

# Final Lecture of CS220

Debugging

Software maintenance

Others

# Agenda for Today

- Quiz
- Technical content
  - Debugging
  - Software maintenance
- Non-technical content
  - Project & Exams
  - Evaluation
  - Beyond this class
- A video

# Debugging

# Software bugs

- Semantic bugs
- Memory bugs
- Concurrency bugs

# Debugging

- Logging
- Interactive debugging
- Slicing
- Delta-debugging

# Software maintenance

# Definition

- Software maintenance
  - The process of changing a software system after it has been delivered

# Reasons behind maintenance

- Why delivered software needs change?



# Reasons behind maintenance

- Why delivered software needs change?
  - Fault repair
  - Platform adaptation
  - System enhancement

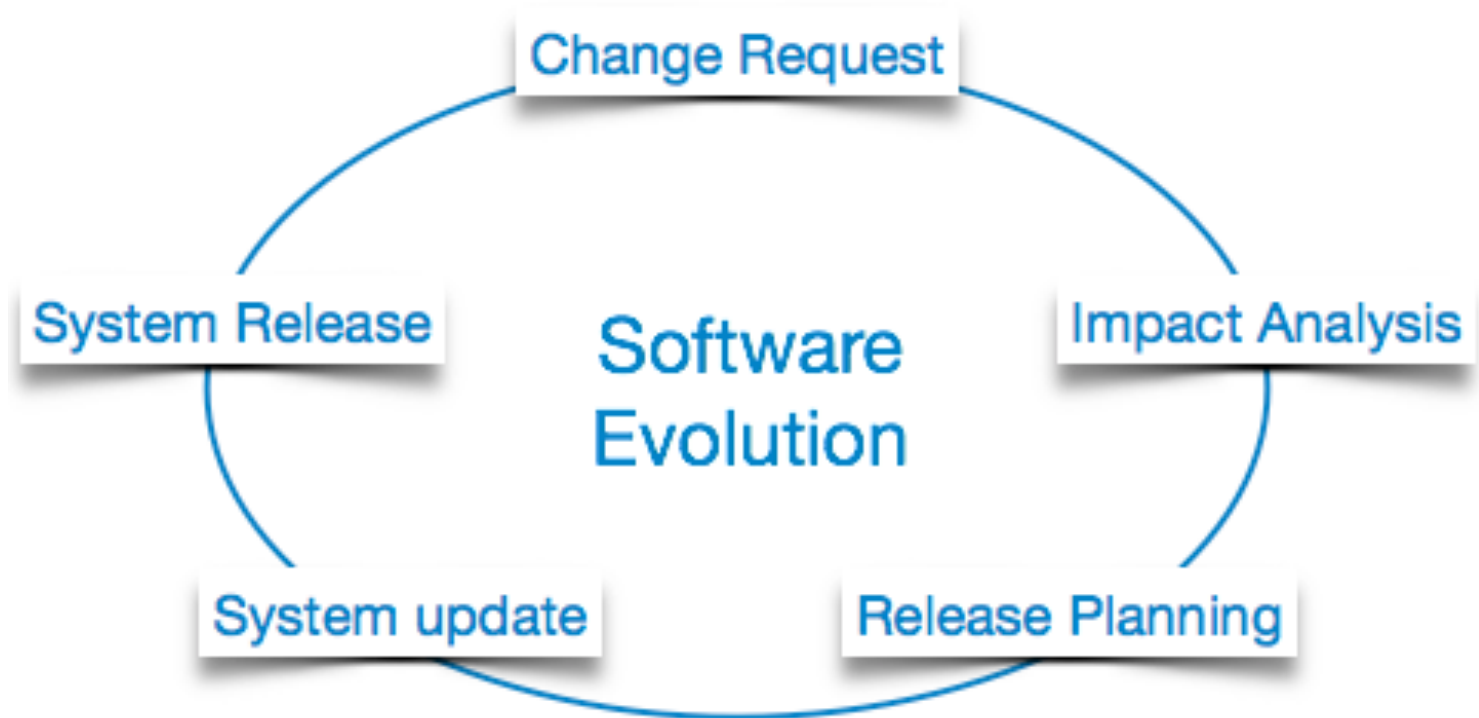
# Maintenance is important

- 60%--80% of overall IT cost
  - Software is too expensive to discard after one version

# A big picture

- Initial development
- Software evolution
- Software servicing
- Phase-out phase

# A smaller picture --- evolution process



# A smaller picture

- What happened during “software update”?
  - Non-agile way
  - Agile way

# Software reengineering

- Redocumenting
- Structure/architecture refacotring
- Programming language translation
- Data reengineering

# When to stop supporting a software

- Business value
- Maintenance expense

# Project, Exam



# Project milestone 5 & 6

- Milestone 5
  - Due **tonight!**
  - Example readme
    - <http://www.gnu.org/software/gzip/manual/gzip.html>
  - Don't forget the installation guide!
- Milestone 6
  - Your task will be assigned on Wednesday
  - Due on Sunday
  - What to submit
    - An assessment document
    - List of bugs found
    - Grade

# Exam

- Include all lectures we covered!
- 3 reference text books are all reserved in Math Library
- Style similar w/ quizzes & mid-term

# Other things

Courses

Evaluation

# Fun Time

[https://www.youtube.com/watch?  
v=wYzvVjRtn5Y](https://www.youtube.com/watch?v=wYzvVjRtn5Y)

22:17 – 30:00