System Analysis Design

Week-8-Lesson-1

Managing the Information Systems Project

Learning Objectives

❑ **Explain the process of managing an information systems project.**

❑ **Describe the skills required to be an effective project manager.**

❑ **List project management activities during project initiation, planning, execution, and closedown.**

❑ **Explain critical path scheduling, Gantt charts, and Network diagrams.**

❑ **Explain the utility of commercial project management software tools.**

Importance of Project Management

❑ **Project management may be the most important aspect of systems development.**

❑ **Effective PM helps ensure**
  ▪ **Meeting customer expectations**
  ▪ **Satisfying budget and time constraints**

❑ **PM skills are difficult and important to learn.**

Deciding on Systems Projects

❏ **System Service Request (SSR)**
- A standard form for requesting or proposing systems development work within an organization.

❏ **Feasibility study**
- A study that determines whether a requested system makes economic and operational sense for an organization.

System Service Request (SSR)

Figure 3-2 System Service Request for Purchasing Fulfillment System with name and contact information of the person requesting the system, a statement of the problem, and the name and contact information of the liaison and sponsor

Pine Valley Furniture
System Service Request

REQUESTED BY   Juanita Lopez   DATE   November 1, 2004

DEPARTMENT   Purchasing, Manufacturing Support

LOCATION   Headquarters, 1-322

CONTACT   Tel: 4-3267   FAX: 4-3270   e-mail: jlopez

TYPE OF REQUEST   URGENCY

[X] New System   [   ] Immediate – Operations are impaired or opportunity lost

[   ] System Enhancement   [   ] Problems exist, but can be worked around

[   ] System Error Correction   [X] Business losses can be tolerated until new system installed

PROBLEM STATEMENT

Sales growth at PVF has caused greater volume of work for the manufacturing support unit within Purchasing. Further, more concentration on customer service has reduced manufacturing lead times, which puts more pressure on purchasing activities. In addition, cost-cutting measures force Purchasing to be more aggressive in negotiating terms with vendors, improving delivery times, and lowering our investments in inventory. The current modest systems support for Manufacturing/Purchasing is not responsive to these new business conditions. Data are not available, information cannot be summarized, supplier orders cannot be adequately tracked, and commodity buying is not well supported. PVF is spending too much on raw materials and not being responsive to manufacturing needs.

SERVICE REQUEST

I request a thorough analysis of our current operations with the intent to design and build a completely new information system. This system should handle all purchasing transactions, support display and reporting of critical purchasing data, and assist purchasing agents in commodity buying.

IS LIAISON   Chris Martin (Tel: 4-6204   FAX: 4-6200   e-mail: cmartin)

SPONSOR   Sal Divario, Director, Purchasing

-------------------------- TO BE COMPLETED BY SYSTEMS PRIORITY BOARD --------------------------

[   ] Request approved   Assigned to _____
               Start date _____

[   ] Recommend revision

[   ] Suggest user development

[   ] Reject for reason _____

❑ **System Service Request (SSR) is a form requesting development or maintenance of an information system. It includes the contact person, a problem statement, a service request statement, and contact information.**

Managing the Information Systems Project

❑ **Project:**
  ▪ A planned undertaking of related activities to reach an objective that has a beginning and an end.

