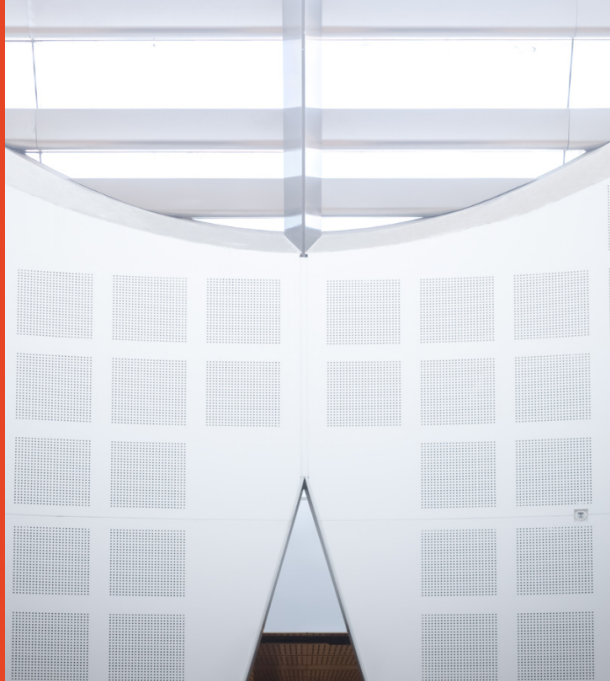
COMP5313/COMP4313 - Large Scale Networks

Week 13: Exam Review

Lijun Chang

May 29, 2025

THE UNIVERSITY OF SYDNEY



Unit of Study Survey (USS)

- If you haven't done so, please spend a few minutes to complete the survey.
  - Scan the QR code below, or browse to:
    https://student-surveys.sydney.edu.au/students/
  - Log in if you are not already
  - Complete survey for COMP5313 or COMP4313

Outline

Feedback for Assignment 1 and Mid-term Quiz

Final Exam Overview

Example Exam Questions

Feedback for Assignment 1 and Mid-term Quiz

- This part will **not** be recorded!

Outline

Feedback for Assignment 1 and Mid-term Quiz

Final Exam Overview

Example Exam Questions

Outline of Lectures

Week	Topic
Week 1	Introduction
Week 2	Strong and Weak Ties
Week 3	Structural Balance, Network Evolution
Week 4	Community Detection
Week 5	The Structure of the Web, Hubs and Authorities
Week 6	Google's PageRank Algorithm
Week 7	Machine Learning on Graphs (i)
Week 9	Machine Learning on Graphs (ii)
Week 8	Information Cascades
Week 10	Power Laws, Structural Model for Small World
Week 11	Peer-to-Peer Networks
Week 12	Project Presentation
Week 13	Unit of Study Review

Exam Schedule

- Time: Friday, 13 June 2025, Starts at 1:00pm AEST
- Duration: 2 hours examination + 10 minutes reading time

- 22 questions (NOT equal marks), 50 marks in total
  - 8 multiple-choice questions (8 marks)
  - 5 fill-in-the-blank questions (10 marks)
  - 9 short-answer questions (32 marks)
  - Pace yourself: if you find yourself stuck on a question, move on to the next one.

- Final exam covers lecture material in Weeks 1–11, excluding optional materials that are explicitly marked as "optional" in the lecture slides
  - No programming

Exam Condition

- Restricted open book
- Materials permitted:
  - Calculator - non-programmable
  - One A4 sheet of handwritten and/or typed notes double-sided
  - A standard linguistic dictionary (English to foreign language and vice versa/bilingual) is allowed.
- Materials provided:
  - None

During the Exam

- If you are uncertain about a question during the exam, answer to the best of your ability. Do not contact the unit coordinator or other teaching staff during the exam. After the exam, email your unit coordinator with information including the question and question number.

- If a problem affects you completing your exam, you must describe the difficulties you faced in a Student Declaration form and apply for Special Consideration.

