PDM Practice Exercise

Introduction

The Precedence Diagram Method (PDM) is a technique for building a network schedule. In addition to showing task relationships, PDM schedules typically include information such as: task duration, float, early start and finish dates, and late start and finish dates.

In this practice exercise, you will fill in a network schedule by applying the precedence diagram method.

To complete this practice exercise:

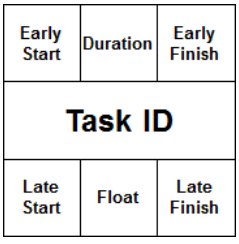
1. Perform a **Forward Pass** to determine each task's *early* start and finish dates.
2. Perform a **Backward Pass** to determine each task's *late* start and finish dates.
3. Calculate the **Float** for each task.
4. Identify the **Critical Path**.

Part 1 contains the practice exercise. Part 2 contains the solutions for the practice exercise (forward pass, backward pass, and float and critical path).

Things to Know Before You Begin

PDM Network Schedule Legend

This practice exercise uses a segmented box to display an individual task's information. The task identifier or name is in the middle of the box. The left side of the box displays start information: top left is early start and bottom left is late start. The right side of the box displays finish information: top right is early finish and bottom right is late finish. The task's duration displays at the top of the box, in the middle between early start and early finish. The task's float value displays at the bottom of the box, in the middle between late start and late finish.

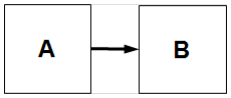


➲ **Note:** Task durations have been pre-determined for this exercise.

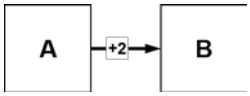
Task Relationships

Recall that there are four types of task relationships used in network schedules:

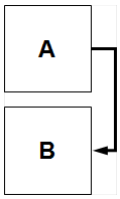
Finish-to-Start Relationship



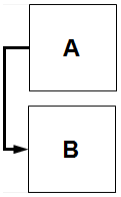
Finish-to-Start Relationship with a Lag



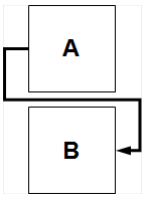
Finish-to-Finish Relationship



Start-to-Start Relationship



Start-to-Finish Relationship



1. The **finish-to-start** relationship means that one task cannot start until another task has finished. In this example, Task B cannot start until Task A has finished. Task A is the predecessor and Task B is the successor.
2. The **finish-to-start with a lag** relationship means that one task cannot start until a specific number of days after another task has finished. In this example, Task B cannot start until 2 days after Task A has finished. Task A is the predecessor and Task B is the successor.
3. The **finish-to-finish** relationship means that one task cannot finish until another task has finished. In this example, Task B cannot finish until Task A has finished. Task A is the predecessor and Task B is the successor.
4. The **start-to-start** relationship means that one task cannot start until another task has started. In this example, Task B cannot start until Task A has started. Task A is the predecessor and Task B is the successor.
5. The **start-to-finish** relationship means that one task cannot finish until another task has started. In this example, Task B cannot finish until Task A has started. Task A is the predecessor and Task B is the successor.