❑ **Project Management:**
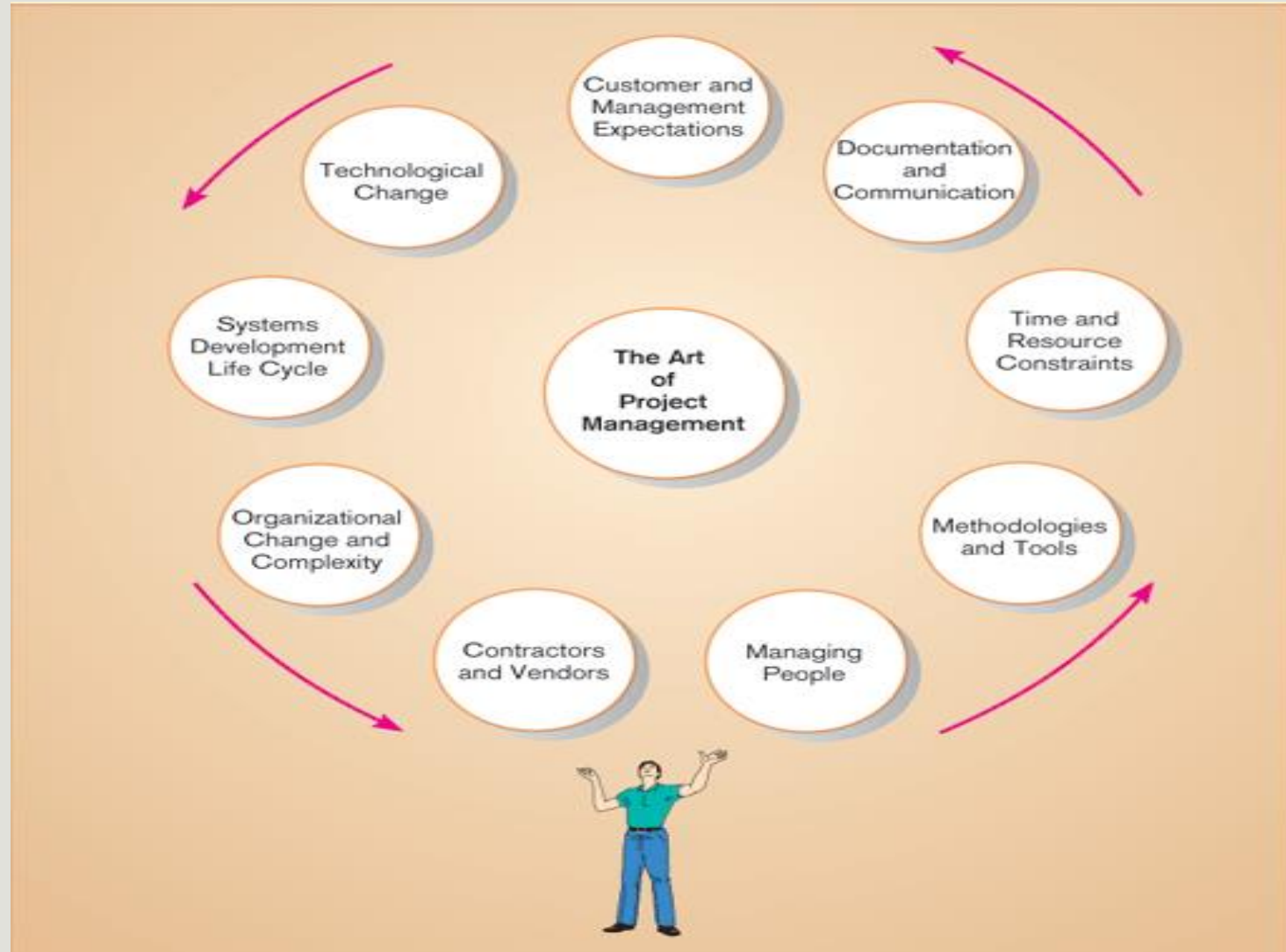 ▪ A controlled process of initiating, planning, executing, and closing down a project.

❑ **Project Manager**
  ▪ Systems analyst with management and leadership skills responsible for leading project initiation, planning, execution, and closedown

❑ **Deliverable**
  ▪ The end product of an SDLC phase

Project Management Activities

Representing and Scheduling Project Plans

- ❑ **Gantt Charts**
- ❑ **Network Diagrams**
- ❑ **PERT Calculations**
- ❑ **Critical Path Scheduling**
- ❑ **Project Management Software**

Gantt Charts vs. Network Diagrams

❑ **Gantt Charts**
- ▪ Show task durations.
- ▪ Show time overlap.
- ▪ Show slack time in duration.

❑ **Network Diagrams**
- ▪ Show task dependencies.
- ▪ Do not show time overlap, but show parallelism.
- ▪ Show slack time in boxes.

Example of Gantt Chart

Project Management Gantt Chart

	Week1	Week2	Week3	Week4	Week5	Week6	Week7
Sample Text	Research						
Sample Text		Design					
Sample Text		Layout					
Sample Text				Developing			
Sample Text					Upload		
Sample Text						Finishing	

Estimating Task Duration

❑**PERT: Program Evaluation Review Technique**

▪ Technique that uses optimistic (o), pessimistic (p), and realistic (r) time estimates to determine expected task duration

❑**Formula for Estimated Time:**
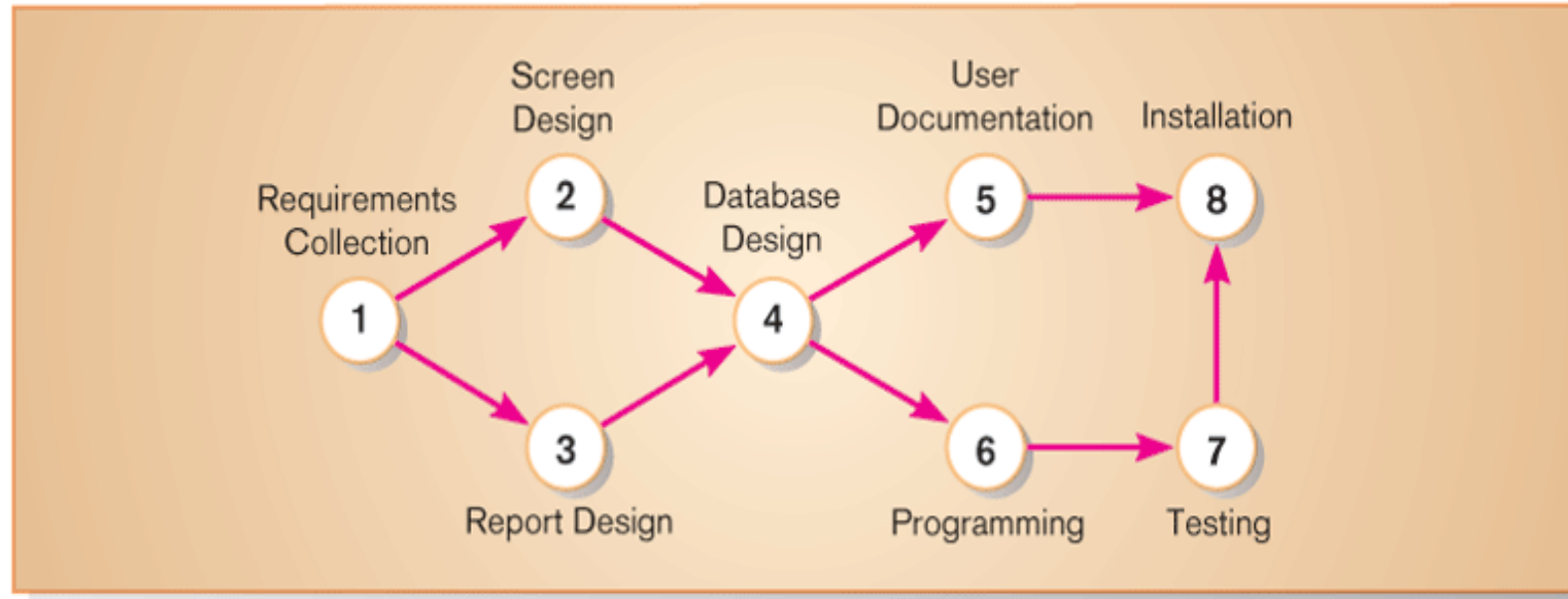
▪ ET = (o + 4r + p)/6

