國立臺北大學自然資源與環境管理研究所
九十九學年度第二學期
『環境系統分析』課程講義（四）

進度：網路模式與專案管理
Network Models and Project Management
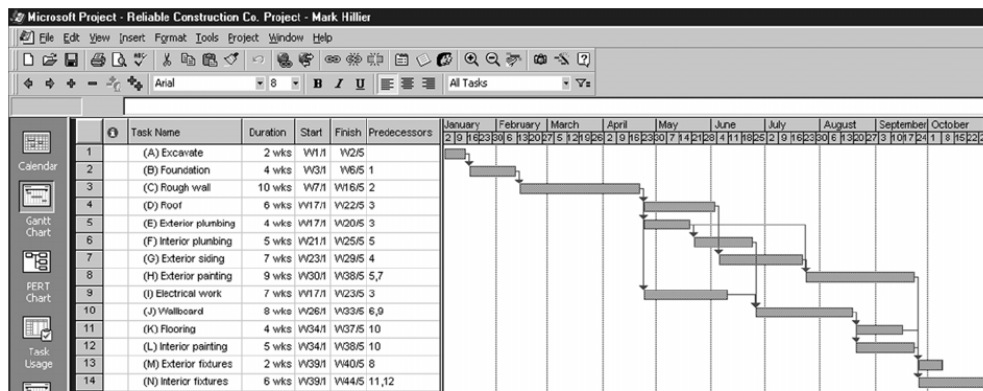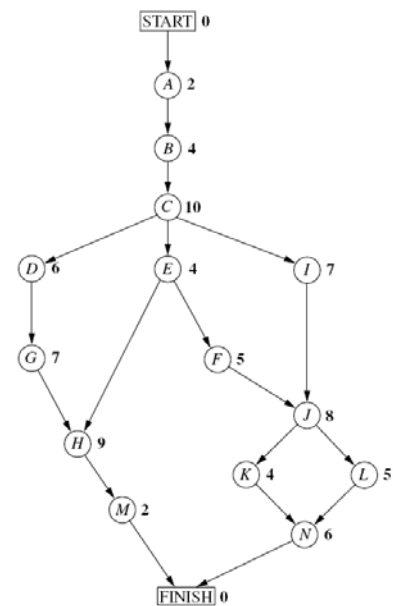
- **NETWORK MODEL**
  - □ Introduction => *c.f.*: Continuous Mathematical Programming
  - □ Terminology: Node (Vertex), Arc (Link), Path, and Graph (Tree); Flow and Direction
  - □ Classical Network Programming Models (Hillier, Chap.9)
    - ⇨ Shortest-Path Problem; Minimum Spanning Tree Problem
    - ⇨ Maximum Flow Problem; Minimum Cost Flow Problem
  - □ Other Models: Traveling Salesman Problem

- **PROJECT MANAGEMENT AND PERT/CPM**
  - □ Introduction to Project Management
    - ⇨ *A project is a collection of tasks that must be completed in minimum* **time** *or at minimal* **cost**.
    - ⇨ Other Resources: Human resource, materials…, etc.
    - ⇨ Presentations: Gantt Chart, Arrow Diagram (Network)
  - □ Prototype Example: Hillier - Reliable Construction Co.

TABLE 10.1 Activity list for the Reliable Construction Co. project

Activity	Activity Description	Immediate Predecessors	Estimated Duration
A	Excavate	—	2 weeks
B	Lay the foundation	A	4 weeks
C	Put up the rough wall	B	10 weeks
D	Put up the roof	C	6 weeks
E	Install the exterior plumbing	C	4 weeks
F	Install the interior plumbing	E	5 weeks
G	Put up the exterior siding	D	7 weeks
H	Do the exterior painting	E, G	9 weeks
I	Do the electrical work	C	7 weeks
J	Put up the wallboard	F, I	8 weeks
K	Install the flooring	J	4 weeks
L	Do the interior painting	J	5 weeks
M	Install the exterior fixtures	H	2 weeks
N	Install the interior fixtures	K, L	6 weeks

- **HOMEWORK #2** (2011/03/29 Due): Please use Microsoft Project to construct a *project* (including Gantt Chart and the "project network") for completing your own thesis research.