UNIVERSITY OF RUHUNA
BACHELOR OF COMPUTER SCIENCE (BCS) (SPECIAL) DEGREE LEVEL IV
(SEMESTER II) EXAMINATION – DECEMBER 2016

COURSE UNIT:CSC4222–Service Oriented Computing   TIME: 2 Hours

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Answer all four questions

1.

a. State whether the following statements are True or False about the service?
   i. An act that one party can offer to another that is essentially intangible.
   ii. Service promotes interoperability.
   iii. Services are acts performed for other entities including the provision of resources that other entities will use.
   iv. Services interact with applications through a loosely coupled, message based communication model.
   v. Service is an architecture which has to be practiced.

b. UniCare Company is a multinational company which provides variety of consumer products. The company follows service oriented approach in their software solutions. The company performs most of the transactions with their supplier's with interacting via other system which are running on different platforms. The company is successfully adopted the changing software requirements very quickly which represents new business needs. The company is profitable as the software supports to automate most of activities of large number of suppliers and customers.

   i. Name two software and business benefits of service oriented architecture and identify suitable examples from the given case for each.
   ii. Briefly explain what is mean by federated IT environment and give reasons why federated IT environment is required to the above company.
   iii. Dose the system in UniCare open or closed?
   iv. Describe three challenges faced by the system relevant to the answer given in 1 (b) iii.

c. "An application that uses Web services is service-oriented." Do you agree with this statement? Justify your answer.

d.
   i. "Service Oriented Computing (SOC) emphasizes on software engineering and deemphasizes programming". Comment on this statement.
   ii. Three independent parties involve in the software development in SOC environment. Name and describe these three parties.

2.

a. Consider a student registering business process which consists of following details: Registration number, Name, Address, Gender, Subject stream, Mentor and Hostel Room Number. Design a service or services to promote following attributes in (a) i-ii. (Write pseudo code to represent service(s)).
   i. Reusability
   ii. Course grained
   iii. Comment on granularity of above two methods you mentioned in 2 (a) i and ii.
   iv. Compare two technical advantages of method one given in 2 (a)i over the method two given in 2 (a) ii.
   v. Considering the answer given in 2 (a) i and ii, list two basic services.

b. Describe three categories of services defined by Thomas Erl with an example for each.

c. Compare traditional software development architectures with service oriented architecture mentioning five factors.

d. Write short notes on following topics with respect to services and SOA.
   i. Loose coupling
   ii. Orchestration layer
   iii. Autonomy
   iv. Service cohesion

3.

a. Explain the need of Enterprise Service Bus (ESB).

b. Select only the statement(s) which is/are true about ESB.
   i. Service is the basic component of the ESB
   ii. It is an architectural style.
   iii. It is a middleware product.
   iv. It facilitates integration of isolated applications into a decentralized infrastructure.
   v. ESB can be used only in service oriented environment.
   vi. Message oriented middleware (MOM) is the back born of the ESB.
   vii. Service container is a component of ESB.
   viii. Security is low when passing messages in ESB.

c. Explain five functionalities of ESB.

d. Describe the difference between following type of ESBs.
    i. Point-to-Point Connections versus Mediation ESB capabilities.
    ii. Protocol driven verses API driven ESB

e.
    i. Explain why the SOA governance is required.
    ii. Describe four non-technical aspects of SOA governance.

4.

a. Describe three benefits of web services.

b.
    i. Using diagram explain the web service architecture.
    ii. Describe three main roles and three operations attached the architecture in 4 (b) i.

c.
    i. List five rules when writing the SOAP messages.
    ii. Write SOAP request and response messages for a simple web service to get the price of a laptop.
    iii. Describe the steps of development life cycle of above web service created in 4 (c) ii.

d. Name and describe three types of information provided by UDDI.

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