

**THE UNIVERSITY OF BRITISH COLUMBIA**  
**CPSC 310: MIDTERM #1**  
**2009/2010 WINTER TERM 1**  
**OCTOBER 14<sup>TH</sup>, 2009**

Name: \_\_\_\_\_

Student #: \_\_\_\_\_

Signature: \_\_\_\_\_

**Notes about this examination**

1. You have 45 minutes to write this examination.
2. No notes, books, or any type of electronic equipment is allowed including cell phones and calculators.
3. Good luck!

	Marks	Max
Multiple Choice		10
True/False		10
11		6
12		6
13		8
Total		40

***Rules Governing Formal Examinations***

1. Each candidate must be prepared to produce, upon request, a UBCcard for identification.
2. Candidates are not permitted to ask questions of the invigilators, except in cases of supposed errors or ambiguities in examination questions.
3. No candidate shall be permitted to enter the examination room after the expiration of one-half hour from the scheduled starting time, or to leave during the first half hour of the examination.
4. Candidates suspected of any of the following, or similar, dishonest practices shall be immediately dismissed from the examination and shall be liable to disciplinary action.
  - Having at the place of writing any books, papers or memoranda, calculators, computers, sound or image players/recorders/transmitters (including telephones), or other memory aid devices, other than those authorized by the examiners.
  - Speaking or communicating with other candidates.
  - Purposely exposing written papers to the view of other candidates. The plea of accident or forgetfulness shall not be received.
5. Candidates must not destroy or mutilate any examination material; must hand in all examination papers; and must not take any examination material from the examination room without permission of the invigilator.
6. Candidates must follow any additional examination rules or directions communicated by the instructor or invigilator.

## Multiple Choice

Choose the best answer for each question and provide a *brief* justification of your answer.

1. Circle **all** of the functional requirements below. [2 marks]
  - a. The user must be able to bookmark a search result.
  - b. The user must be able to choose the location of the exported text file when she exports her bookmarks.
  - c. The system must be developed in Java.
  - d. The user must be able to manually enter a new search.
  - e. The system must display an error message if an internet connection is not available.
  - f. The help system must be available in English and French.
  - g. The system must be available 99.9% of the time.
  
2. The question “When do you need the software project to be completed?” from a requirements interview is: [2 marks]
  - a. Closed-ended and context-free
  - b. Closed-ended but not context-free
  - c. Open-ended and context-free
  - d. Open-ended but not context-free
  
3. Which design pattern provides a single point of communication between logically connected objects? [2 marks]
  - a. Observer
  - b. Composite
  - c. Singleton
  - d. Mediator
  - e. Façade
  - f. Decorator
  - g. none of the above

4. Which design principle is violated in the following code snippet? [2 marks]

```
public class ViewManager
{
    // rest of the code omitted

    public void updateMainView()
    {
        IViewPart mView;
        try {
            mView = getWorkbench().getActiveWindow().getActivePage().showView("main.ui");
            mView.setFocus();
        } catch (PartInitException e) {
            e.printStackTrace();
        }
    }
}
```

- a. Open/Closed Principle
- b. Law of Demeter
- c. Liskov Substitution Principle
- d. High Cohesion
- e. Low Coupling
- f. None of the above

5. Which of the following is not a benefit of agile development? [2 marks]

- a. ability to react to changing requirements and environments
- b. progress can be seen quickly because of the focus on continuous integration and working software
- c. time to complete the project is less than if you used another lifecycle
- d. none of the above

## True/False

For each true/false question below provide a *brief* justification of your answer.

6. A Software Requirements Specification fully documents how a software system will be built. **[2 marks]**
7. The design principles we learned in class are only relevant if you are using the waterfall lifecycle. **[2 marks]**
8. A disadvantage of the waterfall lifecycle is that it's difficult to get the requirements correct, and the rest of the project will be built on the (potentially faulty) requirements. The staged delivery model does not have this disadvantage. **[2 marks]**
9. The intent of the Abstract Factory design pattern is to allow the creation of different types of related objects without having to rely on the concrete classes. **[2 marks]**
10. Scrum dictates that development teams must pair program and use test-driven development. **[2 marks]**

## Short Answer

11. In class we discussed many techniques for eliciting requirements including interviews, questionnaires, and ethnographic analysis. Fill in the following table about each of those techniques? (Point form answers are fine) **[6 marks]**

	Example situation in which the technique is appropriate	Which stakeholders would you involve? (in your example)	Advantage of the technique	Disadvantage of the technique
Interviews				
Questionnaires				
Ethnographic analysis				

12. Use one of the design patterns from the appendix to draw a class diagram for the following system. You should not use the stereotype names (ie, the class names shown in the UML diagram in the appendix). Instead, choose class names that are appropriate for this situation. You only need to include the classes that demonstrate how the design pattern is used.

You are creating new user interface widgets (eg, text boxes, windows, buttons, and panels to contain other widgets). Some of the widgets will need to scroll horizontally, some will need to scroll vertically, and some will need both. **[6 marks]**

SAMPLE

13. Imagine that you are working in a 7-person, professional development team that has historically used the waterfall lifecycle. Your team is about to start working on a new project with somewhat unknown requirements.

- a. What would you say to your technical team lead to convince him or her that you should use an agile methodology? **[4 marks]**

- b. Even after hearing your arguments (from part a), your technical team lead is hesitant to completely adopt an agile methodology (eg, XP or Scrum) but he/she is willing to try some agile practices. Which two agile practices would you suggest your team adopt first and why? **[4 marks]**