What do software developers do?

- One way to measure: how do they spend their time?
- IBM study (McCue 78):
  - 50% team interactions
  - 30% working alone
  - 20% not directly productive

*i.e., Technical excellence is not enough*

What makes a great project team?

- Together must cover all aspects of a project
- Diverse Skills
  - Intellectual: requirements, design, code, test
  - Managerial: estimation, planning, scheduling, reporting
  - People skills: communication (written, verbal), negotiation, collaboration
- Coherence
  - Shared expectations
  - Ability to construct and work toward a shared vision
- Mutual Respect and Responsibility
  - You don’t have to like each other, but you need to trust and respect each other — and to earn your teammates trust and respect
  - This is an enduring part of real world professionalism
Roles and Responsibilities

- Roles should reflect **ownership of responsibilities**
- Each role is responsible for specific activities and artifacts
  - Manager: responsible for schedule
  - Tester: responsible for test plan, unit testing
- A person in the role **owns** the corresponding artifacts
  - Does not mean he/she does all the work
  - Does mean he/she is responsible for artifact's completeness and quality
- **Project Risk**: failure to be specific about individual responsibilities and holding people accountable
  - One of the most frequently cited project problems

"Egoless" Design

*(Weinberg, *Psychology of Computer Programming*)

- Investing ego in group
- "Letting go" of ego investment in code, design, ideas
  - No winning or losing design debates
  - Focus on improving the product
  - Once contributed, ideas and artifacts belong to the group
  - Criticism is aimed at artifacts, not people
- The best designers criticize their own designs!
  - Our own assumptions are the hardest to critique
  - Corollary: A good critic is your best ally
  - The hardest lesson to learn but one of the most valuable
  - Applies to all aspects of profession and life

. . . but we are not egoless people

- Ego investment is normal
  - Be aware of it, be in control of it
  - Take control, ask for critique
- Consider the egos of others
  - Examine your own motivations: What are you attacking? Why?
  - What is motivation of the other person?
    - Are they feeling ignored? Not valued?
- Pride in accomplishment is ok, unless it interferes with accomplishment
Consensus Decision Making

- Consensus is not counting votes
  - Democracy is 51% agreement
  - Unanimity is 100% agreement
- Consensus is neither
  - Everyone has their say
  - Everyone accepts the decision, even if they do not prefer it
  - It is "buying in" by group as a whole, including those who disagree
- Usually best approach for peer groups
  - "Buy-in" is critical for coordinated progress
  - Avoids winners and losers

Consensus takes time and work, but is worthwhile

Conflict

- Can be healthy and productive
- Can destroy a team if not carefully managed
- Manage conflict constructively
  - Soothe and protect egos
  - Everyone’s job, but especially the manager’s job
  - Keep conflict on a technical level (not personal)
  - Reward conflict resolution
- If team really cannot reach resolution, talk to instructor

Being a Good Team Member

- Attributes most valued by other team members
  - Dependability
    - When you say you’ll do something, you do it
    - Correctly
    - On time
  - Carrying your own weight (doing a fair share of the work)
  - People will overlook almost everything else if you do these
- Also part of your grade
  - Collect from peer evaluations, blogs, etc.
  - Can significantly raise or lower project grade
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And any additional comments regarding your teammate’s contributions, strengths, or weaknesses.

A Word on Managing

A good manager supplies what is needed for the team to succeed. This includes (but is not limited to):
- Resources
- Planning and coordination
- Pitching in when needed
- Protection (especially from upper management)
- Emotional support, etc.
- Good managers are leaders not dictators (especially true for peer teams)
- Good managers are rare
Introverts & Extroverts

- Where does your energy come from
  - Extroverts energized by social interactions
  - Introverts energized by internal reflection
- Both have value
  - Extroverts work well in group settings especially with new people
    - May tend to “shoot from the hip”
  - Introverts tend to think more deeply about issues
    - May be reticent to get involved, share thoughts
    - Important to ensure that introverts are heard
      - i.e., explicitly take turns asking for inputs
      - Provide smaller venues for discussion

Effective Meetings

Notes on effective meetings

- Only hold meetings if necessary
  - "Necessary" means that the most cost effective way to accomplish a goal is by meeting
- Have a goal, and a plan (agenda)
  - Clear meeting objectives
  - Known to all in advance (i.e., distribute via email)
- Plan to goal:
  - Participants - Invite only the necessary people
  - Schedule
  - Intended outcome
- Prepare
  - Cost of wasted time = Time x people x hourly cost
  - Cost of individual prep time is much less
Notes on effective meetings (2)

- Start on time, end on time
- Write down and disseminate the results
  - Leaves an audit trail of decisions
  - Makes people feel included
  - Limits the number of (informational) invitees
- End with concrete, specific action items
  - What must be done
  - Who should do it
  - What the follow-up is
- Reflect items in the schedule and developer logs

Next Week

- Tuesday
  - Review
    - Guidelines for Project 1 reports
    - Guidelines for project submission
  - Final progress reports
  - Final client meetings as desired
- Thursday
  - Project 1 presentations

Questions?