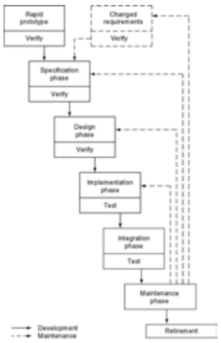
REQUIREMENTS ELICITATION TECHNIQUES

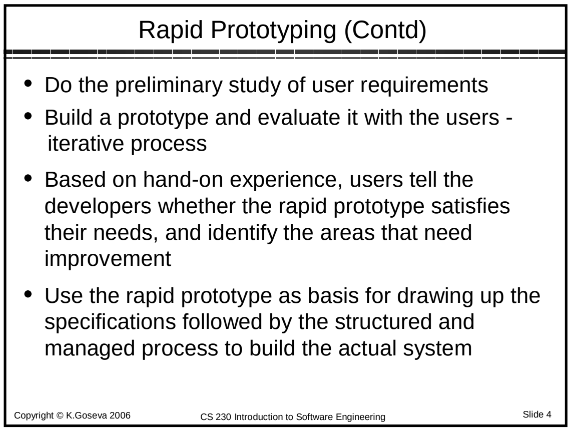
Requirements Elicitation

- Requirements elicitation process
  - Terminology
  - General procedure
  - Participants
- Outcomes of good & poor elicitation processes
- Difficulties of requirements elicitation
- Different elicitation techniques
  - Prototyping
  - Interviewing
  - Brainstorming

Rapid Prototyping

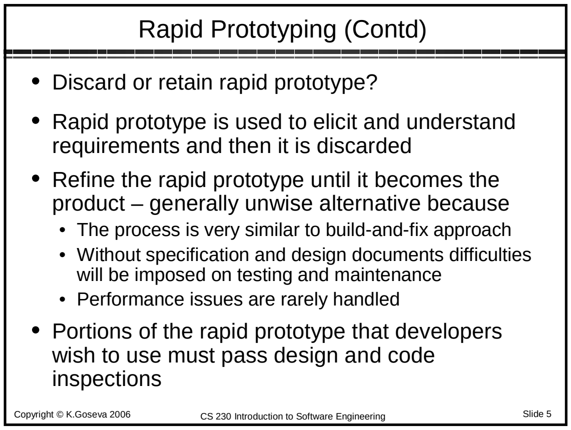
- Rapid prototyping is a high level elicitation technique that is helpful in overcoming articulation and communication barriers
- Rapid prototype is a software that incorporates much of the functionality of the target product but omits aspects invisible to the client
- Popular rapid prototyping languages include HTML, Lisp, Smalltalk, Perl, as well as visual C++





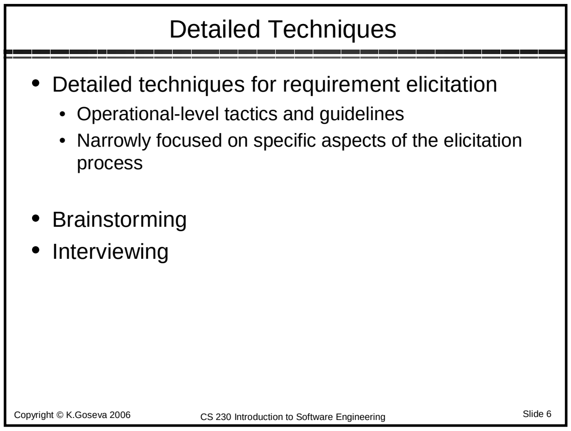
Rapid Prototyping (Contd)

- Do the preliminary study of user requirements
- Build a prototype and evaluate it with the users - iterative process
- Based on hand-on experience, users tell the developers whether the rapid prototype satisfies their needs, and identify the areas that need improvement
- Use the rapid prototype as basis for drawing up the specifications followed by the structured and managed process to build the actual system



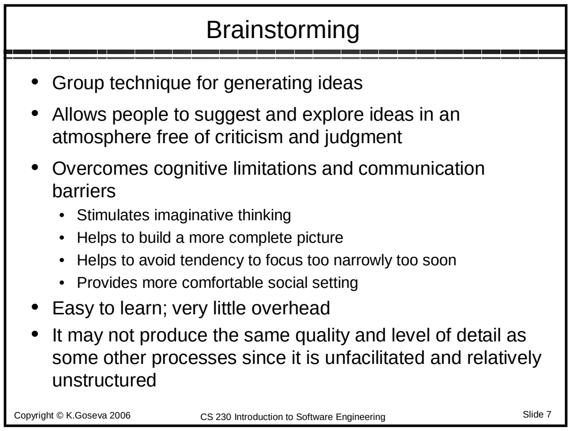
Rapid Prototyping (Contd)

