

إدارة المشروعات

# Projects Management



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Lecture 5 – Part 2

Activity on Arrow Diagram (AOA)

# P2: Sequencing Activities

## Network diagrams

- Network diagrams are the preferred technique for showing activity sequencing
- A **network diagram** is a **schematic display** of the **logical relationships** among, or **sequencing** of, project activities
- Some people refer to network diagrams as project schedule network diagrams or PERT charts (PERT is described later )
- **Two main formats** are the arrow and precedence diagramming methods:

1. Activity-on-arrow (AOA) or Arrow Diagramming Method (ADM)
2. Precedence Diagramming Method (PDM)

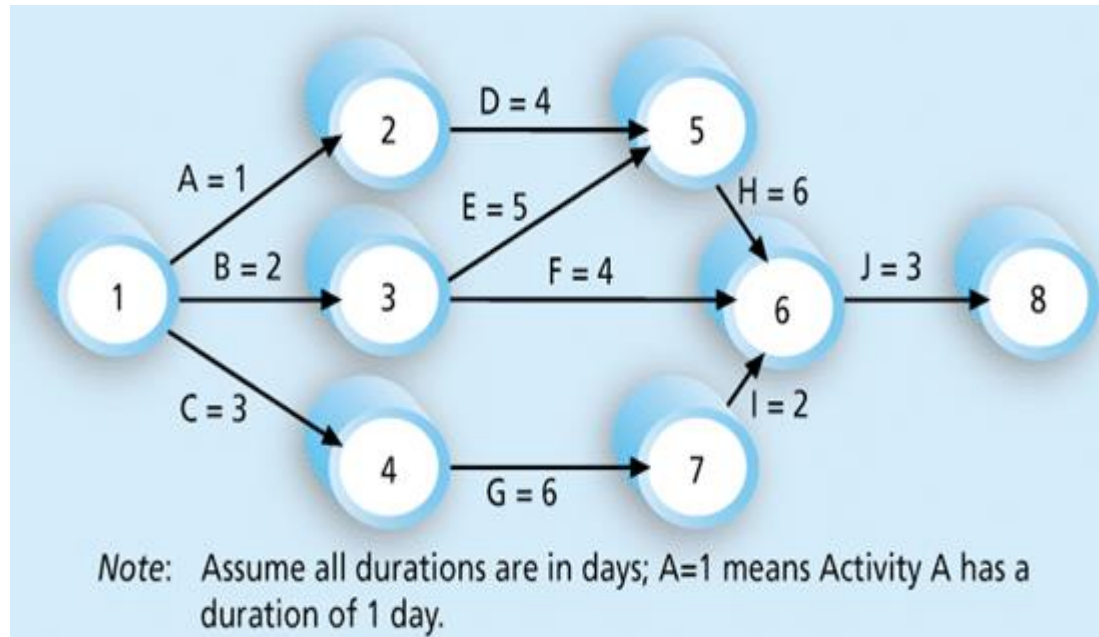


# P2: Sequencing Activities

## Network diagrams

### 1. Activity-on-arrow (AOA) or Arrow Diagramming Method (ADM)

- Activities required to complete the project are represented by arrows (A to J).
- These activities come from the WBS and activity definition process described earlier.
- Nodes or circles are the starting and ending points of activities.



The first node signifies the start of a project, and the last node represents the end.



# P2: Sequencing Activities

## Network diagrams

### 1. Activity-on-arrow (AOA) or Arrow Diagramming Method (ADM)

- Every activity on the network diagram must be completed in order to finish the project.
- Not every item on WBS needs to be shown on the network diagram (only activities with dependencies need to be shown).
- However, some people like to have start and end milestones and to list every activity (It is a matter of preference)
- For large projects with hundreds of activities, it might be simpler to include only activities with dependencies on a network diagram.
- Sometimes it is enough to break down the project into several smaller network diagrams.



# P2: Sequencing Activities

## Steps to create an Activity-on-arrow (AOA) network diagram:

1. Find all of the activities that start at Node 1. Draw their finish nodes, and draw arrows between Node 1 and each of the finish nodes.
2. Put arrowheads on all arrows to signify the direction of the relationships.
3. Put the activity letter or name on the associated arrow.
4. If you have a duration estimate, write it next to the activity letter or name, as shown in Figure (example, A = 1 means that the duration of Activity A is one day, week, or other standard unit of time).
5. **Continue drawing the network diagram, working from left to right.**
6. Look for **bursts** and **merges**:
  - ✓ A Bursts occur when two or more activities follow a single node (Node 1 is a burst because it goes into Nodes 2, 3, and 4).
  - ✓ A merge occurs when two or more nodes precede a single node (Node 5 is a merge preceded by Nodes 2 and 3).
7. Continue drawing the AOA network diagram until all activities are included.

# P2: Sequencing Activities

## Excercise

Consider the Table shown, All duration estimates are in days, and the network proceeds from Node 1 to Node 9

1. Draw an AOA network diagram representing the project.
2. Determine the Burst and Merge Nodes.
3. Estimate the finish date assuming beginning of the project today?

Activity	Initial Node	Final Node	Estimated Duration
A	1	2	2
B	2	3	2
C	2	4	3
D	2	5	4
E	3	6	2
F	4	6	3
G	5	7	6
H	6	8	2
I	6	7	5
J	7	8	1
K	8	9	2

# P2: Sequencing Activities

## Network diagrams

### 1. Activity-on-arrow (AOA) or Arrow Diagramming Method (ADM)

Even though AOA or ADM network diagrams are generally easy to understand and create, **a different method is more commonly used:**

The precedence diagramming method (PDM)

