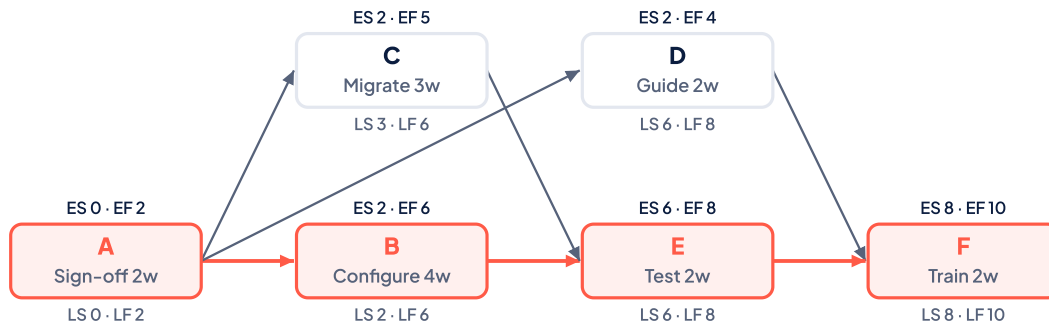


Critical path method (CPM)

Find the chain that sets the shortest possible duration: the work whose delay moves the end date.



Illustrative, weeks from 0 (2 = end of week 2). Above each box: early start · finish (ES · EF); below: late (LS · LF). Coral: the critical path.

WHAT IT IS

Published by James Kelley and Morgan Walker in 1959. On an **activity-on-node** network, each box is an activity and each arrow a dependency. A forward pass gives each activity's early dates, a backward pass its late ones. Where they agree there is no float: that chain is the **critical path**. It is the longest path, so it sets the shortest possible duration.

HOW IT WORKS

- 01 Forward: ES = the largest EF before it; EF = ES + duration.
- 02 Backward: LF = the smallest LS after it; LS = LF – duration.
- 03 Float = LS – ES; no float: the critical path.
- 04 From day 1: EF = ES + duration – 1; the same float.

MID-LEVEL · WORKED EXAMPLE

Apply it well

The situation: A city team has ten weeks before online parking permits go live: six activities, from signing off the permit rules to training the staff.

Ten weeks on A–B–E–F (2 + 4 + 2 + 2), with no room before go-live; via the data migration, 2 + 3 + 2 + 2 = 9, so near-critical. The project manager books the sign-off now, as A is critical, and checks the migration weekly.

In the exam: Write ES · EF above and LS · LF below each box; name the path, its length and what you will watch.

SENIOR · WORKED EXAMPLE

Design and lead it

The situation: A city is joining 14 online services under one login over 30 months; the national login takes changes only in quarterly release windows.

The project manager sets the rules: one network across the teams, the release windows as fixed dates, and a monthly board view of the critical path and every chain within two weeks of it.

In the exam: Show that you **govern** it: one network, fixed external dates, near-critical chains with owners.

WHERE IT SITS

IPMA · ICB4	PMI · PMBOK® GUIDE 8 · PMP® EXAM	APM · BOK 8 · PMQ EXAM
4.5.4.4: calculate the critical path (p. 114); network analysis, critical path planning (p. 112)	Guide pp. 160–161: critical path method; pp. 185–186: precedence diagramming. Exam outline: Process task 8	BoK (APM's Body of Knowledge) §5.5.1: critical path analysis (CPA), understood well enough to check software. PMQ (APM's Project Management Qualification) 20b, 20c

Sources: Kelley & Walker (1959); IPMA ICB4 (2015); PMI, PMBOK® Guide, 8th ed.; PMI, PMP® Examination Content Outline (2026); APM Body of Knowledge, 8th ed.; APM, PMQ handbook (v6, 2026)

Key: IPMA = International Project Management Association; ICB4 = IPMA's Individual Competence Baseline (4.5.4 etc.: its competence elements); PMI = Project Management Institute; PMBOK® Guide = PMI's body-of-knowledge guide; PMP® = PMI's Project Management Professional; APM = Association for Project Management. Unofficial study material for IPMA®, PMI® and APM exams. Not affiliated with, endorsed by or approved by IPMA, PMI or APM, and not an accredited or endorsed training provider. IPMA® and IPMA ICB® are registered trademarks of IPMA in Switzerland and other countries. PMI, PMP, CAPM and PMBOK are registered marks of Project Management Institute, Inc. APM is a trade mark of the Association for Project Management. Other marks belong to their owners. PMP® exam facts are from PMI's public PMP® Examination Content Outline (2026); check the current version on pmi.org. APM's qualifications are its own; this series is not an APM Accredited Provider or APM Endorsed. Examples use a fictional city and its projects. Levels (this series' labels): Mid-level = moderately complex projects (IPMA Level C, PMI's PMP®); Senior = complex projects and people (IPMA Level B, APM's Chartered Project Professional).

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