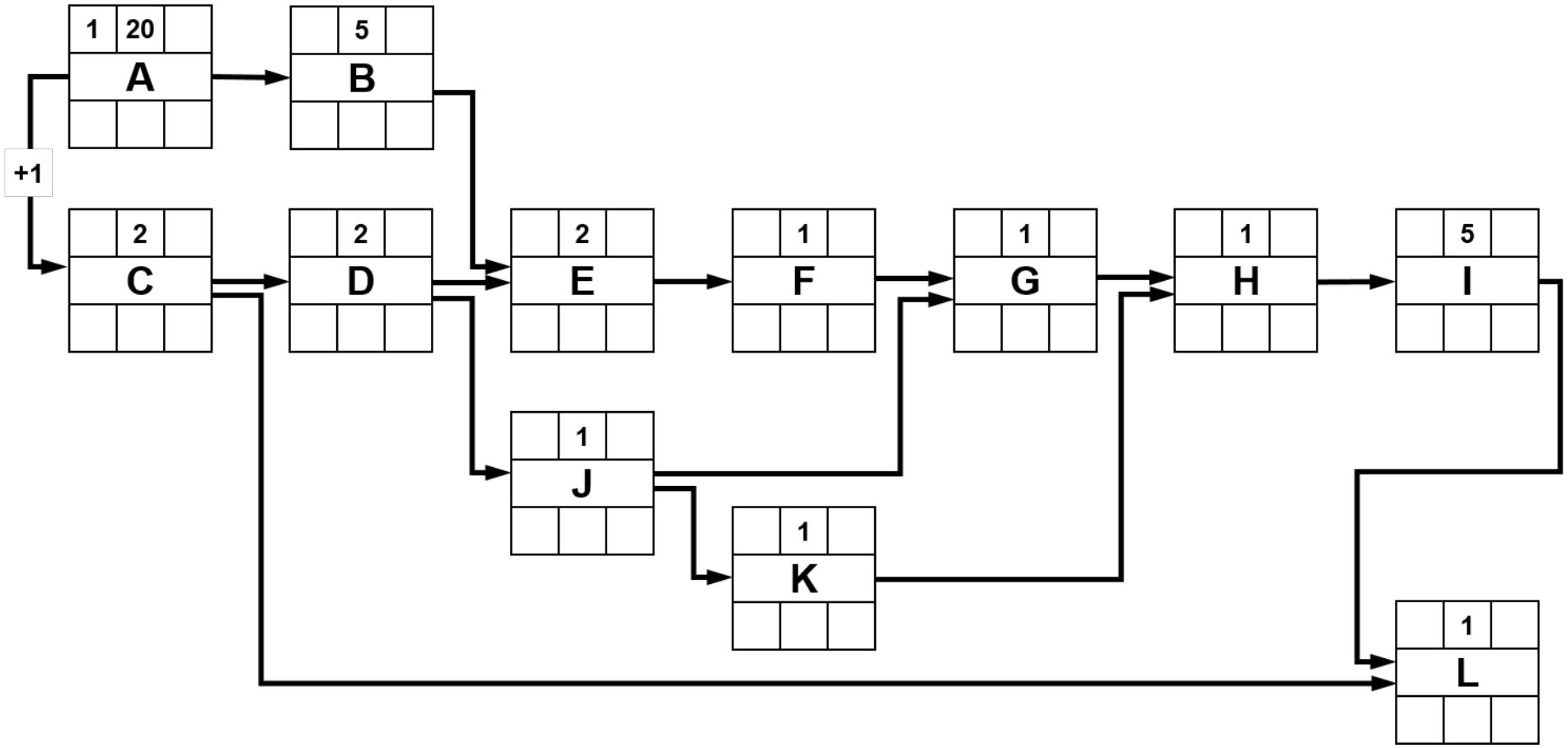
➲ **Note:** The start-to-finish relationship is not commonly used in scheduling.

ⓘ *See the **How to Read a Schedule** and **Build a PDM Network Schedule** job aids for more information about PDM network schedules.*

PART 1—Exercise

For the following PDM network schedule:

