

SWE30010

Development Project 2: Design, Planning and Management

Lecture 8a

Traditional Task Scheduling



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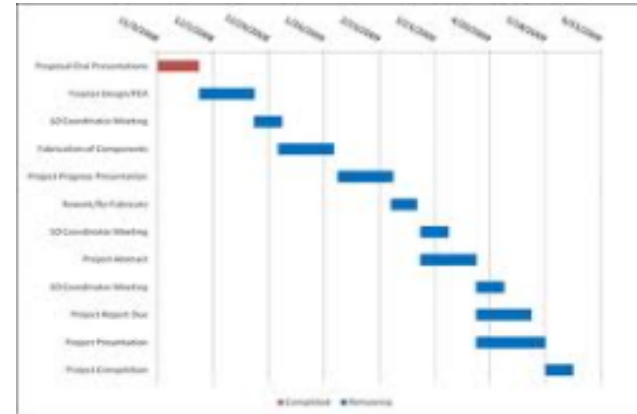
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Project Scheduling [Trad. PM approach]



Goal:

- Organizing project activities in a **coherent order**
- Organizing the staff allocations to activities to ensure project is completed in minimum time





Project Scheduling and Agile

- Traditional scheduling does not make much sense in agile projects
- Can use traditional approaches for sprint planning
- Still important to look at traditional approaches, as they are still used in industry, especially in non-development projects



Traditional

vs

Agile



Predictive scheduling (“traditional”) **Adaptive** scheduling (“agile”)

- Scope is known upfront and does not change (a lot)
 - Problem/solution space is very well understood
 - A detailed plan for most of the project activities can be done upfront
 - Activities, activity dependencies and risks calculated
 - Assume (at least in the first instance) that staff will be available whenever an activity is due to start
- Project defined mainly in terms of goals and vision, but scope may change (substantially)
 - Problem/solution space not clearly defined
 - Detailed plan can only be created for a short term (3-4 weeks)
 - Risks are managed “dynamically”

Traditional

vs

Agile (cont'd)



Activity based ("traditional")

- Fix amount of work to be completed
- Define schedule and allocate resources so that all tasks can be completed
- ☞ *Mainly used in predictive planning and scheduling*

Time-boxed ("agile")

- Fix amount of time available
- Choose scope so that it can be completed within time-box
- ☞ *Basic "building block" of most agile methodologies*
- ☞ *Sprint level – each sprint is time-boxed*
- ☞ *Task level – it is still Activity based!*

Trad. Example – Activities and Dependencies



Project: To replace a legacy system – very high level WBS

Act. Id.	Activity Name	Dependencies
A	Hardware Selection and Delivery	
B	Hardware Installation	A
C	Legacy System Analysis	
D	Software Design	C
E	System Implementation and Testing	B,D
F	Data Migration	C
G	System Deployment	E,F

Here
“X depends on Y” means that Y must be completed before X starts

Agile Example – Tasks and Dependencies



Item: To produce a sales report – very low level task breakdown

Task No.	Task Description	Dependencies
A	Select appropriate database server (may need spiking)	
B	Install database server for coding	A
C	Analyze the reporting requirements	
D	Design the required module	C
E	Programming the required module	B,D
F	Design test data for reporting	C
G	Verify the correctness of report	E,F

Here

“X depends on Y”

means that

Y must be completed before X starts

Agile Example – Tasks, Dependencies and Duration



Task Id.	Task Description	Dependencies	Duration (hours)
A	Select appropriate database server (may need spiking)		4
B	Install database server for coding	A	3
C	Analyze the reporting requirements		5
D	Design the required module	C	4
E	Programming the required module	B,D	5
F	Design test data for reporting	C	3
G	Verify the correctness of report	E,F	2

Total number of hours = 26 hrs → 3.25 days work [Ideal time]
OR → 4.6 days work [realistic time]

Realistic = ideal / 0.7 (assume 70% of efficiency)

Agile Example – Tasks, Dependencies and Duration (cont)



