CRITICAL PATH

In a graph, a critical path corresponds to a **simple path of maximum value**. Critical paths are used to determine the minimum amount of time required to carry out a task comprising several steps. To represent such a situation, you must be aware of which steps are prerequisites for others and which can be carried out simultaneously.

E.g.

Starting a company

Step	Description	Execution time (days)	Prior steps
A	Preparing a business plan	30	None
B	Conducting market research	10	A
C	Looking for partners	25	A
D	Looking for a location	20	A
E	Analyzing the market research	5	B
F	Evaluating the product-distribution system	15	C and D
G	Arranging for financing	35	E and F
H	Launching the company	None	G

The set of steps associated with starting this company can be represented using the adjacent graph. In this graph, the following can be noted:

- Each vertex corresponds to a step.
- Parallel paths are associated with steps that can be executed simultaneously.
- The number indicated at each arc corresponds to the execution time of the step at the arc's starting point.
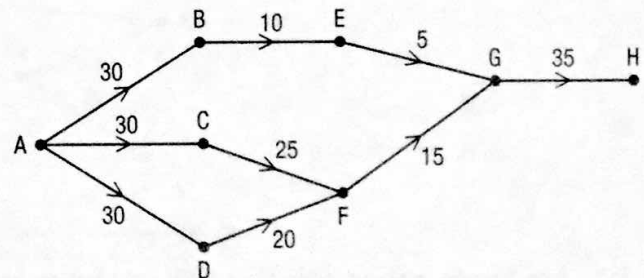
The minimum time required to start this company can be determined by finding the value of the critical path associated with this situation.
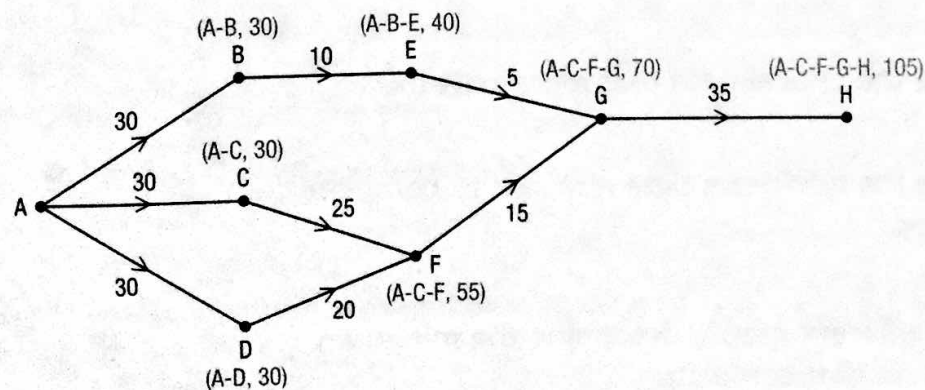
It would take a minimum of 105 days to start this company.