PERT and Gantt
Example Gantt Chart
(Later, but next,
PERT charts...)

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Source:
PERT Charts

- Acronym for:
  - Program Evaluation and Review Technique
  - But what is a “program”?
program – noun  *(from dictionary.com)*

1. a plan of action to accomplish a specified end: a school lunch **program**.

2. a plan or schedule of activities, procedures, etc., to be followed.

3. a radio or television performance or production.

4. a list of items, pieces, performers, etc., in a musical, theatrical, or other entertainment.

5. an entertainment with reference to its pieces or numbers: a program of American and French music.
program – noun  (cont.)
6. a planned, coordinated group of activities, procedures, etc., often for a specific purpose, or a facility offering such a series of activities: a drug rehabilitation program; a graduate program in linguistics.
7. a prospectus or syllabus: a program of courses being offered.
   a. a systematic plan for the automatic solution of a problem by a computer.
   b. the precise sequence of instructions enabling a computer to solve a problem.
Acronym for:

- Program Evaluation and Review Technique

It is for evaluating and reviewing activity plans

They are a kind of “activity network”

- Microsoft Project uses them

“Activity diagrams” are similar

- They are part of UML
PERT Charts II

- Acronym for:
  - Program Evaluation and Review Technique
- Let’s see an example
  - Key:
    - this is an “activity-on-arrow” (AOA) method
    - Activity-on-node (AON) is an analogous idea
PERT Chart Example
Looking at the PERT Chart

- How long from start (A) to finish (L)?

- What would happen if AE takes 8 days?

- An activity is **critical** if:
  - a delay in it delays the entire project

- What activities are critical in the fig.?
Slack Time in PERT Charts

- Some phases are not critical
  - Example?
- **"Slack time":**
  (Also called float time)
  - how much a stage can be delayed before becoming critical
  - What is the slack in activity AE?
- Let's pick an activity and figure out its slack
  - Let's try a couple of others
PERT Chart Example
More on Project Scheduling with PERT Diagrams

- There are various types of "boundary times"
- Example:
  - the **soonest** a task could begin
- What is it for task EG?
- Let’s try a few others...
  - IJ? JL? Want to try one more?
More on Project Scheduling - PERT Diagrams

- There are various types of "boundary times"
- Example:
  - the latest a task could begin without delaying the whole project
- What is it for task AB?
  - Let's try one more...
PERT Chart Example
More on Project Scheduling - PERT Diagrams

- There are various types of "boundary times"
- Example:
  - The time to complete a partial path
- What is it for path BJ?
- What is it for task FJ?
- What is it for task AJ?
What would a PERT diagram look like of the waterfall model?

What would a PERT diagram look like of the UP lifecycle model?

What kind of project would a PERT diagram be most useful for?
When to use PERT Charts

- Wikipedia:
- “PERT is intended for very large-scale, one-time, complex, non-routine projects.”
Based on above figure, please identify the critical path.

- a) A-B-D-I-J-L
- b) A-E-G-J-L
- c) A-E-G-J-K-L
- d) A-C-F-H-K-J-L
Some More Questions

- What is the soonest task FJ could begin?
- What is the latest GJ could begin without delaying the project?
- How soon could FJ possibly finish?
- What is the float time for task BI?
Questions III

In project planning, what characterizes a critical path?

- a. It represents the shortest amount of time needed to complete the project
- b. It represents the longest amount of time needed to complete the project
- c. It represents any sequence of tasks that must be completed for the project to be completed
- d. There is exactly one critical path in any project
Another Method for Project Scheduling - Gantt Charts

- It's a plan
- Let’s look at a few examples
- Gantt: 1861-1919)
Gantt Charts II

- “Gantt charts were employed on major infrastructure projects including the Hoover Dam and Interstate highway system” – http://en.wikipedia.org/wiki/Henry_Gantt
- Gantt: 1861-1919
Simple Gantt Chart Demo

- Market Research
- Define Specifications
- Overall Architecture
- Project Planning
- Detail Design
- Software Development
- Test Plan
- Testing and QA
- User Documentation
Gantt Chart Example II

Source: http://upload.wikimedia.org/wikipedia/commons/3/33/Gantt-chart.png
Source: http://www.ics.forth.gr/tourbot/description.html
(TOURBOT - Interactive Museum Tele-presence Through Robotic Avatars)
Gantt Charts (cont.)

- A Gantt chart is a plan
- It doesn't tell some things PERT charts do (like what?)
- It does show what things are done concurrently
- It can be annotated with % effort assigned to each concurrent task
More Gantt Charts

- They are commonly used
- Note use of bars for task durations
- Note use of diamonds for milestones
- Buzz words: "Gantt chart," "Timeline charts"
PERT and Gantt Comparison Review

- What can PERT charts show that Gantt charts cannot?
- What can Gantt charts show that PERT charts cannot?