Example PERT Analysis

ACTIVITY	TIME ESTIMATE (in weeks)			EXPECTED TIME (ET) $\dfrac{o + 4r + p}{6}$
	o	r	p	
1. Requirements Collection	1	5	9	5
2. Screen Design	5	6	7	6
3. Report Design	3	6	9	6
4. Database Design	1	2	3	2
5. User Documentation	3	6	7	5.5
6. Programming	4	5	6	5
7. Testing	1	3	5	3
8. Installation	1	1	1	1

Critical Path Scheduling

❑A scheduling technique whose order and duration of a sequence of task activities directly affects the completion date of a project

❑*Critical path:* the shortest time in which a project can be completed

❑*Slack time:* the time an activity can be delayed without delaying the project

Critical Path Example

A network diagram that illustrates the activities (circles) and the sequence (arrows) of those activities

Screen Design — 2
Requirements Collection — 1
Database Design — 4
User Documentation — 5
Installation — 8
Report Design — 3
Programming — 6
Testing — 7

- Network diagram provides graphical illustration of dependencies between activities (see previous slide).
- Network diagram shows dependencies

Critical Path Elements

▸ **Activity**   :   any portions of project (tasks) which required by project, uses up resource and consumes time – may involve labor, paper work, contractual negotiations, machinery operations Activity on Arrow (AOA) showed as arrow, AON – Activity on Node

▸ **Event**   :   beginning or ending points of one or more activities, instantaneous point in time, also called 'nodes'

