**PRIFYSGOL ABERYSTWYTH - ABERYSTWYTH UNIVERSITY**

DEGREE EXAMINATIONS 2010-2011 SEMESTER 1

FACULTY OF SCIENCE

**Computer Science, CS31310: Agile Methodologies**

**Time allowed: 2 hours**

*Calculators are not allowed in this examination.*

*Answer* **THREE** *from* **FIVE** *questions.*

*All questions carry equal marks.*

1. *"Agile methodologies, and in particular Extreme Programming, have made plan-driven methodologies obsolete."* Discuss this statement. Use examples to support your arguments.

   [33 marks]

2. *Cambrian Coast Insurance* develops in-house solutions to support its business operations. It has traditionally followed a plan-based methodology to develop in-house IT systems. The company is planning to use Extreme Programming (XP) for a project to develop a new insurance claims system.

   You are asked to introduce XP to Cambrian Coast Insurance by completing the following tasks.

   a) Explain how project planning is performed in Extreme Programming. In your answer, you should discuss the main activities that are performed and the people that are involved in those activities.

   [15]

   b) The company will need to select an appropriate customer to work on the project. The management has proposed that a member of the insurance claim processing team can allocate two days a week to the project. Discuss the responsibilities that the customer should expect to take on and whether the proposed person is suitable for this role.

   [12]

   c) The company uses formal code reviews as part of its existing development process. Discuss how XP manages the process of code reviews and identify one advantage and one disadvantage of this approach.

   [6]

3. This question is about testing on a XP project.

   a) XP uses two main types of tests: Unit Tests and Acceptance Tests. Describe the purpose of these types of tests and identify who is responsible for creating the tests. At what points in the process are the tests performed?

   [6]

   b) You have started work to develop tests for a new class to store details of calls made to a customer support centre. The class will store details in a FIFO (first in, first out) queue. You are using the JUnit test framework. The class, *CallQueue* has a *length* method that returns the value 0. The class *TestCallQueue* has a single method *testEmptyQueueLength*; this test method creates a new instance of the CallQueue class and confirms that the *length* method returns 0.

   Describe and provide rationale for the steps that you would follow to add *two* further tests and associated implementation for this class. You do not need to write syntactically correct code, pseudo code will suffice.

   [19]

   c) Briefly discuss the advantages and disadvantages of relying on the combination of the tests and the source code to provide adequate documentation for a project.

   [8]

4. This question concerns Feature Driven Development and antipatterns.

   a) Feature Driven Development (FDD) comprises the five processes:

   - Develop an overall model
   - Build a features list
   - Plan by features
   - The pair of repeated processes:
     - Design by features
     - Build by features

   Briefly summarize the entry criteria and exit criteria for each of these five processes.

   [15]

   b) A project is following the FDD process. Many of the features are complete, but several are behind schedule. The feature teams responsible for the features that are behind schedule all include one particular class owner, and all the classes owned by that class owner have a very similar combination of instance variables and methods. It should be added that a similar class, with the same class owner, has already proved its worth as an effective element of several of the completed features. Identify antipatterns that might give rise to these symptoms, and suggest remedies to improve the project.

   [18]

5. This question is about the software form *Big Ball of Mud*, described by Brian Foote and Joseph Yoder in 1999.

   a) Briefly describe what Brian Foote and Joseph Yoder mean by a *Big Ball of Mud* as presented in their 1999 paper of that title.

   [10]

   b) Briefly outline the forces that drive production of a *Big Ball of Mud*.

   [12]

   c) Should *Big Ball of Mud* be viewed as a pattern or as an antipattern? Outline the case for each point of view and give reasons for your conclusion.

   [11]