

University Examinations 2012/2013

SECOND YEAR, SECOND SEMESTER, EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN COMPUTER SCIENCE

ICS 2209: DESIGN AND IMPLEMENTATION OF COMPUTER APPLICATIONS

DATE: DECEMBER 2012

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE – 30 MARKS

- a. Describe the following: (2 Marks)
- b. Differentiate between a server and a client (2 Marks)
- c. Briefly discuss the applications of java technology in design and implementation of computer applications. (5 Marks)
- d. Describe the object oriented programming concepts as used in design and implementation of computer applications. (5 Marks)
- e. Describe three classification of variables that java supports in design and implementation of computer applications. (6 Marks)
- f. Explain the process of writing and using a java program. (3 Marks)
- g. Describe exception as used in java programming language. (2 Marks)
- h. Discuss anatomy of a method in java programming language. (3 Marks)
- i. Differentiate between the instance and class methods as used in java programming language. (2 Marks)

QUESTION TWO – 20 MARKS

- a. Describe two sets of visual components and containers for user interface design in java programming language. (4 Marks)
- b. Describe four types of layout manager and their characteristics. (4 Marks)
- c. Consider making an object to represent an employee in a company which maintains; name, address, phoneNumber, employeeNumber and hourly pay. (3 Marks)
- d. Consider the following class hierarchy of employee, person, manager and customer objects with some instance methods belonging to each class. (10 Marks)
- e. Write a java application program to show a class containing a recursive method that returns a list of odd integers from a given list of integers. (5 Marks)

QUESTION THREE – 20 MARKS

- a. Write a java application program which will display the frame with menus as follows and perform the following tasks. (8 Marks)

When the deposit menu is clicked a standard input dialog box is opened to take the amount to deposit. Upon entering the deposit amount when OK button is clicked the amount entered added to the balance. The balance amount is then displayed to the console. When the withdraw menu is clicked a standard input dialog box is opened to take the amount to withdraw. Upon entering the withdraw amount when OK button is clicked the amount entered is subtracted from the balance. The balance amount is then displayed to the console.

- b. Explain the following terms: (6 Marks)
- i. A model
 - ii. User interface
 - iii. Graphical user interface
- c. Explain the following terms: (6 Marks)
- i. A view
 - ii. A controller
 - iii. A frame

QUESTION FOUR – 20 MARKS

- a. Write a java application program, when run will display the frame as shown below. The program will perform the following tasks: If a book name is entered in the text field and then the **ADD** button is clicked the entered book name will be added to the book list vector and the updated list will be displayed in the JList. The message “Enter book name here to add” will be displayed in the text field again after adding the book name. If a book name is selected in the JList and the **DELETE** button is clicked the selected book will be deleted from the book list vector and the update list will be displayed in the JList. (20 Marks)

QUESTION FIVE – 20 MARKS

- a. Describe five types of events and explain how they are used in java applications. (5 Marks)
- b. Write a Java application in order to manage student’s information that interacts with the user by Graphical User Interface (GUI). Write the class such that the object of the class will look like the following frame. The variable are to be declared outside the constructor and created as well as added to the frame inside the constructor. An object of the StudentOptionPanel is added for the buttons. Create an object of the class in the main () method so that it displays the frame as shown above when the program is run. (10 Marks)