Uva Wellassa University, Sri Lanka
Faculty of Science and Technology
Industrial Information Technology Degree Programme
1st Year 2nd Semester Examination – August/September 2014
IIT 112-2 System Analysis and Design

Uva Wellassa University

Number of questions: Four (04)
Answer all questions.
Time Allocation: Two (02) hours.
Total mark: 100

1. a.
   i. What is an Information System? List the essential components of an Information System. (3 mark)
   ii. What are the key elements of Computer-Based Information Systems? (3 mark)
   iii. Who are the stakeholders of an Information System? (3 mark)

   b. Briefly explain the Software Development Life Cycle. (5 mark)

   c. What is known as Fact- Finding? List five (05) Fact- Finding methods and explain one (1). (8 mark)

   d. What are the different types of feasibility tests? (3 mark)

2. a. Select the suitable relationship type from generalization, Aggregation, Composition and Association for the following statements. (10 mark)
   - Files contain records
   - A hand has fingers
   - Monitors and keyboards are input/output devices
   - A student learns from a professor
   - A country has a capital city
   - A file is an ordinary file or a directory file
   - Every chess board consists of 64 squares
   - Husband married to a wife
   - Radiologist consults the lawyer
   - Car has accelerator, break and wheels as parts

b. Model the followings. You are required to visualize the class, relationship type and multiplicity.

i. In some restaurants, a meal consists of soup or salad, main course, and dessert. (5 mark)

ii. Personal computer consists of a CPU box, a keyboard, a mouse, a monitor and possibly some speakers. The CPU box holds a CD-ROM drive, one or more hard drive/s, a modem, RAM, a graphics card, and a sound card. (5 mark)

iii. A daisy is a kind of flower. A rose is a (different) kind of flower. Red roses and yellow roses are both kinds of roses. A petal is a part of both kinds of flowers. Ladybugs eat certain pests such as aphids, which may be infesting certain kinds of flowers. (5 mark)

3. a.

i. State the usage of a data dictionary when constructing a dataflow diagram (DFD) model of a system. (3 mark)

ii. Who is **external agent in** a DFD? (2 mark)

b. Consider a Library System that supports the following activities.

- lending
- cataloguing
- registration of members and books
- reservation
- inquires

i. Identify the documents in the given Library System. (2 mark)

ii. Draw a **Document Flow Diagram** for the above Library System. (3 mark)

iii. Draw a Context Diagram for the System. (5 mark)

iv. Draw a Top Level Data Flow Diagram for the system. (10 mark)

4. a. Draw an Activity Diagram for the following vending machine. (10 mark)

A soft drink vending machine accepts coins for a variety of products. When the amount of money deposited into the machine is equal to or greater than the price of any of its available products, the respective product selection buttons will be enabled for the user to make the selection. After the user has made a valid selection, the machine will dispense the soft drink, together with the change (if applicable).

b. Order processing system of ABC Corporation is given below.

ABC Corporation is one of the leading home appliances suppliers in the country. Customers can place an order for the product/s they selected to buy. Sales employee at ABC Corporation gets the order and he should fullfill the order after checking necessary details. Important information that should be gathered by the sales employee is customer contacts details, specially the address, since the company is providing free delivery to the customers. Customer can pay for the order through several payment methods including cash, cheque, debit card or credit card. After complete the information gathering and the payment, order will be shipped to the given address.

i. Identify classes, relationships (include multiplicity, roles, name) and draw a **high level** class diagram for above system. (10 mark)

ii. Draw a use case diagram only for **pay for the order** requirement. (5 mark)