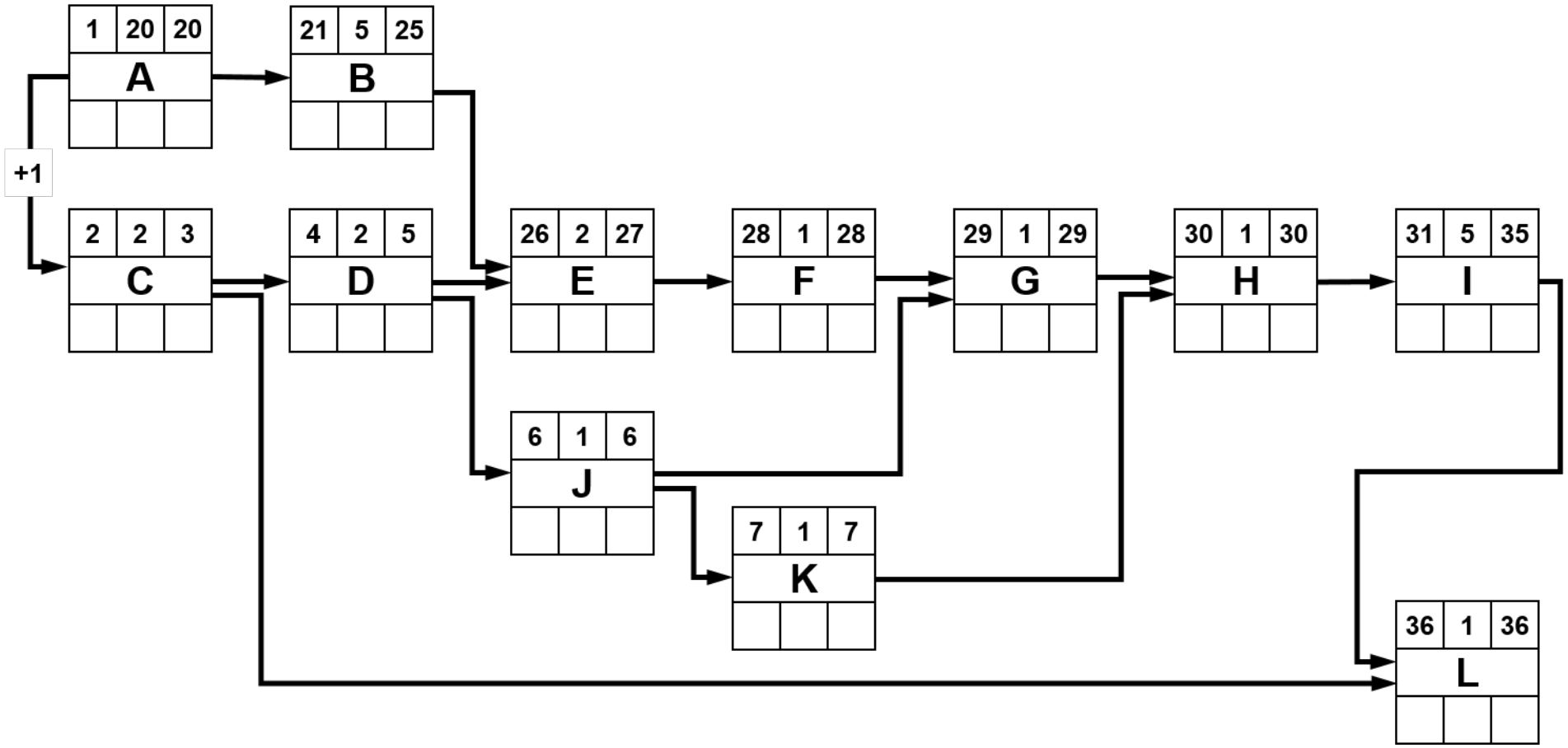
1. Determine each task's:
    a. *Early* start and finish dates;
    b. *Late* start and finish dates.
2. Calculate the float for each task.
3. Identify the critical path.