- Discard or retain rapid prototype?
- Rapid prototype is used to elicit and understand requirements and then it is discarded
- Refine the rapid prototype until it becomes the product – generally unwise alternative because
  - The process is very similar to build-and-fix approach
  - Without specification and design documents difficulties will be imposed on testing and maintenance
  - Performance issues are rarely handled
- Portions of the rapid prototype that developers wish to use must pass design and code inspections



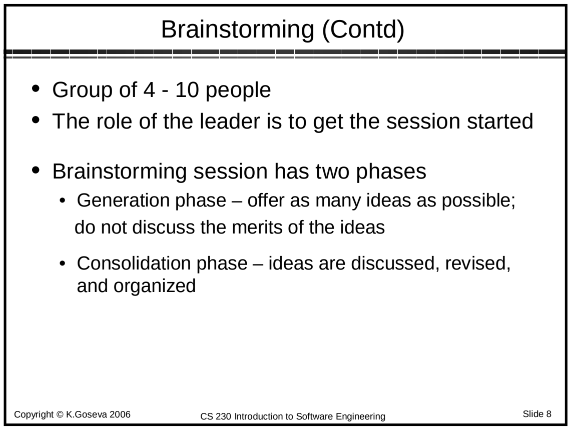
Detailed Techniques

- Detailed techniques for requirement elicitation
  - Operational-level tactics and guidelines
  - Narrowly focused on specific aspects of the elicitation process
- Brainstorming
- Interviewing



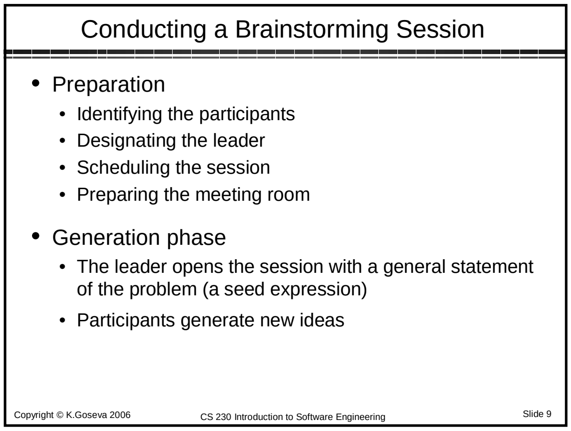
Brainstorming

- Group technique for generating ideas
- Allows people to suggest and explore ideas in an atmosphere free of criticism and judgment
- Overcomes cognitive limitations and communication barriers
  - Stimulates imaginative thinking
  - Helps to build a more complete picture
  - Helps to avoid tendency to focus too narrowly too soon
  - Provides more comfortable social setting
- Easy to learn; very little overhead
- It may not produce the same quality and level of detail as some other processes since it is unfacilitated and relatively unstructured



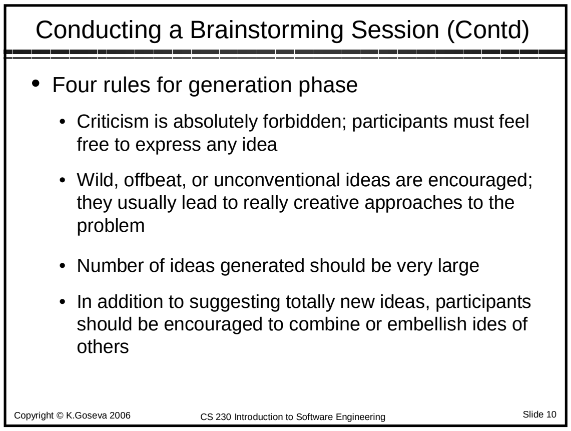
Brainstorming (Contd)

- Group of 4 - 10 people
- The role of the leader is to get the session started
- Brainstorming session has two phases
  - Generation phase – offer as many ideas as possible; do not discuss the merits of the ideas
  - Consolidation phase – ideas are discussed, revised, and organized



