



EASTERN UNIVERSITY, SRI LANKA
DEPARTMENT OF MATHEMATICS
SECOND EXAMINATION IN SCIENCE -2013/2014
SECOND SEMESTER (Oct. /Nov., 2016)
CS205 – SOFTWARE ENGINEERING PRINCIPLES
(Proper & Repeat)

Answer all questions

Time allowed: 01 Hour

- Software engineering is an engineering discipline which is concerned with all aspects of software production.
- a) Briefly explain the following terms in Software Engineering:
- Well Engineered Software,
 - Software process,
 - Software process model.
- b) i. Describe the Water fall model.
- ii. List the pros and cons of adopting this model for software development.
- c) Distinguish *Plan-driven* and *Agile* methodologies in software development.
- d) List the problems of *Agile* method in software development.
- e) Describe the following terms in Software Engineering:
- Software design,
 - Modularization,
 - Coupling,
 - Cohesion.
- f))
- a) Consider an online seat reservation system for a bus company. The bus company includes several buses and realizes trips to different cities. Each bus is identified by its plate number and a separately assigned bus number. The trips are based on a predefined schedule and stop at predefined bus stations. Each bus can have only one trip per day. There are two types of trips, normal trips and express trips. Express trips do not stop at intermediate stations and get faster at the destination. Seats can be reserved by customers via online of the bus

company. The customer has the option to directly pay for the seat through the online case, the seat cannot be cancelled (neither by the customer nor by the bus company). If the customer has not paid for the seat, the bus company can cancel the seat if the customer does not show up one hour before the trip. When the reservation is cancelled, the seat will be free and can be sold to another customer. Both the customer and the company must authenticate themselves for performing operations with the system.

- i. Draw a *use case diagram* for describing the functional requirements of the bus reservation system.
 - ii. List and justify three non-functional requirements that could be important for the bus reservation system.
 - iii. *Passenger Alex lists all scheduled busses from Batticaloa to Colombo on December 15, 2016. He selects the one that departs at 13:00. The system displays all the busses and their status. Alex chooses seat numbered 9, which happens to be free. He completes his reservation by entering his contact information. We assume Alex had already logged in to the system prior to this scenario. Construct a sequence diagram for this scenario.*
- b) Perfect Pizza wants to install a system to record orders for pizza and chicken wings. When regular customers call Perfect Pizza on the phone, their phone number goes automatically into the Perfect Pizza system. The phone number invokes the name, address, and phone number, and the date comes automatically up on the screen. Once the order is taken, the total, including tax and delivery, is calculated. Then the order is given to the cook. A receipt is printed. Occasionally, special offer (coupons) is printed so the customer can get a discount. Delivery people who make deliveries give customers a copy of the receipt and coupon (if any). Weekly reports are kept for comparison with last year's performance.
- i. Draw a *context diagram* for Perfect Pizza
 - ii. Explode the context-level diagram showing all the major processes.