Part 2—Solution

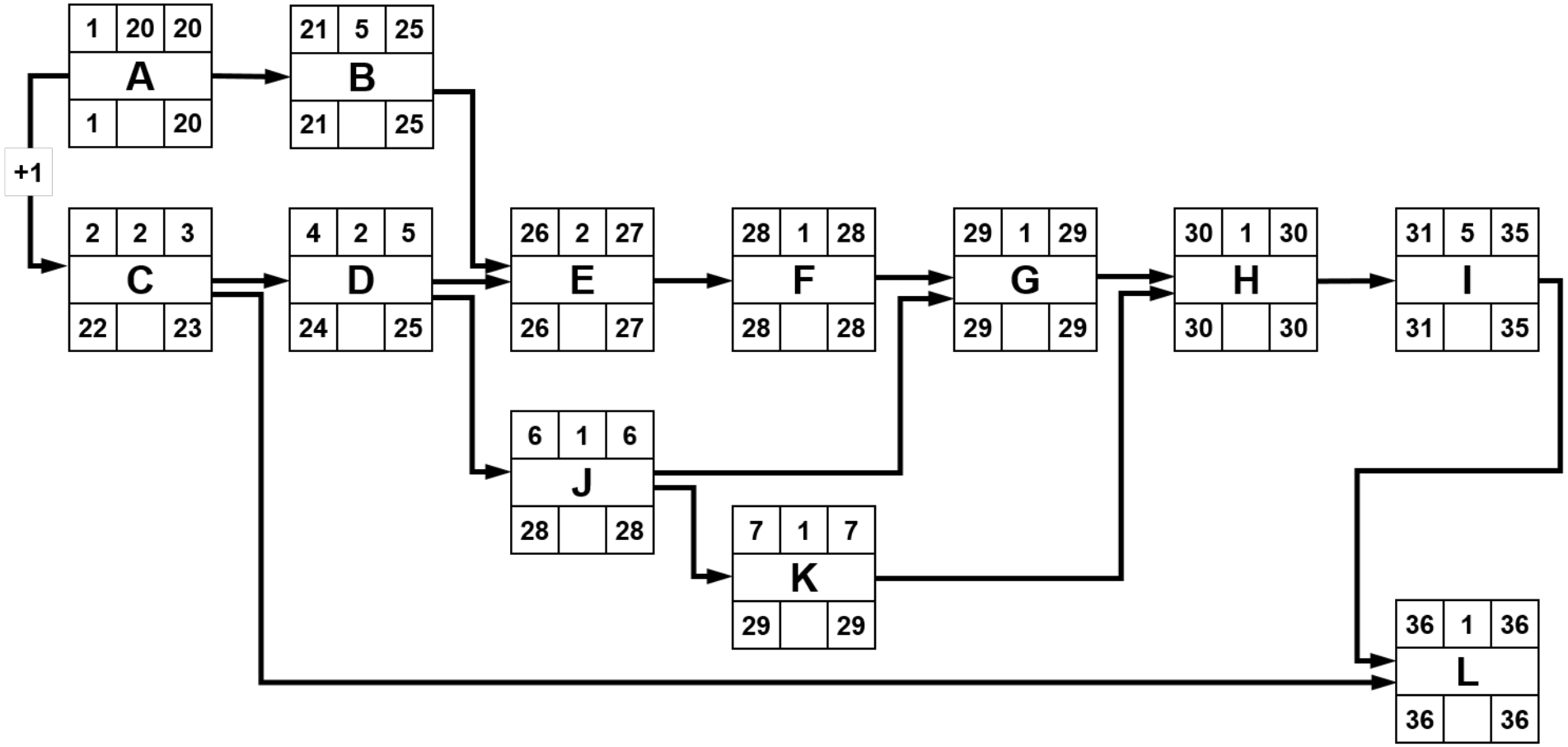
Forward Pass

Once task durations have been identified, the first step in completing a PDM network schedule is conducting a **Forward Pass** to determine each task's *early* start and finish dates. A forward pass starts with the first task in the project, works through the network according to task relationships and durations, and concludes with the final task.



