

<b>COM S 413x Survey</b>	<b>1</b>
Learning Objectives	1
Description	1
Deliverables	2
Grading Criteria	2

## COM S 413x Survey

### Learning Objectives

1. Get further familiar with the terminologies we taught in class
2. Learn where to find the literature of program analysis
3. Get in-depth understandings on a subject of program analysis of your interest (meet me during office hours to get help for the materials you are not able to understand)
4. Practice presentation and teaching skills

### Description

The purpose of doing a survey is to teach you how to find, read and present the literature of program analysis. To demonstrate your learning outcomes, you will teach a mini-tutorial in class that summarizes what you have read and submit a revision for the learning materials I prepared for the class, including both the lecture notes and homework assignments for the topic.

You can select a topic of interest from the following list:

1. finding bugs, including the option of presenting 5 *interesting* bugs in real-world software
2. automatic test input generation
3. debugging
4. specification inference
5. analyzing software changes and versions
6. big code analysis
7. advanced topics: certifying and explaining AI software, program repair and synthesis

For each topic, you are required to read 5 documents. These 5 documents should form a theme of your tutorial. The documents can be selected from the “further reading” section listed in the lecture note of the topic. You are also encouraged to use conference papers published in the recent 3 years. The conferences you should search for such papers include ICSE/FSE/PLDI/ASE/ISSTA. You can find proceedings of these conferences on the electric libraries of ACM and IEEE.

The survey will be assigned at the first week of the class when you will be asked to select a topic of interest from the above list. The deliverables are due at the end of each topic. The specific dates for each topic will be announced in class. Note that the surveys for different topics are due at different dates.

## Deliverables

1. 20 min in-class mini-tutorial that can summarize your 5 documents.
2. Revisions for improving the lecture notes and homework assignment for the topic, including but not limited to:
  - a. Corrections for mistakes in existing lecture notes and homework
  - b. Additional examples
  - c. Additional points, subtopics, sections and slides
  - d. Structure improvement
  - e. More readme documentation for the homework
  - f. Your experiences for the relevant tools, and/or
  - g. Any other contents that you believe that help with the learning of the topic

You can prepare your revisions in latex, ppt, .c files (if it is code), .png files if it is figure, or even videos.. Please submit the improved lecture notes with a readme on “what’s changed from the original lecture notes and where in the lecture notes or homework assignments these materials should be presented”. Please also submit the slides for your tutorials.

All the deliverables should be zipped to one file and submit to canvas under the “assignment 1: survey” column.

## Grading Criteria

### **Tutorial (5 pt)**

The in-class tutorial will be peer reviewed, including me and the rest of the class. Here are the four questions that go to the evaluators:

1. Clarity (1 pt): are you able to understand all the content? most, not at all, somewhat
2. Completeness (2 pt): does the amount of materials include all the 5 documents? do you learn *a lot of things* from the tutorial? yes, no, somewhat
3. Insightfulness (2 pt): is the material useful and interesting? Does the presenter use a novel way to summarize the work? Does the presenter have interesting comments about the work? yes, no, somewhat
4. Provide one feedback to the presenter to further improve his/her tutorial.

We will fill the questions right after your tutorial and compute an average score among all the evaluators as your tutorial scores.

**Revision quality (3 pt)**

- Accepted as a pull request: 3
- Partially accepted/accepted with a comment of insufficient materials: 2
- Complete but rejected due to being incorrect or redundant with regard to the existing materials: 1
- Not-complete or very little and poor quality: 0

To be accepted as a pull request, please make sure your revision is professionally presented. For example, the examples you want to add should be complete, clear, big enough for slides. You are welcomed to reuse or modify any slides you have prepared for your tutorial. Note that if you directly copy any materials from what you have read, please put citations at the appropriate places in your revisions.

**Your evaluation for other tutorials (2 pt)**

You should be prepared to attend all the tutorials and also file the evaluation fairly. Absence and irresponsible evaluation will lead the 2 points reduced for your score.