Pass the Unit of Study

- Final exam forms 50% of your final mark
- You must obtain at least 40% (i.e., 20 marks) in the final exam, as well as an overall mark of at least 50 marks, to pass the unit

- If you are unwell for the exam, please apply for special consideration.
- If your special consideration application is approved, you will be able to take a replacement exam later.

- If you are approved for a replacement exam, please ensure you attend it. Special consideration for the replacement exam may result in an oral examination (viva).

Exam Preparation

- Preparation for the final exam
  - Lecture slides (weeks 1–11)
  - Tutorial notes (weeks 4, 5, 6, 11)
  - Assignment 1
  - Mid-term quiz

Outline

Example Question 1

Section 1 /8pts

Answer the following **multiple-choice questions** by writing your answer in the provided **box**. For each question, there is only one correct answer.

Q1. [ ] In a homophily test based on a binary characteristic (e.g., group 1 and group 2), if a network has 20 nodes (12 in group 1 and 8 in group 2) and 5 edges, what is the expected number of inter-group edges if the links were formed randomly?

(A) 0.48

(B) 1.2

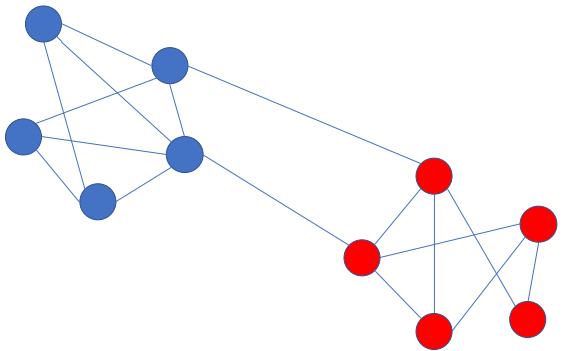
(C) 5

(D) 2.4

(E) None of the above is correct.

Example Question 2

- Does this graph show evidence of Homophily? Justify your answer.
- What are the two underline mechanisms that possibly cause Homophily?

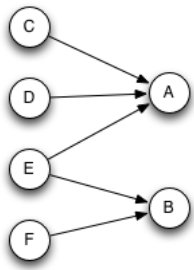


Example Question 3

- Explain the **Spider Trap** problem in Page Rank calculation and explain how the **Scaled Page Rank Update Rule** solve this problem.

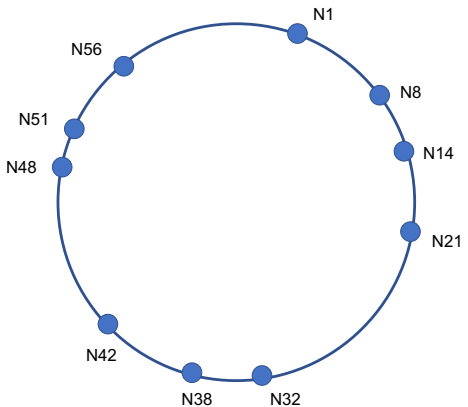
Example Question 4 (from tutorial week 5)

- Describe a strategy for adding three nodes X, Y, and Z to the network in below, with choices of links out of Y and Z while X has no out links, so that when you run the 2-step hub-authority computation, and then rank all nodes by their authority score, node X shows up in second place.
- Is there another strategy of choosing X, Y and Z outgoing edges so that X shows up in first place?



Example Question 6

If $m = 6$, build the finger table for node N8. Suppose each node only maintains the finger table and the ID of its immediate successor. What will be the route if node N8 searches for key 1?



Final Activities

- No tutorial this Week
- Review your assignment/quiz marks on Canvas/Gradescope
- Complete USS survey: https://student-surveys.sydney.edu.au/students/
- Review lecture slides (weeks 1–11), tutorial notes (weeks 4, 5, 6, 11), assignment 1, mid-term quiz

- Good luck!!! You are going to do great!