<u>COSC 419 Exam Review Quiz</u>

Name: _____          Student #: _____

This quiz is due the day of the final exam, Monday Dec. 17[Th], 6-9 PM. It covers many of the topics we discussed in class and will serve as a study guide for the final exam. Some of these questions may appear on the final exam, however note that there will be new content in the final exam as well, so you should study the notes and labs in addition to this quiz.

## Section A – Multiple Choice (8 marks)
Circle the answer you believe is correct. Do not circle more than one answer.

1. Which of the following is not part of the software stack?
    a) Database
    b) Operating System
    c) Hypervisor
    d) Front-End Language

2. Which of the following is a valid route in Laravel?
    a) Route::view('/help', function() { return "This is a help page" });
    b) Route::get('/articles/[id]', function($id) { return "Article " . $id });
    c) Route::redirect('/page1', 301, '/page2');
    d) Route::get('/articles', 'ArticleController@getArticles');

3. Of the following, what is *not* a reason to use Blade inheritance?
    a) It minimizes the amount of HTML that must be rewritten for each page
    b) It reduces the file size of your front-end environment
    c) It allows a 'master' template to be used to maintain style across pages
    d) It allows the inclusion of additional data into a page, if it exists

4. Of the following, select the Laravel component you would use to interface with a database
    a) Blade file
    b) Session Driver
    c) Query Builder
    d) Validation

5. Which of the following is responsible for the most security vulnerabilities?
    a) Cross-Site Scripting
    b) SQL Injection
    c) Cookie theft
    d) Information Leakage

6. Which property is *not* among those used in server fingerprinting?
    a) Ordering of HTTP headers
    b) The HTTP 'Server' header
    c) Checking the server response to common HTTP errors
    d) The HTTP 'Content-Length' header

7. Which of the following is *not* true of the Flask web framework?
      a) It uses the Python programming language
      b) It uses Blade templates, like Laravel
      c) It is available under the BSD license
      d) It uses the Web Server Gateway Interface (WSGI) functionality of Python

8. Which of the following is *not* true of Dockerfiles?
      a) They begin with a 'FROM' declaration
      b) They are built using a base docker image
      c) Dockerfiles are built to produce new docker images
      d) Your changes are saved as commits to the base docker image

**Section B – Short Answer (10 marks)**
Answer each question briefly (2-3 sentences, or in point form)

1. List the 5 core components of the software stack in Full-Stack development, and draw a diagram showing how they interact (3 marks).

2. Name the two types of Cross-Site Scripting (XSS) attack that we covered in class, and explain how each works and the difference between the two (3 marks).

3. We discussed two methods of building Docker images in class, but we focused on one method in particular. What method did we use to build our Docker images, and why did we focus on it? (2 marks)

4. What is load balancing, and why might we want to use it when hosting a web service? (2 marks)

**Section C – Long Answer (16 marks)**
Provide code where asked for. Pseudocode is acceptable for partial marks.

1. Consider a website with a specific web page at http://www.example.com/article/10, where the '10' is a reference to the id of the current article. Write routes for both Laravel and Flask that would handle this URL. You do not need to write a function or controller. (5 marks)

2. Write a basic Docker file that performs the following tasks, using the centos base image (5 marks):
   - Install the nano text editing utility
   - Install Apache
   - Open port 21

3. Name four areas where information leakage may occur on a website, and discuss how each could be avoided using the security methods we discussed in-class (6 marks)

**Bonus (1 mark)**: What part of COSC 419 did you enjoy the most? What do you think could be done to improve the course?