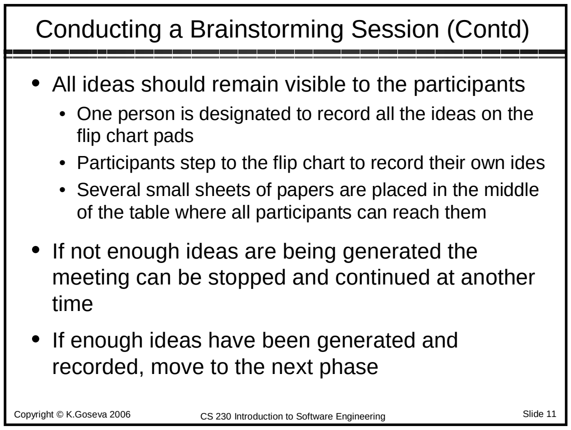
Conducting a Brainstorming Session

- Preparation
  - Identifying the participants
  - Designating the leader
  - Scheduling the session
  - Preparing the meeting room
- Generation phase
  - The leader opens the session with a general statement of the problem (a seed expression)
  - Participants generate new ideas



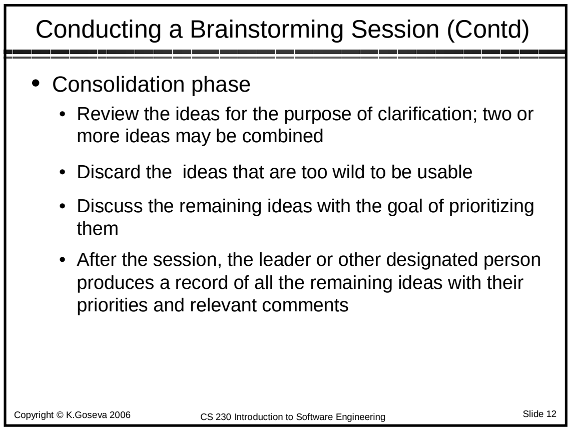
Conducting a Brainstorming Session (Contd)

- Four rules for generation phase
  - Criticism is absolutely forbidden; participants must feel free to express any idea
  - Wild, offbeat, or unconventional ideas are encouraged; they usually lead to really creative approaches to the problem
  - Number of ideas generated should be very large
  - In addition to suggesting totally new ideas, participants should be encouraged to combine or embellish ides of others



Conducting a Brainstorming Session (Contd)

- All ideas should remain visible to the participants
  - One person is designated to record all the ideas on the flip chart pads
  - Participants step to the flip chart to record their own ides
  - Several small sheets of papers are placed in the middle of the table where all participants can reach them
- If not enough ideas are being generated the meeting can be stopped and continued at another time
- If enough ideas have been generated and recorded, move to the next phase



Conducting a Brainstorming Session (Contd)

- Consolidation phase
  - Review the ideas for the purpose of clarification; two or more ideas may be combined
  - Discard the ideas that are too wild to be usable
  - Discuss the remaining ideas with the goal of prioritizing them
  - After the session, the leader or other designated person produces a record of all the remaining ideas with their priorities and relevant comments

Interviewing

- Used for eliciting detailed information from an individual
  - For the small projects – may be used as the only requirement elicitation technique
  - For large projects – usually a part of some high-level elicitation technique
- Interviewing is not simply a matter of asking questions; it requires development of some general social skills, the ability to listen, and knowledge of a variety of interviewing tactics
- Overcomes articulation problems and communication barriers

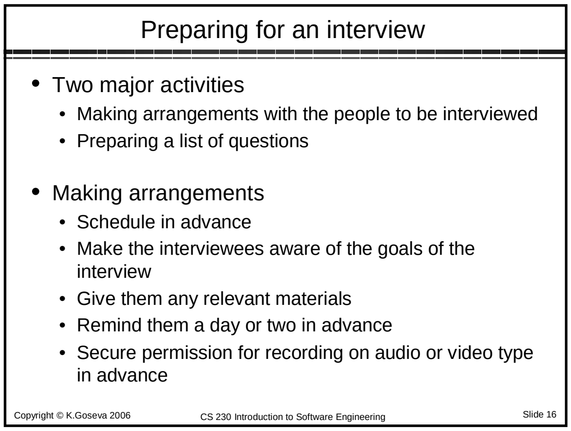
Interviewing (Contd)

Four phases

- Identifying candidates
- Preparing for an interview
- Conducting the interview
- Following up

