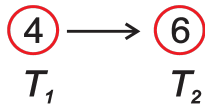
2.5 Critical Path Analysis

A list of vertices connected by arrows is a _____ ***graph*** or _____.

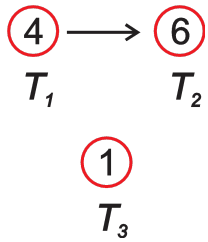
If the tasks cannot be completed in a random order, then the order can be specified in an _____ ***digraph***.

If the time to complete a task is shown on the digraph, it is a _____ digraph.

Suppose the first task T_1 takes 4 minutes and a second task T_2 takes 6 minutes, and the second task can't be started until the first task is done. This would be represented in a weighted digraph as



An _____ ***task*** is one that can be done independently of any of the other tasks. So if task T_3 takes 1 minute and is an independent task, the weighted order-requirement digraph would look like



Example

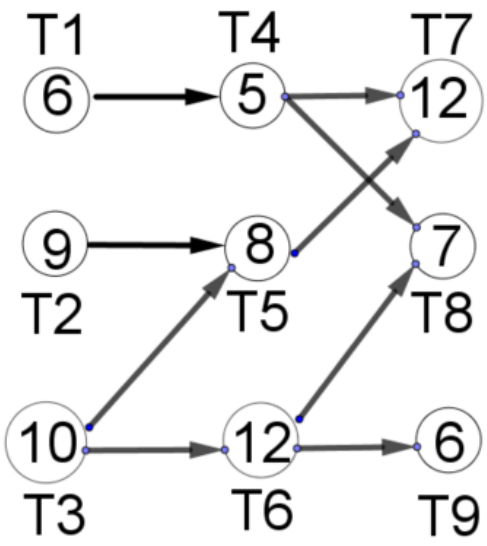
Break down the fajita recipe below into a series of tasks. Show these tasks in a weighted order-requirement digraph.

Tortillas	Slice the onion and chicken into strips.
Chicken	Cook chicken 10 minutes then add
1 onion	onions and cook for 5 more minutes.
Seasoning	Add seasoning. Chop tomatoes and mix
Tomatoes	with cilantro. Warm tortillas. Serve.
Cilantro	

A _____ ***path*** on the digraph is the *longest path* and it determines the *earliest completion time* (the earliest possible time for the completion of all of the tasks making up the job in the digraph).

Example
What is the critical path for making fajitas?

Example
Determine the critical path in the digraph below.



What is the earliest possible time for completion of all of the tasks in the digraph?