

UNIVERSITY OF RUHUNA
BACHELOR OF COMPUTER SCIENCE (BCS) (SPECIAL) DEGREE LEVEL IV
(SEMESTER II) EXAMINATION – JANUARY 2018

COURSE UNIT: CSC4222–Service Oriented Computing

TIME: 2 Hours

Answer all questions

1.

- a. State whether you agreed or not agreed with following statements and your opinion cause to the decision.
- i. “SOA cannot accommodate the heterogeneity of the applications”.
 - ii. “Reusing application logic is the main benefit of SOA”.
 - iii. “The main idea of service oriented computing (SOC) is to emphasize on software engineering and to deemphasize on programming.”
 - iv. “You can buy SOA”.
 - v. “Easiness of creating and utilizing web service is a challenge to SOA”.
- b. SHELTER - a large financial company observes that its cost/income ratio shows poor performance. Due to inefficient IT solutions the company was unable to adapt for changing customer needs and much of them need to interact with other systems. Their centralized software system is capable to handle most of the primary business processes in the company. Such as account management, loan processing. But the customer service management is not in a satisfactory level. As the system was built with large components which represents the bundle of business functionalities it is not flexible to modify.
- i. Identify three inefficiencies in their software system
 - ii. For each factor identify above (i), propose a concept with respect to characteristics of an open system environment which leads to a solution.
 - iii. The management of SHELTER decides to adopt the Service-Oriented approach to the company. Name one business benefit and one software benefit which can be achieved through this approach with respect to the problem they have.
 - iv. Identify five possible atomic services in the Accounts Management business process.
 - v. Define the following terms and comment on each with regards to the existing software system of SHELTER
 1. Granularity Level
 2. Functional Cohesion
- c. Explain three principles of Service-oriented Architecture .
- d. Describe the followings.
- i. Service
 - ii. Service Registry
 - iii. Services orchestration

2.

- a. Consider the *order management* business process to answer the following questions.
 - i. Identify three Basic Data Services
 - ii. Identify three Basic Logic Services
 - iii. Identify three composed services.
 - iv. Write pseudo code for one basic data service identified in a) i.
 - v. Explain how can you achieve reusability using the service you wrote in a) iv.
- b. Describe each layer relates with following SOA expansion stages.
 - i. Fundamental SOA
 - ii. Federated SOA
 - iii. Process-enable SOA
- c. Briefly explain how does SOA achieve alignment between business and IT?
- d. Explain the Service Coupling in detail.

3.

- a. State whether the following statements are true or false.
 - i. A SOAP message contains XML Processing Instructions
 - ii. A SOAP message must NOT contain a DTD reference
 - iii. Service oriented Architecture is realised through web services
 - iv. Web services must registered using UDDI standard.
 - v. SOAP provides a way to communicate between applications running on different operating systems
- b. Briefly describe the web service development lifecycle phases.
- c.
 - i. Explain the need of WSDL standard in Web Service architecture.
 - ii. Describe WSDL document structure.
- d.
 - i. Describe the conceptual Web Service Stack using a diagram.
 - ii. Describe the functionality of the bottom layer of the above stack.
 - iii. Explain the need of second layer from the bottom.

4.

a. Describe three challenges faced by Service Oriented Architecture (SOA).

b. Service Oriented Architecture (SOA) governance deals with technical and non-technical issues.

i. Describe three technical related issues.

ii. Describe three non-technical issues.

c.

i. Define Enterprise Service Bus (ESB).

ii. Enterprise Service Bus (ESB) supports for scalability of application. Comment on this statement.

iii. List the main components of ESB and mention two responsibilities of each.