▸ **Network**   :   Combination of all project activities and the events

PRECEEDING   SUCCESSOR

ACTIVITY

EVENT
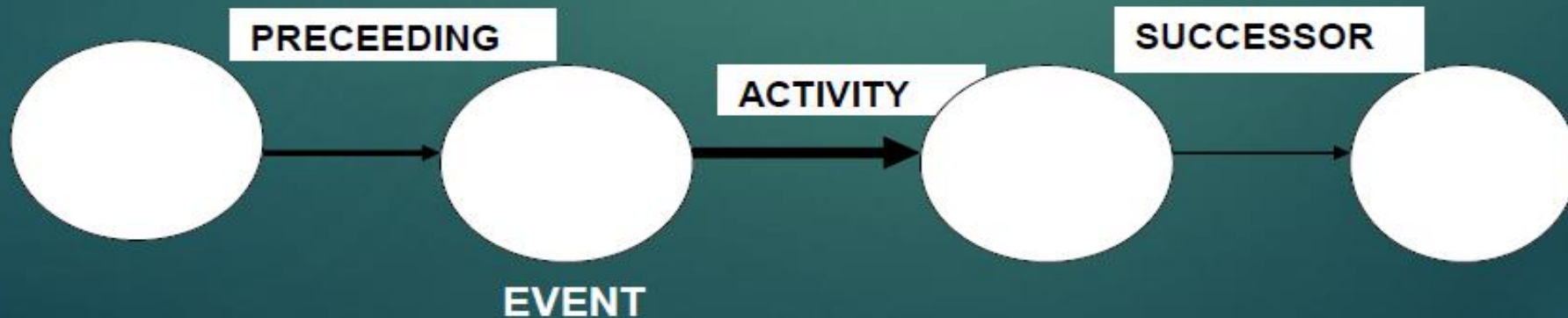
# **Activity, Duration, ES, EF, LS, LF**
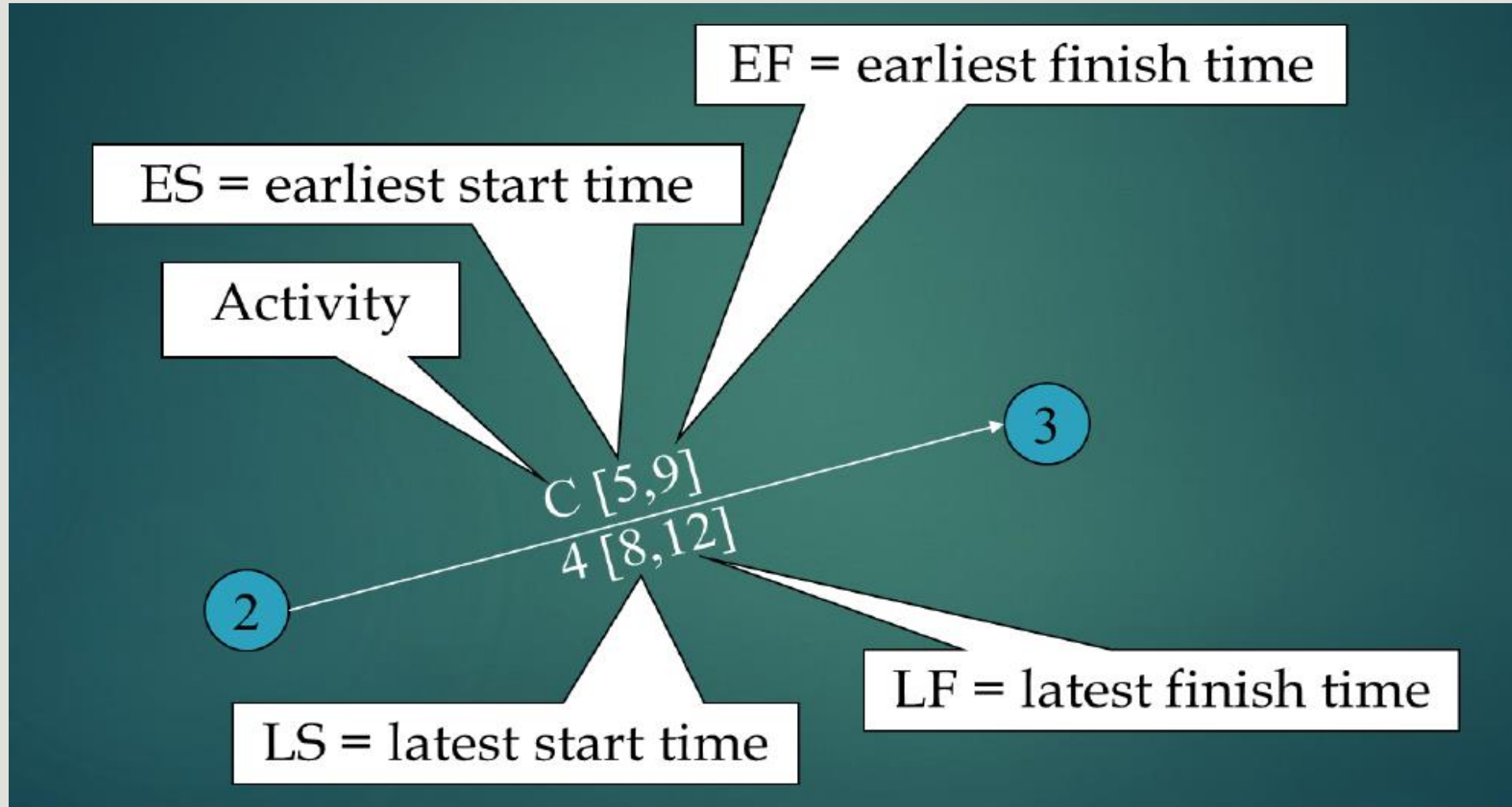
Dummy Activity
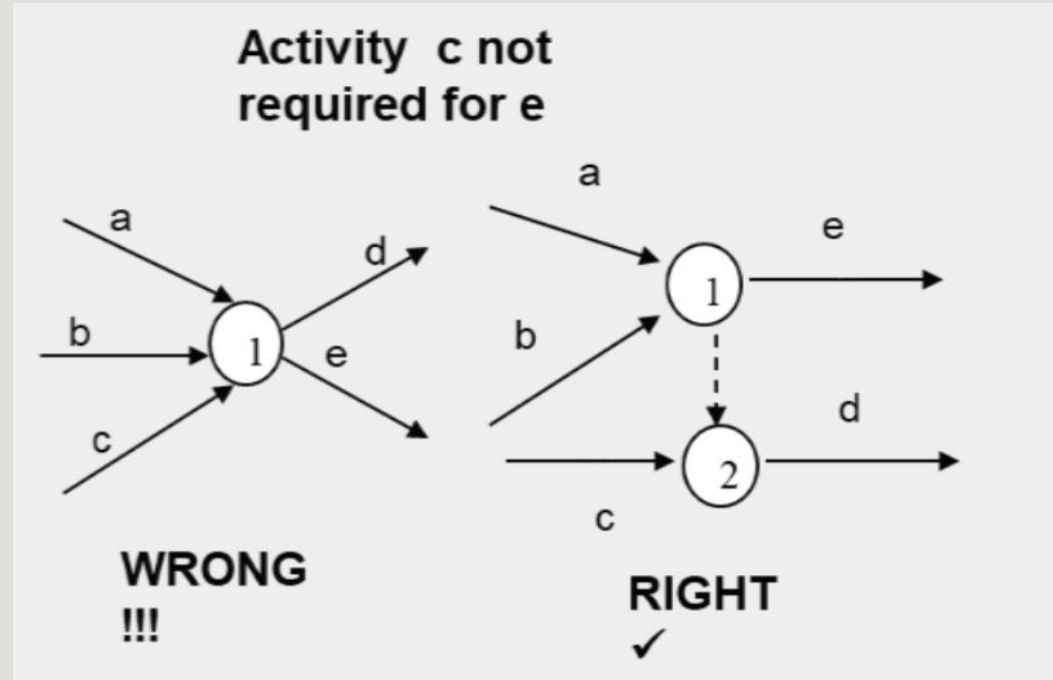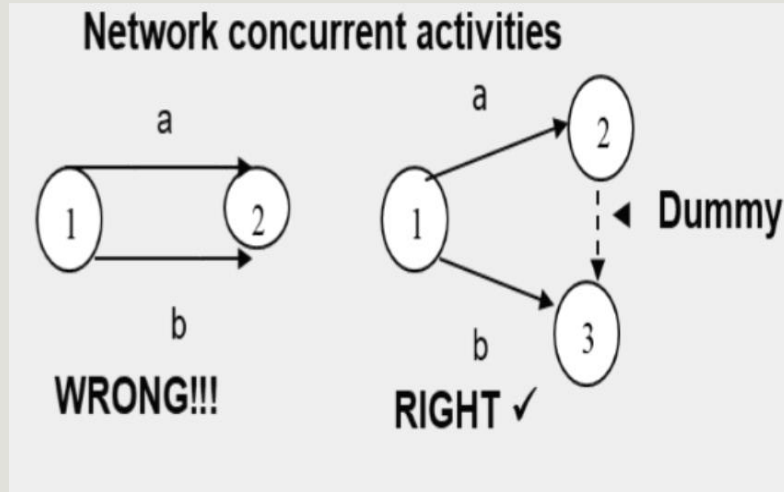