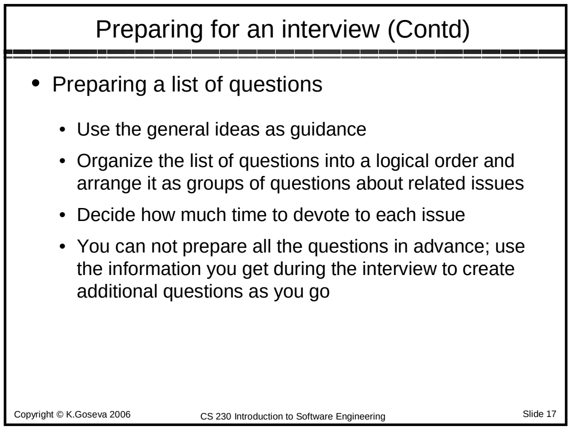
Identifying candidates

- Start with the person who has authorized or is sponsoring the project – usually a manager or executive
- Use the organization chart to identify other relevant people – those who know why the system is being build and who will use it
- Ask questions such as
  - “Who else should I talk to?”
  - “Who else may use the system?”
  - “Who will agree/disagree with you on this?”
  - “Who else interacts with you?”



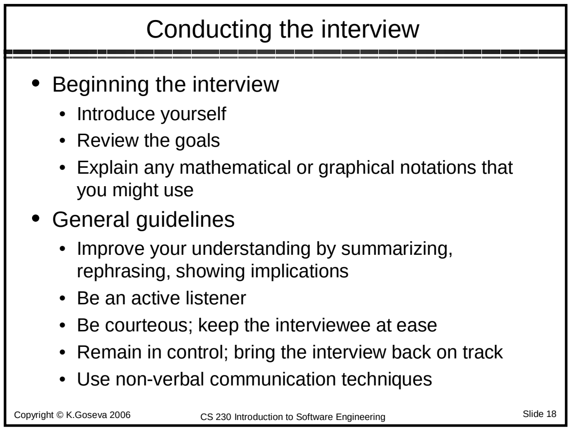
Preparing for an interview

- Two major activities
  - Making arrangements with the people to be interviewed
  - Preparing a list of questions
- Making arrangements
  - Schedule in advance
  - Make the interviewees aware of the goals of the interview
  - Give them any relevant materials
  - Remind them a day or two in advance
  - Secure permission for recording on audio or video type in advance



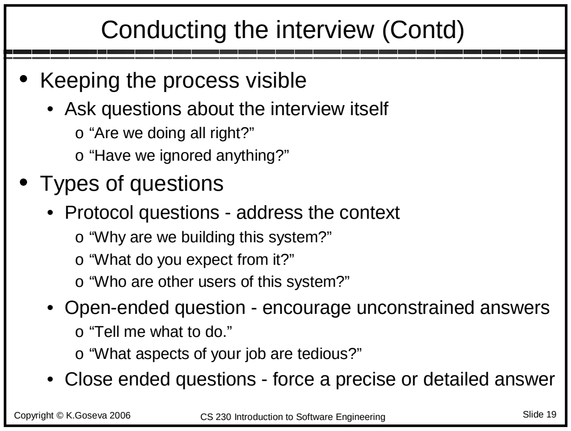
Preparing for an interview (Contd)

- Preparing a list of questions
  - Use the general ideas as guidance
  - Organize the list of questions into a logical order and arrange it as groups of questions about related issues
  - Decide how much time to devote to each issue
  - You can not prepare all the questions in advance; use the information you get during the interview to create additional questions as you go



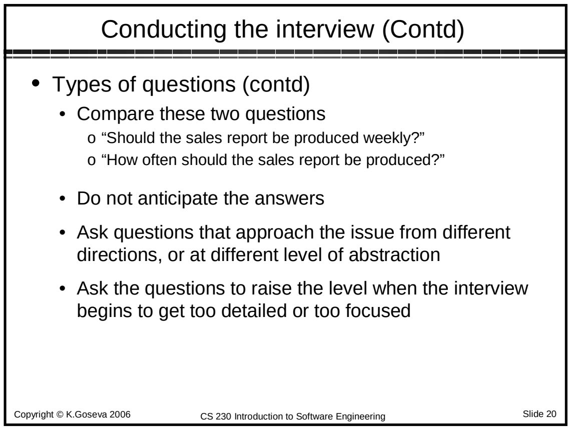
Conducting the interview

- Beginning the interview
  - Introduce yourself
  - Review the goals
  - Explain any mathematical or graphical notations that you might use
- General guidelines
  - Improve your understanding by summarizing, rephrasing, showing implications
  - Be an active listener
  - Be courteous; keep the interviewee at ease
  - Remain in control; bring the interview back on track
  - Use non-verbal communication techniques



