

**Due Date:** No later than start of class on Mon Dec 5, 2011.

**Problem 1. (25 points)**

Use a merge-and-prune approach for Intersection (i.e Figure 12 of page 21 of Subject 7), to find the cost of an efficient evaluation of the query

$t_A \text{ AND } t_B \text{ AND } t_C \text{ AND } t_D \text{ AND } t_E$

where the doclists of  $t_A, t_B, t_C, t_D, t_E$  are of length 1000, 10, 2000, 5, 10000 respectively. Explain.

**Problem 2. (25 points)**

For the terms and doclists of Problem 1, what is the cost of an efficient evaluation of the query  $(t_A \text{ AND } t_B) \text{ OR } (t_C \text{ AND } t_D)$ ? Explain.

**Problem 3. (50 points)**

Repeat the following study for Google and Bing. We execute two queries in Google and Bing and the collected results can be found in the last 4 pages of this homework as well as in the Handouts section of the course web-page. One query(Q1) is CS 485 NJIT and the other(Q2) is CS 485 Web-search. However, the CS 485 course number is a generic special topics one and thus NJIT CS 485 courses on Android development that ARE NOT RELEVANT TO OUR CS 485 course are output. Thus for Q1/Q2 relevant documents are only those of OUR CS 485 course. The first query is not very well thought-out. The second is more refined. You are asked to evaluate those two queries and also Google's and Bing's capabilities in generating relevant documents. We compared both engines in HW1; we conclude the course by evaluating these engines' search capabilities. **When you examine the output results tabulate by starting with Google Q1, then Q2, and then move to Bing and do not deviate from this order! Do not include ad links in considering relevant documents!**

(a) Tabulate for each engine and query and engine, the number of hits reported in the result page attached (easy), the number of relevant documents (be cautious), and the precision for the single result page reported.

(b) Include 3-point effectiveness rates and 3-point averages of those rates separately for each one of the four queries/engines. (Note: Use the methods of Subject 8 as needed if incomplete information is available.)

(c) Fill the following table with data (columns 2 and 3). If Google is better give Google 1pt and Bing 0 in columns 4 and 5. If Bing is better, give Bing 1pt and Google 0. If it is a tie, give each one 1pt each. Add up the points of columns 4 and 5 and provide sum in the last row. Who wins? (Note that the interpolated precision figures asked might not be the ones computed from part (b). "Interpolate" appropriately as it was done in Subject 8 and in class.)

	Values		Points	
	Google	Bing	Google	Bing
# Retrieved docs for Q1				
# Relevant docs for Q1				
# Retrieved docs for Q2				
# Relevant docs for Q2				
20% recall interpolated precision for Q1				
50% recall interpolated precision for Q1				
80% recall interpolated precision for Q1				
3-point effectiveness(20,50,80) for Q1				
20% recall interpolated precision for Q2				
50% recall interpolated precision for Q2				
80% recall interpolated precision for Q2				
3-point effectiveness(20,50,80) for Q2				
=====				
Number of point wins (sum)	-	-		

**Problem 4. (25 points)**

Find the page rank of the graph of Figure 1. Use the algorithm of page 14 of Subject 9. Initial values are  $1/N$ . Also use  $a = (d =) = 0.85$  in the page rank formula. Iterate as many times as needed for the error to be less than  $10^{-4}$ . Use the synchronous update version.

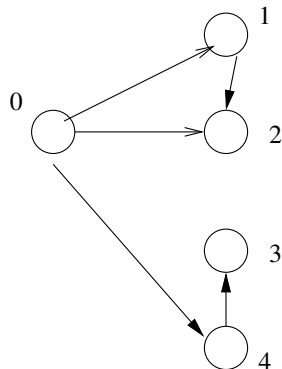


Figure 1: PageRank Graph.

**Problem 5. (Bonus 35 points)**

This is a bonus problem that can earn you 35 more points than the normally allotted ones (i.e. 160 instead of just 125 points).

In HW2 you were asked to create a web-page for HW2 that would point to the course web-page and include some form of a time-stamp in it. I hope that you had regularly updated the date/time-stamp information field, and searched for that page in Google or Bing regularly. What is the refresh rate of Google or Bing of your own page or alternatively of our course web-page?

Prove your claims by providing snapshots of Google's or Bing's storing your web-page or the CS 485 course web-page (otherwise) to determine refresh rates i.e you need two consecutive snapshots to have a convincing case for the 35 points.

(Take snapshots to prove your claims and compute a refresh rate. PrintScreen pages and submit them for the solution to be considered for the 25 points.)

Web Images Videos Maps News Gmail More -

Google

CS 485 NJIT

Search About 120,000 results (0.18 seconds)

Everything

Images

Maps

Videos

News

Shopping

More

Newark, NJ

Change location

Show search tools

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 Tyler Auten — a senior CS major in NJIT's College of Computing Sciences — has several apps in various stages of development, but has already launched two. ...

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**CS 485-101.** Sep 1, 2011. Fall 2011. Course FAQ. Handout 0. **CS 485:** Frequently Asked Questions. 1. What is the complete name of the course? **CS 485-101** ...

