

# Lecture 6

## Engineering Prototype

Feb 6, 2018

A **prototype** is . . . a model . . . of a product to test a concept . . . to be . . . learned from.

From Wikipedia

# For this class according to schedule

- Need 1-3 Crude Prototypes on Feb 13 (1 week)
- Need a working model before March 2 for Aging Conference (3 ½ weeks)

# Prototypes

- **Virtual Prototype 3D Computer Aided Design (CAD) rendering**
- **Mock up Rough construction, Crude materials (cardboard, foam, paper or wood) Shows the idea in 3D form**
- **Working Model Use of existing materials, parts and components to prove the new Idea works or not**

# Prototypes

- **Rapid Prototype** quickly fabricate scale model using three dimensional CAD data.
- **Working (Engineering) Prototype** A fully *functioning* item designed & engineered for features
- **Pre-production Prototype.** A prototype that is ready for manufacturing scaling

**Where are you?**

**Where will you be at the end of the quarter?**

# What is a Crude Prototype?

- Software representation (CAD rendering)

Or

- Sketch

Or

- Mock up Cardboard, foam, paper, wood construction

# What is a working model

- Does the minimum but can still represent functionality- a model that works!
- Minimally Viable product
  - Most pared down version that can still be given to people
- Can be used as a model for improvement next quarter

# What is a working model?

- Can use parts repurposed from another application
- Can be over-featured or under-featured.
- Can be oversized, bulky, inelegant
- Must be tested on people without harm (to people!)

# Question to each Team

- Can we go from sketch today
- To working model on June 2?



# Thoughts

- It doesn't have to be beautiful
- You can order parts that are not used
- Fast schedules drives innovation

Today is the beginning for getting a  
crude prototype

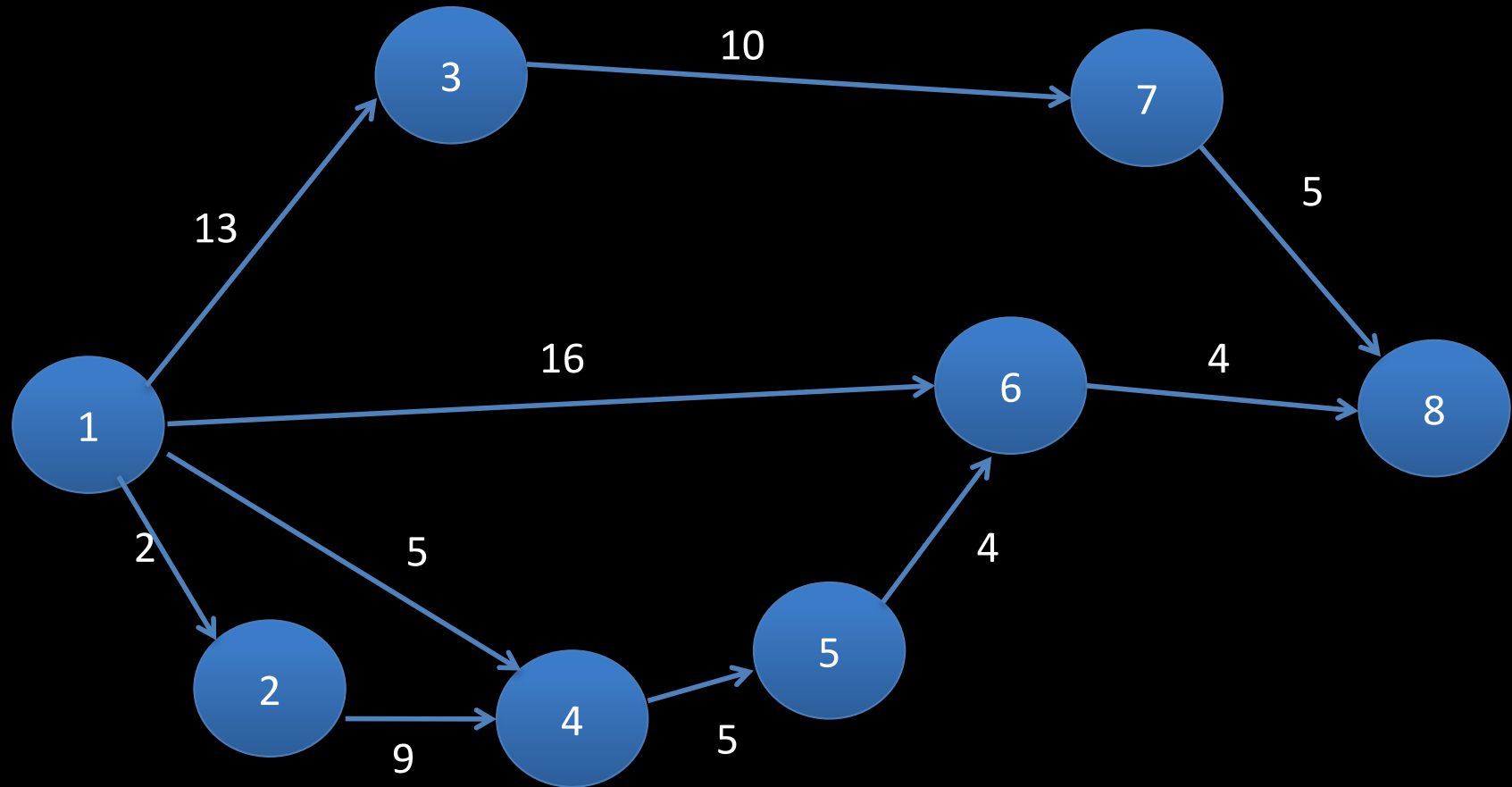
- Think about it, improve for next week Tuesday  
HW 4 submission

# Let's answer the question!

## Today's Exercise

1. Make drawings of what working models (one or more) would look like. Show components if possible
2. What is the critical path (the tasks, that in sequence take the most time?)
3. Discuss any opportunities ideas to simplify working model or otherwise speed up time to get working model

# PERT CHART



1. Know what task 1 is (where you are after today).
2. Know what 8 is
3. Calculate a time from 1 to 8.