Backward Pass

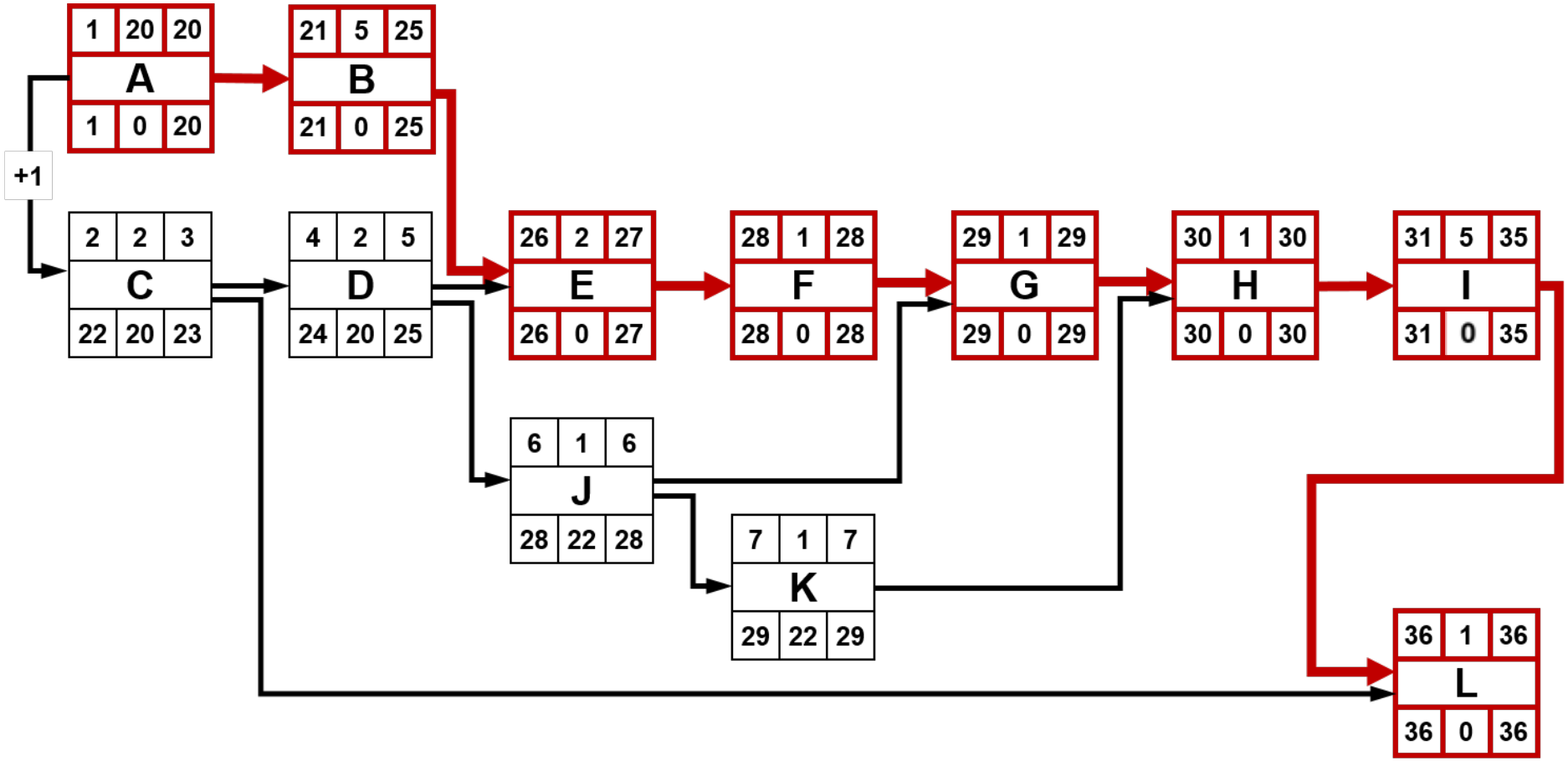
Once the *early* start and finish dates have been determined for all tasks, the next step in completing a PDM network schedule is conducting a **Backward Pass** to determine each task's *late* start and finish dates. A backward pass starts with the last task in the project, works through the network according to task relationships and durations, and concludes with the first task.



Float and Critical Path

Once the late start and finish dates have been determined for all tasks, the next step in completing a PDM network schedule is calculating each task's **Float** days. To determine the total float for a task, you must perform two calculations: (1) subtract the task's earliest start time from its latest start time; and (2) subtract the task's earliest finish time from its latest finish time. If there is a difference between the two calculations, then the float is the lesser of the two values.

The **Critical Path** is the sequence of tasks through the network schedule that has the longest total duration with the least amount of float.



Critical Path: A – B – E – F – G – H – I – L