- ❑ This dotted arc is a **dummy activity**. **Dummy activities** often have a zero completion time and are used to represent precedence relationships that cannot be easily (if at all) represented **using** the actual **activities** involved in the project.
- ❑ By convention **dummies** are always shown as dotted arcs in **network diagrams**.
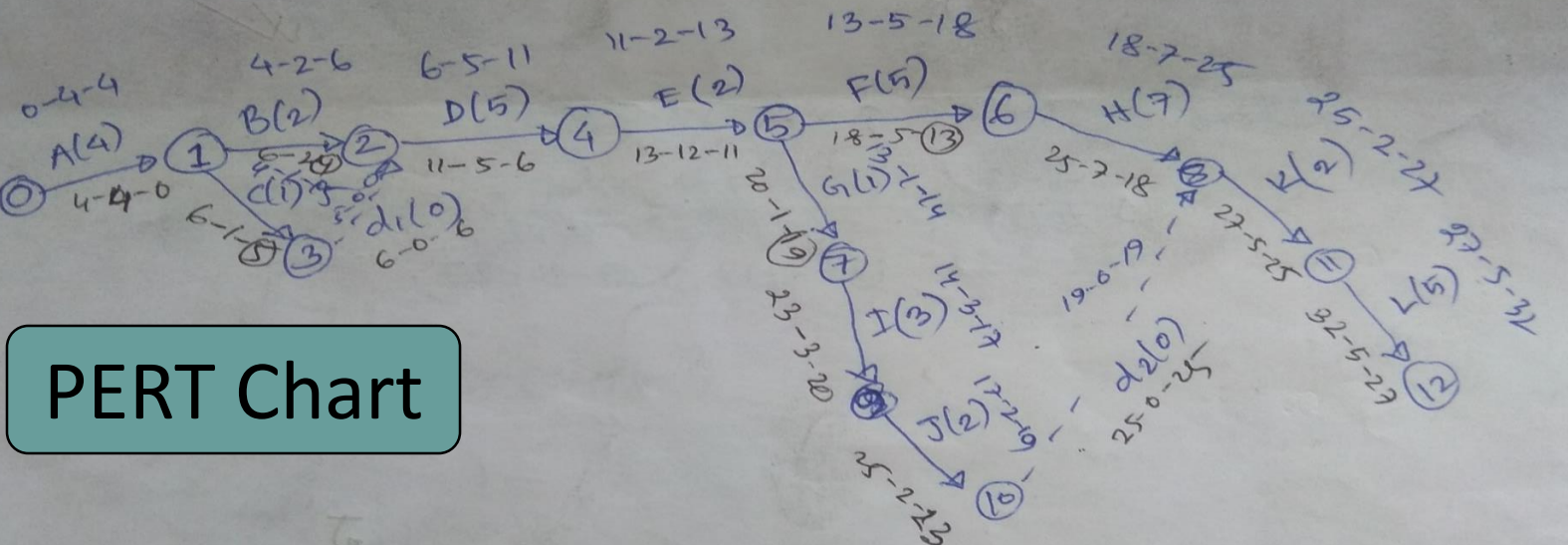
Gantt Chart