Sequential technique

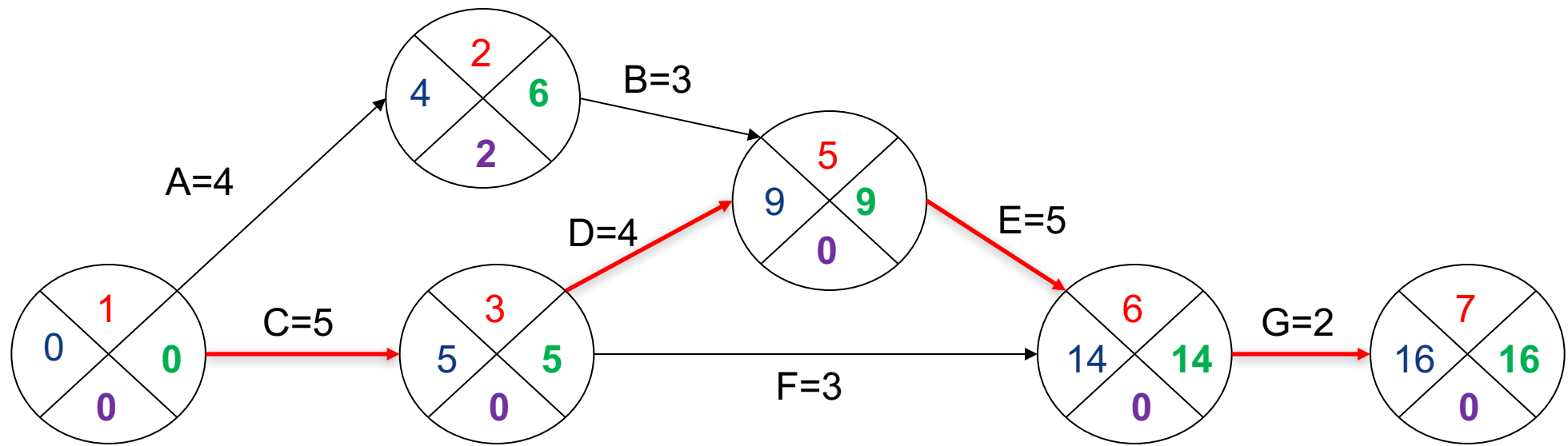
- Total time = 26 hours
- → 3.25 days [Ideal]
- → 4.6 days [Realistic]

Critical Path Method

- Total time = 16 hours
- → 2 days [Ideal]
- → 2.8 days [Realistic]

See next slide for a CPM diagram

Example – CPM Diagram (Activities on Arrows)

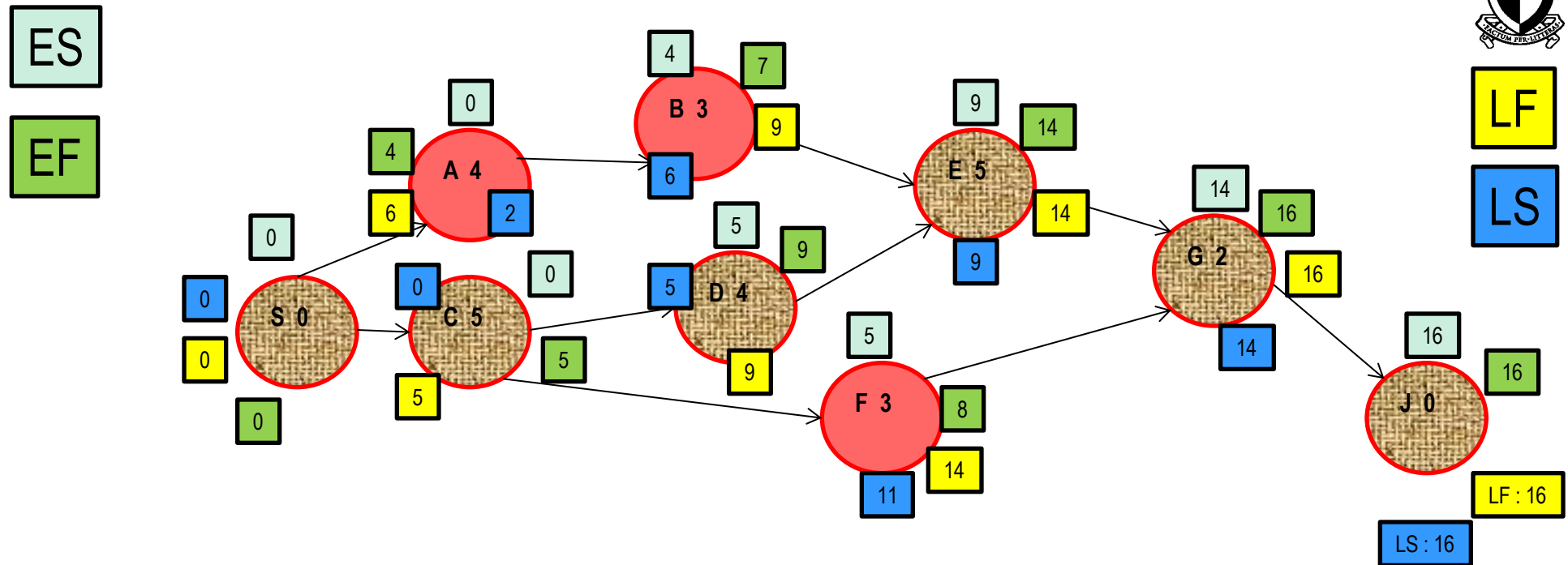


Critical path links those nodes with no slack via the links (activities) that force there to be no slack.

The CP is activities C,D,E,G



Example – CPM Diagram (Activities on Nodes)



The critical path contains the nodes where the $ES = LS$ (and $EF = LF$) – marked in diagram. We can also work out the slack and float figures for each activity ($LS - ES$).

By the way, there is no guarantee of a SINGLE critical path; there may be several!

Example – CPM Diagram (my own drawing)

