

## Exam 2 - CS 601 - Fall 2015

Name:

<b>Question</b>	<b>Awarded Points</b>	<b>Maximum Points</b>
Question 1		10
Question 2		5
Question 3		5
Question 4		10
Question 5		10
Question 6		5
Question 7		10
Question 8		5
Question 9		5
Question 10		5
Question 11		10
Question 12		5
Question 13		5
Question 14		10
Question 15		5
Total		100

1. (10 points) Consider Wikipedia, the online encyclopedia. Describe one advantage **and** one disadvantage to implementing Wikipedia using static web pages rather than as a dynamic web application.
2. (5 points) Describe one reason it is advantageous to separate the model for an application from the controller.

3. (5 points) Describe the design of the tables you have or will use for the Yap project. Include the tables, their columns, and the relationship(s) between the tables.

4. (10 points) Yelp allows users to add friends. In my profile, for example, I can click a link to show the list of all of the friends I have added on Yelp. How would you extend the database schema design described in question 3 to support this feature? Describe all tables you would add, their columns, and their relationships (if any) to the existing tables.

5. Consider a database schema that keeps track of students and, for each student, a list of all email addresses they have provided to a university.

The `students` table looks as follows:

Field	Type
name	varchar(100)
id	int(11)

The `emails` table looks as follows:

Field	Type
id	int(11)
email	varchar(100)

- a. (5 points) Should `email` be a primary key? Why or why not?
- b. (5 points) Consider the values in the tables below. What would be the result of the query `SELECT name, email FROM students LEFT OUTER JOIN emails ON students.id=emails.id;`

name	id
Jane	1
Bob	2
Alex	3
Sandra	4

id	email
1	jane@usfca.edu
1	janey@gmail.com
5	vincent@yahoo.com
2	bobby@hotmail.com

6. (5 points) How should the `logout` feature of your Yap project be implemented? Be as specific as possible. In other words, if you use the HTTP session then explain what happens when you invoke the appropriate HTTP session methods.
  
  
  
  
  
  
  
  
  
  
7. Software development methodologies.
  - a. (5 points) Explain one way in which your approach to developing the Yap project fits the agile methodology.
  
  
  
  
  
  
  
  
  
  
  - b. (5 points) Are there any ways in which your approach does *not* fit the agile methodology? For full credit, explain your answer.

8. (5 points) Consider the application Microsoft Word. Do you think the waterfall method would be an appropriate methodology for developing this application? Why or why not?
9. (5 points) Explain why integration tests fall under the category of white-box testing.
10. (5 points) Explain one system test you would use to test a web-based email application.

11. Consider a web-based email application (e.g., gmail).
  - a. (5 points) Describe a specific example of how the application could use client-side javascript to manipulate the DOM. *Be specific for full credit.*
  - b. (5 points) Describe a specific example of how the single-page application model could be used in this application.
12. (5 points) Should an application that uses replication always provide strong consistency? For full credit, explain your answer.

13. (5 points) Is the Twitter architecture optimized for reads or writes? Explain why.

14. (10 points) Explain **two** reasons to maintain multiple replicas of data in a web application.

15. (5 points) Write **and answer** a question about a topic you studied that was not covered on this exam.