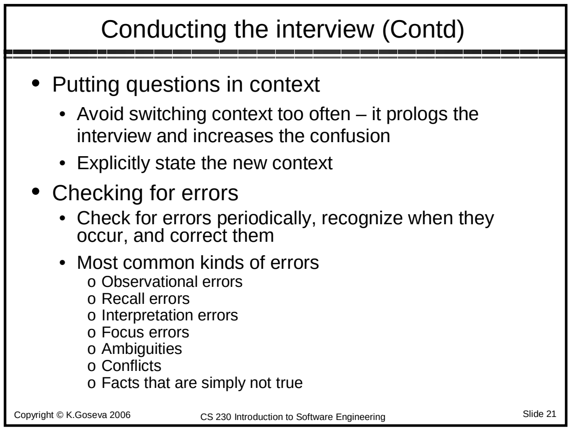
Conducting the interview (Contd)

- Keeping the process visible
  - Ask questions about the interview itself
    - o "Are we doing all right?"
    - o "Have we ignored anything?"
- Types of questions
  - Protocol questions - address the context
    - o "Why are we building this system?"
    - o "What do you expect from it?"
    - o "Who are other users of this system?"
  - Open-ended question - encourage unconstrained answers
    - o "Tell me what to do."
    - o "What aspects of your job are tedious?"
  - Close ended questions - force a precise or detailed answer



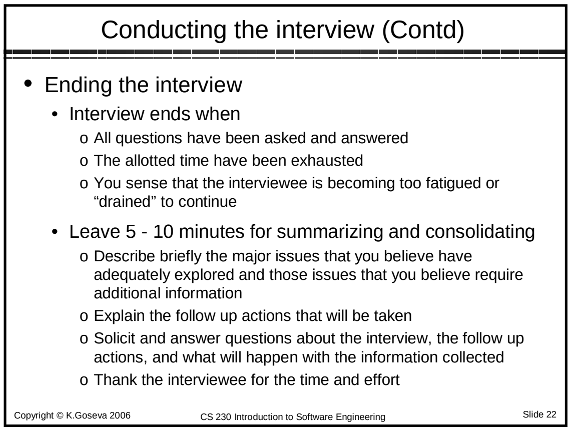
Conducting the interview (Contd)

- Types of questions (contd)
  - Compare these two questions
    - o "Should the sales report be produced weekly?"
    - o "How often should the sales report be produced?"
  - Do not anticipate the answers
  - Ask questions that approach the issue from different directions, or at different level of abstraction
  - Ask the questions to raise the level when the interview begins to get too detailed or too focused



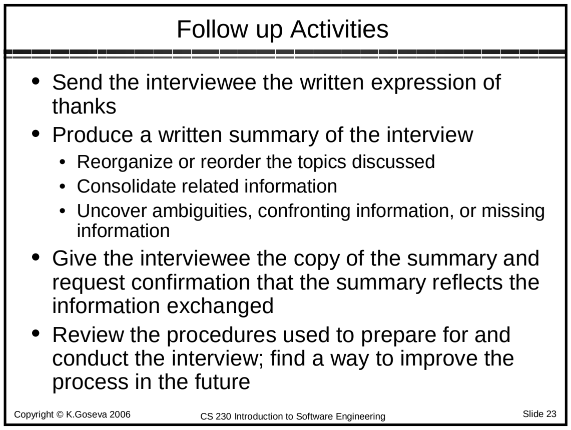
Conducting the interview (Contd)

- Putting questions in context
  - Avoid switching context too often – it prologs the interview and increases the confusion
  - Explicitly state the new context
- Checking for errors
  - Check for errors periodically, recognize when they occur, and correct them
  - Most common kinds of errors
    - o Observational errors
    - o Recall errors
    - o Interpretation errors
    - o Focus errors
    - o Ambiguities
    - o Conflicts
    - o Facts that are simply not true



Conducting the interview (Contd)

- Ending the interview
  - Interview ends when
    - o All questions have been asked and answered
    - o The allotted time have been exhausted
    - o You sense that the interviewee is becoming too fatigued or “drained” to continue
  - Leave 5 - 10 minutes for summarizing and consolidating
    - o Describe briefly the major issues that you believe have adequately explored and those issues that you believe require additional information
    - o Explain the follow up actions that will be taken
    - o Solicit and answer questions about the interview, the follow up actions, and what will happen with the information collected
    - o Thank the interviewee for the time and effort



Follow up Activities

- Send the interviewee the written expression of thanks
- Produce a written summary of the interview
  - Reorganize or reorder the topics discussed
  - Consolidate related information
  - Uncover ambiguities, confronting information, or missing information
- Give the interviewee the copy of the summary and request confirmation that the summary reflects the information exchanged
- Review the procedures used to prepare for and conduct the interview; find a way to improve the process in the future