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 THIS PAGE IS UNDER CONSTRUCTION. Document hand1.pdf contains the LATEST information about this course. This page will be UP-TO-DATE after the first ...

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 Description: A. V. Gerbessiotis **CS 485-101.** Sep 1, 2011 Fall 2011 ... Instructor: Alex Gerbessiotis E-mail: [alg485@cs.njit.edu](mailto:alg485@cs.njit.edu). Office: GITC 4213, 4th ...


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1 2 3 4 5 6 7 8 9 10 Next

Figure 2: Google for CS 485 NJIT



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**Search** About 18,400,000 results (0.41 seconds)

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 An introductory course on **web-searching**. ... The architecture of a search engine. ... Course Web Page: <http://www.cs.njit.edu/~alexg/courses/cs485/index.html> ...

**USCIS - Designated Civil Surgeons**  
[www.uscis.gov/civilsurgeons](http://www.uscis.gov/civilsurgeons)  
 Sep 12, 2011 – The medical examination must be conducted by a **civil surgeon** who has been designated ... Finding A Designated **Civil Surgeon** in Your Area ...

**CS/CS/HB 485 - Fast Track Economic Stimulus for Small Businesses**  
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 Search Bill Text. Session : 2012, 2011, 2010A, 2010O, 2010C, 2010, 2009B, 2009 ... **CS/CS/HB 485 - Fast Track Economic Stimulus for Small Businesses** ...

**Frequently Asked Questions for Form I-693, Medical Examination of ...**  
[www.aicc.com/i-693faq.htm](http://www.aicc.com/i-693faq.htm)  
 The medical examination must be conducted by a **civil surgeon** who has been designated by the USCIS. ... (Form I-485) is filed within one year of your overseas medical examination. ... **Search** for Nursing Jobs or H-2B Visa Jobs in the US. ...

**Main - Courses - UIC - Computer Science**  
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 Mar 4, 2011 – **CS 485** · Networked Operating Systems Programming, -, -, -, s ... Introduction to computing; the Internet; **Web**; file systems; electronic mail; basic tools ... Algorithms for sorting, **searching**, graph computations, pattern matching, ...

**PDF EECS485 Syllabus**  
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**CS485/685: Computer Vision (Spring 2011)** ... There are many image processing and computer vision software packages on the web; .... G. Bebis, S. Uthiram, and M. Georgiopoulos. "Face Detection and Verification Using Genetic **Search**", ...

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<https://blogs.njit.edu/cs485-iphone>

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 We had our first class meeting today. Went over some class basics, introduced them to the Mac lab where we'll be working, set up some lab hours, talked about the ...  
<https://blogs.njit.edu/cs485-iphone/2009/01>

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 NJIT is on spring break this week. Enjoy all! Classes will resume on Monday, March 23. Class build  
 Guest lecture by David Choi  
<https://blogs.njit.edu/cs485-iphone/2009/03/18/spring-break>

**[CS 485 – iPhone Applications Development » 2008 » December](#)**  
 Several of the iPhone app books we've ordered for the students in this course have come in today.  
 Beginning iPhone Development: Exploring the iPhone SDK The iPhone ...  
<https://blogs.njit.edu/cs485-iphone/2008/12>

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 Today in class (Tues, March 24), David Choi guest lectured on user interface design on mobile devices. David is Web Architect for NJIT and leads much of our user ...  
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Figure 4: Bing for CS 485 NJIT

bing

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CS 485: Web Search (Alexandros Gerbessiotis) CS 505: Programming Data Structures and Algorithms (Jonathan Kapleau) CS 506: Foundations of Computer Science (Joseph Leung) web.njit.edu/cs/es\_courses/index.php?d=gs&sem=FALL\_2010

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CS 485 Assignments Web Search: CS-485 Assignment 2 IS 270 Class Assignments Website Critiques An overview of website critiques by Wayne Marcy. web.njit.edu/~wqm9

**NJIT - Courses: Computer Science**

CS 345 - Web Search (3-0-3) Prerequisites: CS 280 and CS 241 or CS 252. An introductory course on the web searching. ... Same as for CS 485. A continuation of CS 485. catalog.njit.edu/courses/cs.php

**CS 435 Section 102 (Spring 2011)**

I will be offering a course on web search next semester as CS 485. If you are interested, you can get additional information by browsing Web-search course. cs.njit.edu/~alexg/courses/cs435/index.html

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CS 485-101: Web Search . Fall 2010. Introductory undergraduate level courses. CS 101: Computer Programming and Problem Solving Spring 2010, Fall 2010, Spring 2011. cs.njit.edu/~alexg/courses/index.html

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CS 485: CS 490: CS 491: CS 495: CS ED ... How does a Web-search happen? Based on this technical perspective, ... CS 495 - Computer Science Research Seminar - 3 S.H. cs.winona.edu/courses.php

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Thank you! 1. Do a web search for some key references on gro... hw8.pdf, Cornell >> CS >> 485 (Spring, 2008 ... CS 485 - Lecture Notes 3/7/07 Liwei Chen, ... www.coursehero.com/file/2978062/RandomOffsetCMOSICDesignCULecture...

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Figure 5: Bing for CS 485 Web-search