



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2009/2010
SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE
SSE 314 : SOFTWARE DESIGN AND ARCHITECTURE

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DATE: THURSDAY 15TH APRIL 2010

TIME: 8.00 A.M. – 10.00 A.M.

INSTRUCTIONS

Answer question One and any other Two.

Question One

- a) What do you mean by the terms cohesion and coupling in the context of software design? How are the concepts of coupling and cohesion useful in arriving at good software design? (5 marks)

- b) What do you understand by the term functional independence in the context of software design? How can you achieve functional independence in software design? (5 marks)

- c) Explain how a particular style and structure for the system architecture chosen may depend on the non-functional system requirements like performance, safety, security, availability, and maintainability. (5 marks)

- d) Give two advantages and two disadvantages of decentralized and semi centralized peer-top-peer architectures. (4 marks)

- e) Explain the concept fan-in and Fan-out in the context of design metrics. (4 marks)
- f) Explain two critical characteristics of a re-usable component. (4 marks)
- g) Explain three reasons why as software designer you can recommend an organization to do software re-engineering. (3 marks)

Question Two

- a) Define the term cohesion in the context of object-oriented design of systems. (2 marks)
- b) What problems are likely to occur if a module has low cohesion? (3 marks)
- c) Explain five architectural models that may be developed for the system architecture of software. (5 marks)
- d) With an aid of a diagram explain a generic architecture of a spreadsheet system. (10 marks)

Question Three

- a) With suitable examples discuss the following architectural models;
 - i) Client-server model (5 marks)
 - ii) layered model (5 marks)
- b) Explain the term distributed object architecture and state three reasons why this architecture would be appropriate for data mining system (4 marks)
- c) With an aid of a diagram explain the conceptual architecture of a service oriented system. How does it differ from distributed object approach? (6 marks)

Question Four

- a) With an aid of a diagram explain the basic elements of a component Model. (10 marks)
- b) With an example compare and contrast three-tier-server and two-tier-server architectures. (6 marks)
- c) Explain four ways in which generic applications architectures can assist you as a software designer. (4 marks)

Question Five

- a) Discuss the observer as behavioural design pattern. (10 marks)
- b) Discuss the reverse engineering process. (10 marks)