

COMP314A Test Two 2003

First Name:

Last Name:

Id Number:

Answer all questions. Write your answers on this test paper, in the space provided. You have 50 minutes to complete this test.

Questions 1 and 2 **both** relate to the problem description given on the last page of this test. You may want to tear off this last page.

This test is **open book**.

1. Draw a robustness diagram for the Submit paper use case. [25 marks]

see last page of this test for the problem description

2. Draw a sequence diagram for the Submit paper use case. [25 marks]

see last page of this test for the problem description

3. Unit testing [35 marks]

Assume you are given the following class API of an unbounded queue:

```
// a Queue of unbounded size
public class Queue

// constructor
public Queue()

// adds object o to the end of the queue
public void add(Object o)

// removes and returns the front object of the queue
// returns null if the queue is empty
public Object remove()

// returns the number of objects currently enqueued
public int size()
```

Can you specify five good unit tests for this class?

a) [10 marks] just specify each test using one English sentence.

for your convenience:

```
public Queue()           // constructor
public void add(Object o) // add to end of queue
public Object remove()   // remove and return front of queue or null
public int size()        // number of objects enqueued
```

b) [25 marks] Implement a class using JUnit with appropriate tests for class Queue.

```
import junit.framework.*;
public class QueueTests extends Testcase {
```

4. Coupling [15 marks]

a) Describe what effects content coupling could have on maintenance:

b) Describe what effects data coupling could have on maintenance:

This is the problem description for Questions 1 and 2.

You may tear off this page if this is helpful

Remember the problem specification from the first test? Here's the introduction as well as the requirement for the submission procedure:

Next year's supercomputer conference will be happening on Waiheke Island. The conference organizers have contracted you to build a fully online system to keep track of the paper submission and the review process.

Authors will submit papers in electronic form (pdf only). The web-based submit form will also collect their email address. Authors will upload their paper, give contact details, specify a contact author and select from a list of possible keywords at least 3 keywords appropriate for their paper.

The Submit Paper procedure has been specified in the following use case:

The Submit Paper use case

Actor: Author

Precondition: the Author has access to the web-page, and the paper is in pdf-format and accessible on this machine.

Basic Course:

the Author fills in the fields of the form with the names of all authors and their email addresses, and ticks one of the authors as the contact author. They then select the paper to upload and hit "Submit". The System verifies all input, including a test whether the uploaded file is a pdf or not, assigns a unique ID to the paper and displays a "success" screen telling the submitter the number of their submission, and also telling them that an email has been sent to the contact author. They are also advised to mail a given address stating their paper number, Should they not receive that email.

Alternate Course:

If input verification fails (no contact author ticked, some emails are missing, the file is not in pdf-format), the form is re-displayed (keeping all the original input) with an appropriate error notice. The use may then edit and re-submit.

If emailing the contact author fails, the conference organizer receives an appropriate message.

Post Condition:

After a successful submission an appropriate record has been created listing ID, authors, emails, the contact author and the paper. If notifying the contact author failed, a message to the conference organizer has been created as well.