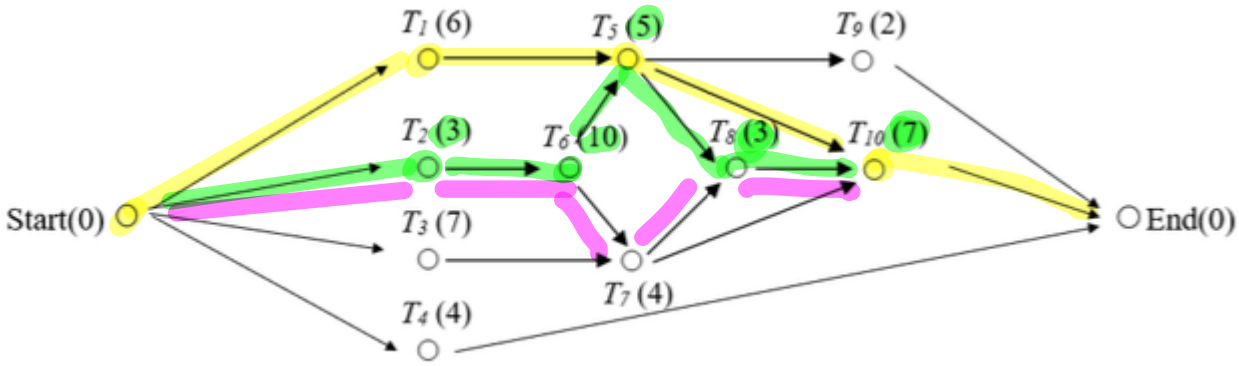
Math 140: Chapter 2 Scheduling Section 2.4 Critical Path Algorithm

The **critical path algorithm** allows you to create a priority list based on idea of critical paths.

Critical path: dictates the minimum completion time for a schedule.

Example 1. What is the critical path for the previous example?



6+5+7 = 18 hours

3+10+5+3+7 = 28 hours

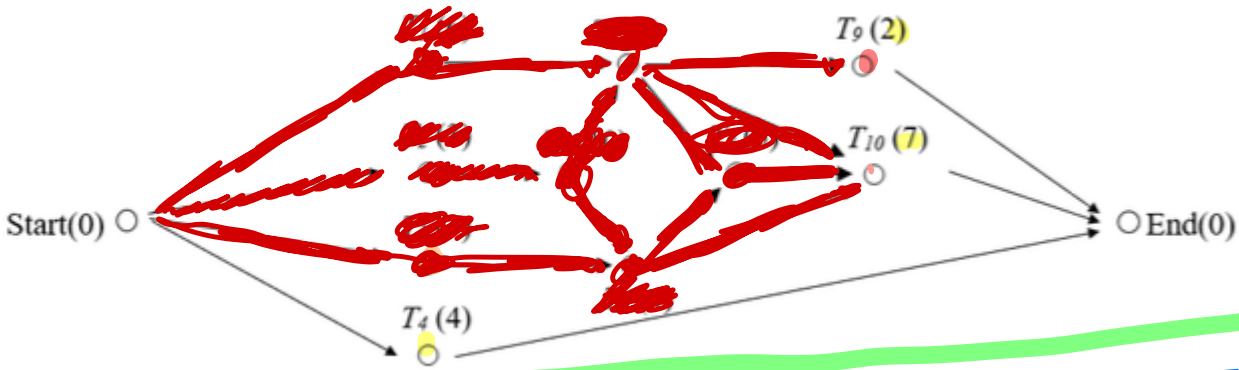
3+10+4+3+7 = 27 hours

Critical path: T_2 (3), T_6 (10), T_5 (5), T_8 (3), T_{10} (7)

Critical Path Algorithm for building a priority list

1. Find the critical path.
2. The first task in the critical path gets added to the priority list.
3. Remove that task (and its associated edges)from the digraph
4. Repeat, finding the new critical path with the revised digraph. The first task of the new critical path is added as the next task in the priority list.
5. Stop when all tasks are added to the priority list.

Example 2. Use the above algorithm to find the priority list for the same digraph.



Priority List: $T_2, T_6, T_1, T_3, T_5, T_7, T_8, T_{10}, T_4, T_9$

1st critical path:
$T_2, T_6, T_5, T_8, T_{10}$

2nd critical path
T_6, T_5, T_8, T_{10}

3rd critical path:
T_1, T_5, T_8, T_{10}

4th critical path
T_3, T_7, T_8, T_{10}

5th critical path
T_5, T_8, T_{10}

6th critical path
T_7, T_3, T_{10}

7th critical path
T_8, T_{10}