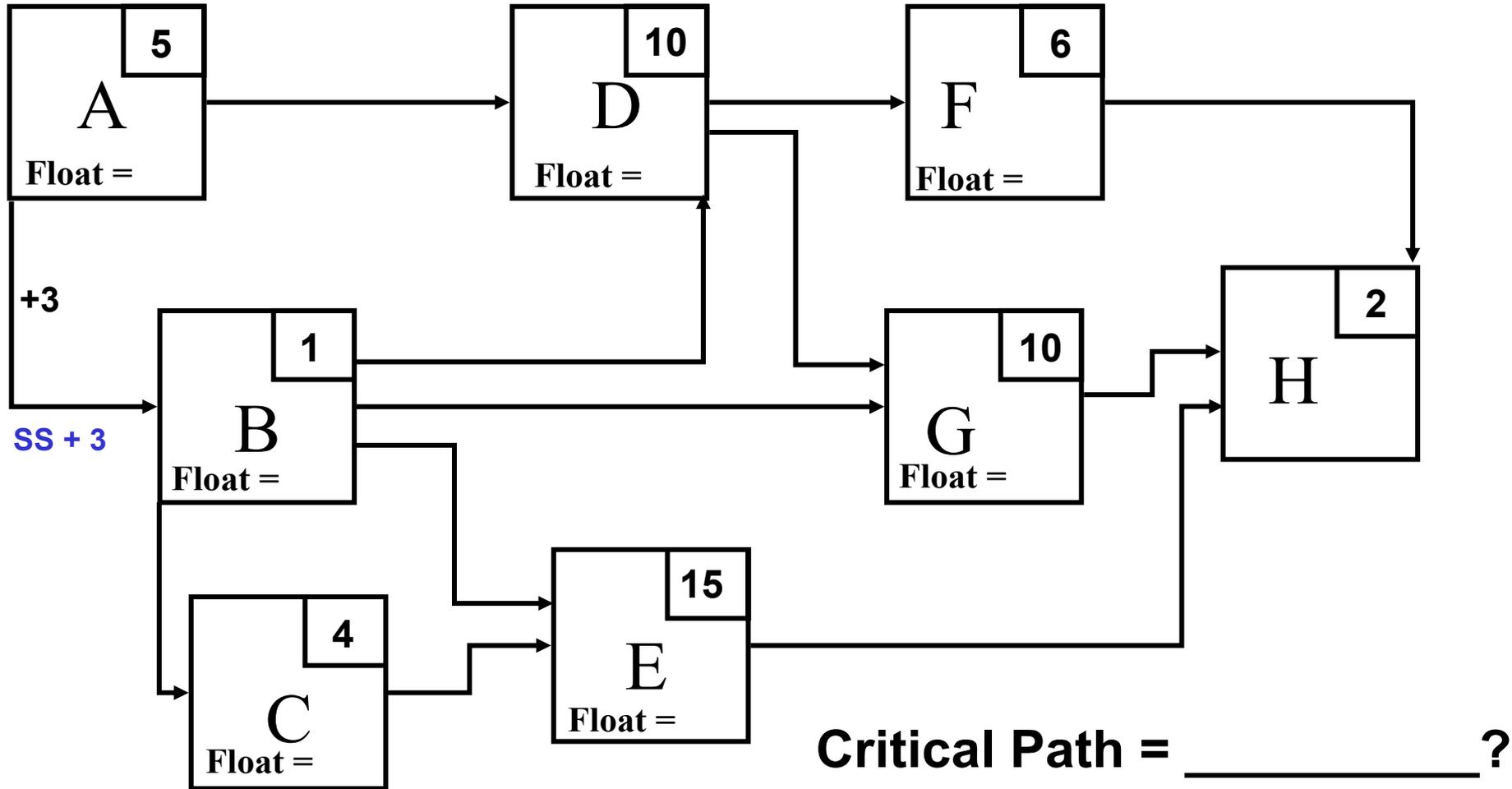
# Task Relationship Exercise



# Schedule Analysis

- **Forward Pass - Determines earliest time (dates) for each activity - (*earliest finish time, EFT*)**
- **Critical Path - The path through a network with the longest total duration (*minimum project duration*)**
- **Backward Pass - Determines latest time (dates) for each activity - (*latest finish time, LFT*)**
- **Float - Amount of time an activity can be delayed or expanded before it impacts the project finish time (date) - ( $LFT - EFT = Float$ )**

# Critical Path and Float Exercise



# Microsoft Project Users Guide

## (Page 3) *Before You Start – Questions*

- **What needs to get done? Identify your project tasks.**
- **How long will it take to complete each task? Estimate task durations.**
- **Which tasks happen before other tasks? Determine task relationships.**
- **Who or what will carry out each task or be responsible for it? Identify the resources you will use to complete the project.**