The Open University of Sri Lanka

B.Sc. Degree Programme: Level 05

Open Book Test 2007/2008

CSU3278: Database Management Systems

Duration: **1½ Hours:**

Date: 14th March 2008 Time: 4.00pm – 5.30pm

Answer ALL questions

(01)

(a) Consider the following items that are likely to be in a library administration system. Categorize these items into *entities* (entity types), *attributes*, an *occurrence of an entity* (tuple) or none of these.

Book, ISBN (International Standard Book Number), Author, Author Name, Librarian, Programming in Pascal, Introduction to Operating Systems, Loan Date, Fine

(b) By means of an example, explain the origin of the *primary key* for a *composite entity*.

(c) Create an ER model and show its relational schema for the following requirements:

- An INVOICE is written by a SALESREP. Each sales representative can write many invoices, but each invoice is written by a single sales representative.
- The INVOICE is written for a single CUSTOMER. However, each customer can have many invoices.
- An INVOICE can include many detail lines(LINE), which describe the products bought by the customer
- The product information is stored in a PRODUCT entity.
- The product's vendor information is found in a VENDOR entity.

(02)

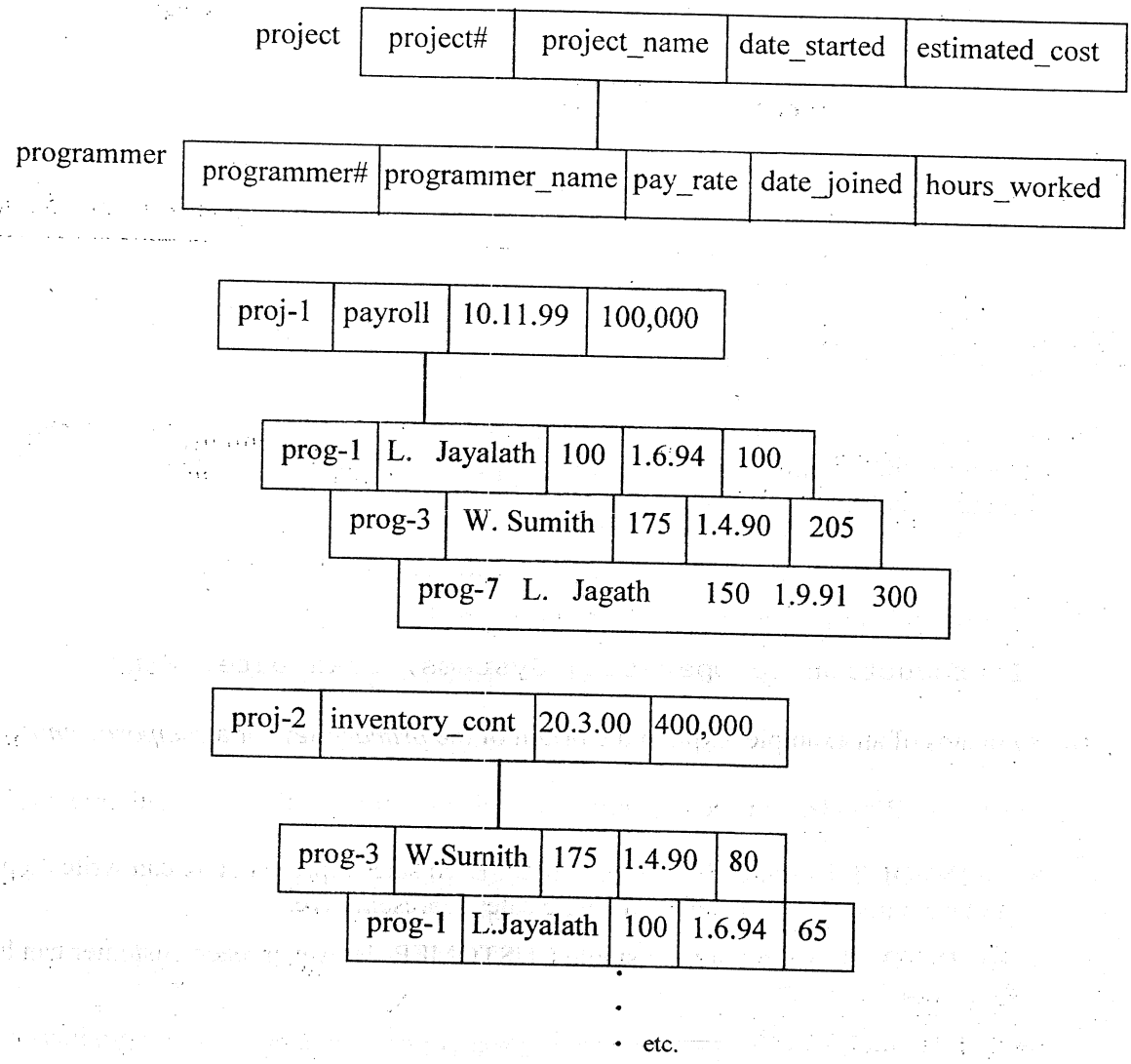
(a) State the *two structures* that are used to construct a *Network database*. What can be considered as the main disadvantage of the *Network model*?

(b) A computer software company database keeps track of projects and programmers involved in projects. The database must hold data about the following:

PROJECT: name of project, date started, estimated cost

PROGRAMMERS: name, pay rate, date of joining

The tree Structure for the above problem may be as follows:



Consider the following queries:

Q1: List all projects on which L. Jayalath works

Q2: List all the programmers working on the payroll project

(i) What problems would you detect when you answer the above two queries?

(ii) What happens if the database is inverted?

Using the given sample data, discuss the *update*, *insertion* and *deletion* problems that exist in th above model.