EASTERN UNIVERSITY, SRI LANKA
SECOND EXAMINATION IN SCIENCE - 2003/2004
SECOND SEMESTER(June/July, 2005)

CS 205 - Software Engineering Principles

Answer all Questions   **Time Allowed: 1 Hour**

1.

(a)

   i. Well-engineered software is defined as possessing four main attributes. List them, and identify four further attributes that a well-engineered software might posses. State clearly under what circumstances these attributes would be of importance.

   ii. Describe briefly general models of software development.

   iii. Draw a block diagram showing the different stages of software lifecycle in the *waterfall* model and describe its final stage.

   iv. Explain clearly why the waterfall model of software process is not a true reflection of the activities that are involved in software development

(b) Explain how data flow diagram may be used to document a system design, and give guidelines to draw data flow diagrams.

2.

(a)

   i. List the most essential features of UML class diagram.

   ii. Define *classes* and *objects* with regard to object oriented paradigms.

   iii. Discuss about the differences between procedural paradigms and obj[e]
oriented paradigms with the aid of suitable examples.

(b) Consider the following scenario regarding a Bank Accounts management System

This system provides the basic services to manage bank accounts at a bank called OOBank. OOBank has many branches, each of which has an address and a branch number. A client opens accounts at a branch. Each account is uniquely identified by an account number; it has a balance and a credit or overdraft limit. There are many types of accounts, including: a `mortgage account` (which has an a property as collateral), a `cheque account`, and a `credit card account` (which has an expiry date and can have secondary cards attached to it). It is possible to have a `joint account` (e.g. for a husband and wife). Each type of account has a particular interest rate, a monthly fee and a specific set of privileges (e.g., ability to write cheques, insurance for a purchases etc.). OOBank is divided into divisions and subdivisions (such as Planning, Investments and Consumer); the branches are considered subdivisions of the Consumer Division. Each division has a manager and a set of other employees. Each customer is assigned a particular employee as his or her 'personal banker'.

   i. Determine the classes of the above system.

   ii. Identify attributes and associations of the classes you have determined.

   iii. Identify any generalizations.

   iv. Draw a class diagram.