PERT Chart
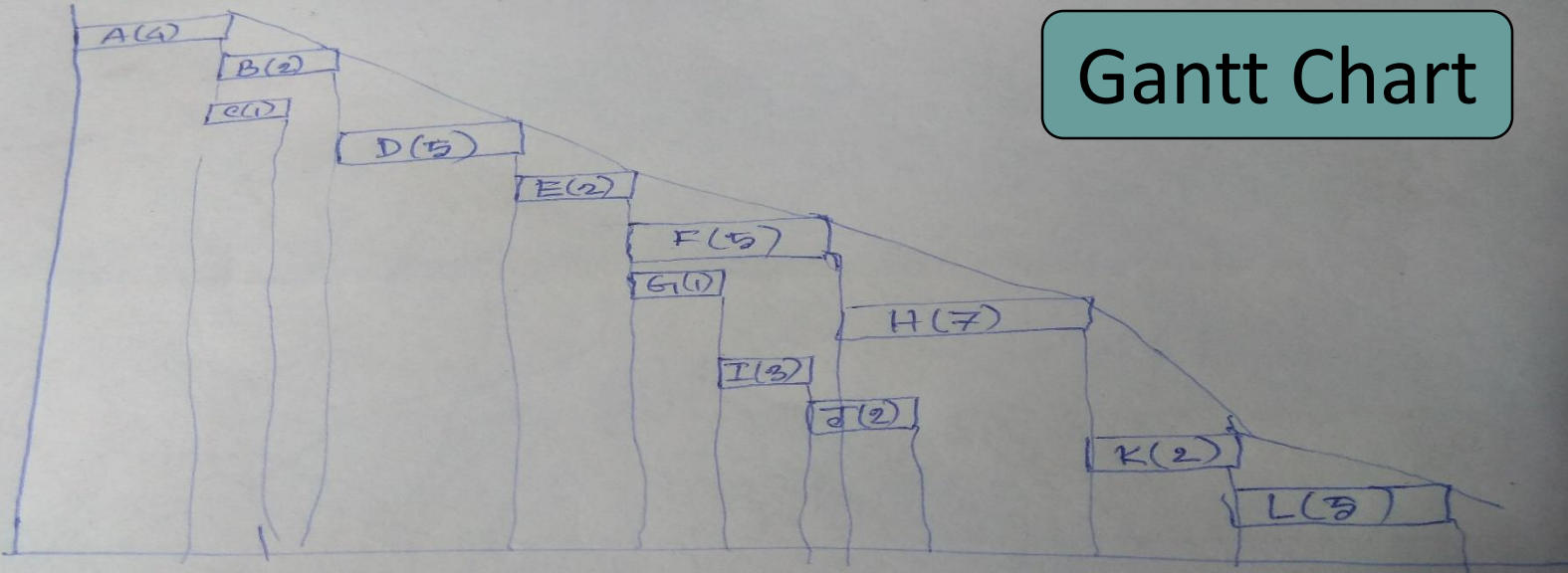
Example-1: The following table shows a list of activities/tasks, their independencies and times required to complete each activity/tasks for a project:

