Question of the Day

- How important is it to be able to estimate the cost of a software project?

Cost Estimation

An estimate of the effort and duration, associated costs of equipment, travel and training and the rationale for the calculations

Recommendation

- If you are involved with cost estimation, I recommend the following book
- Tom DeMarco, *Controlling Software Projects*, Yourdon Press, NY c1982

Definition of Estimate (DeMarco)

- Default:
  - "An estimate is the most optimistic prediction that has a non-zero probability of coming true"
- Proposed:
  - "An estimate is a prediction that is equally likely to be above or below the actual result"

Estimates should not become goals

- DeMarco argues that the estimation and the management decision about pricing or goals should be separate.

Estimate

(a diagram showing the relationship between estimate, price, and cost)
Cost Estimate

- should not be a contract bid
- should not be a schedule
- should be input into the management decision to determine the above
- should be re-estimated frequently

TTYP1

- Given the following data, what would be your estimate for a project that would be about 200K? What would you use for a cost estimation formula?
- Historical data
  - project 1 100K 50 prog-months
  - project 2 20K 10 prog-months
  - project 3 14K 7 prog-months
  - project 4 16K 8 prog-months

Confidence in your estimate

- How confidence are you in this estimate?
- Would you stake your job/grade on this estimate?
- What would be your concerns?
- What could you do to increase your confidence?
- What would you consider to be a successful estimate?

Problems

- Programmer variability
- Product complexity
- Variability of goal
- Conflict of goals
- Lack of detailed product description
- Variation in effort to reuse code
- Emergence of new processes, methods and tools

Cost Estimation Models

- LOC models
  - Boehm's COCOMO
  - Price S
  - Putnam's Model (SLIM)
- non-LOC models
  - Function Points
- combination
  - COCOMO2

Prediction Formulas

$$E=\alpha X^\beta$$

TTYP2 – give an example for each

TTYP3 – which one did Henry Ford experience?
Conclusions

- If you were the boss, what would you do for cost estimation?