Activities/Tasks	Dependency	Time(Week)
A. User Requirements	-	4
B. Feasibility Study	A	2
C. Prioritize the Requirements	A	1
D. Analysis the System	B,C	5
E. Specification	D	2
F. Software Design	E	5
G. Hardware Study	E	1
H. Coding	F	7
I. Hardware Installation	G	3
J. LAN Establishment	I	2
K. Deployment	H, J	2
L. Maintenance	K	5

Task:

Draw the Gantt Chart, Pert Chart/Network Diagram and Critical Path, Critical Value

Gantt Chart

A(10)
B(5)
C(7)
D(7)
E(6)
F(4)
G(10)
H(4)
I(9)
J(10)

PERT Chart

(Network diagram — handwritten)

10-7-17
D(7)
A(10) 10-10
B(5)
d₁(0)
C(7) 0-7-7 7-6-13 13-4-17
E(6) F(4)
12-0-12
d₂(0)
17-10-27 22-4-31
G(10) H(4)
22-9-36
36-9-27
I(9)
d₃(0)
J(10)
31-0-31
36-10-46
46-10-36

■ Critical Path:
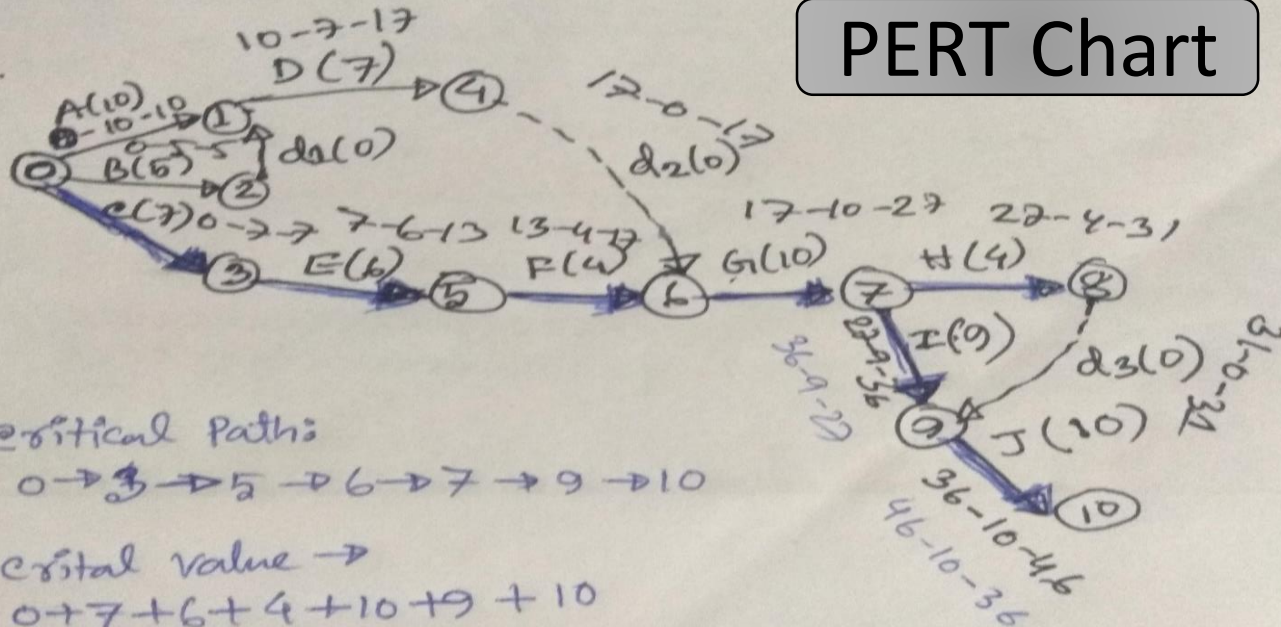0 → 3 → 5 → 6 → 7 → 9 → 10

■ Crital value →
0 + 7 + 6 + 4 + 10 + 9 + 10
= 46
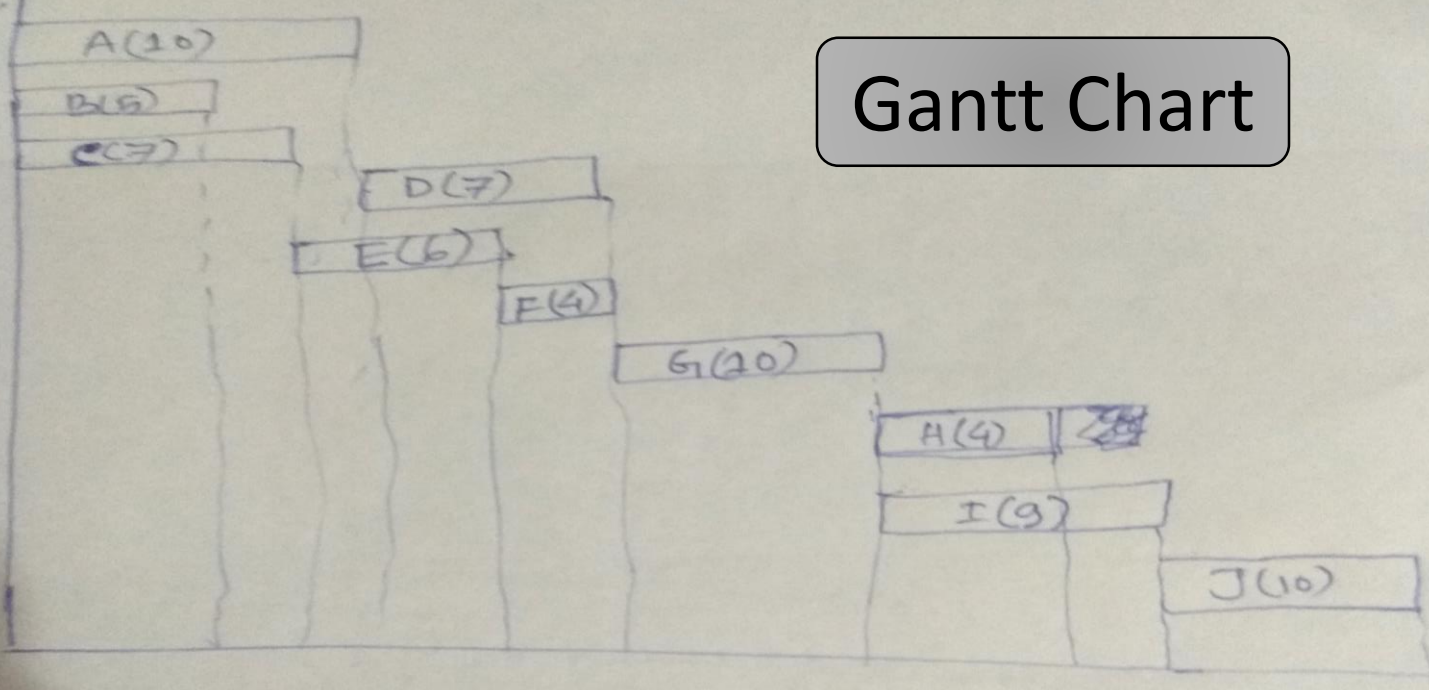
Example-2: The following table shows a list of activities/tasks, their independencies and times required to complete each activity/tasks for a project:

Activities/Tasks	Dependency	Time(Week)
A	-	10
B	-	5
C	-	7
D	A, B	7
E	C	6
F	E	4
G	D, F	10
H	G	4
I	G	9
J	H, I	10

Task:

Draw the Gantt Chart, Pert Chart/Network Diagram and Critical Path, Critical Value

Gantt Chart

A(3)
B(5)
C(7)
D(8)
E(5)
F(5)
G(4)
H(5)
I(6)
J(4)

PERT Chart

0-3-3
A(3)
3-8-11
D(8)
11-6-17
I(6)

0-5-5
B(5)
5-5-10
E(5)
10-4-14
G(4)

7-7-0
C(7)

7-5-12
F(5)
12-5-17
H(5)
12-6-18
d1(0)

17-4-21
J(4)

12-5-7
17-5-12
21-4-17

d1(0)
d2(0)

☑ Critical Path:
    0 → 3 → 6 → 8 → 10

☑ Critical value:
    = 7 + 5 + 5 + 4
    = 21
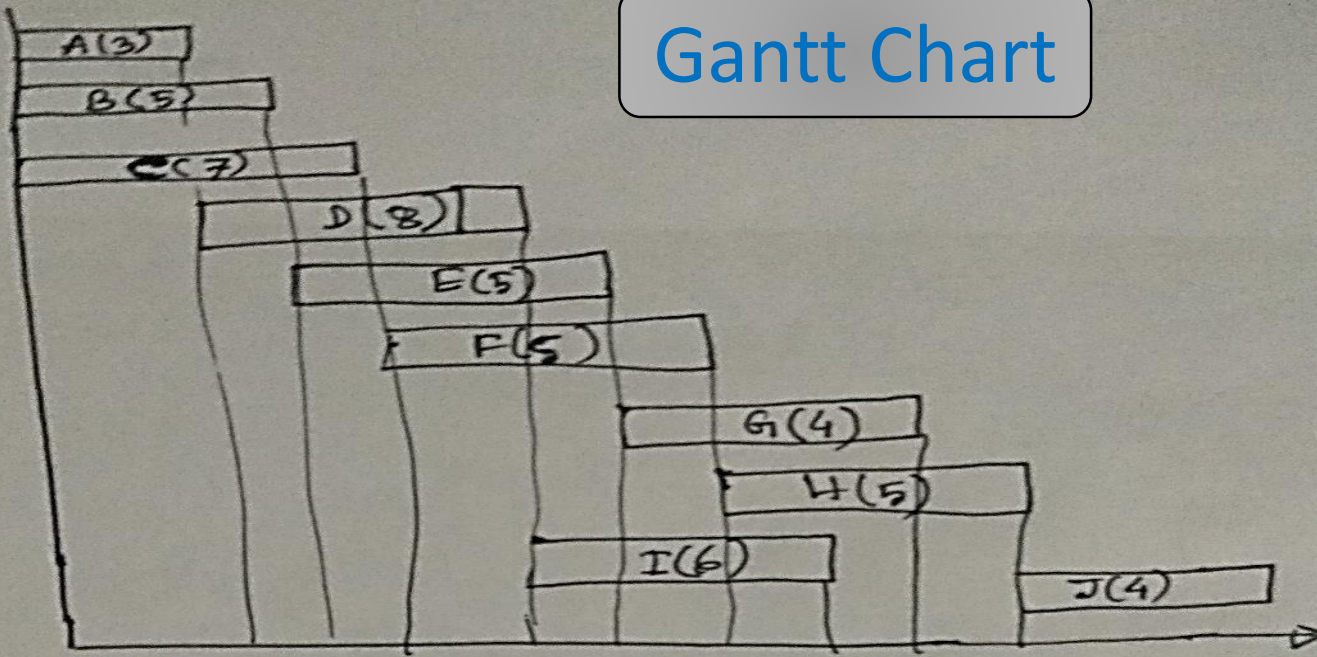
Example-3: The following table shows a list of activities/tasks, their independencies and times required to complete each activity/tasks for a project:

Activities/Tasks	Dependency	Time(Week)
A	-	3
B	-	5
C	-	7
D	A	8
E	B	5
F	C	5
G	E	4
H	F	5
I	D	6
J	G, H	4

Task:

Draw the Gantt Chart, Pert Chart/Network Diagram and Critical Path, Critical Value

References

1. **System Analysis and Design,** by Elias M. Awad
2. **Systems Analysis and Design,** Kendall and Kendall, Fifth Edition