

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN
APPLIED COMPUTER SCIENCE**

ACSC 231: USER INTERFACE PROGRAMMING

STREAMS: BSC (APPLIED COMPUTER SCIENCE) Y3S1

TIME: 2 HOURS

DAY/DATE: THURSDAY 13/12/2018

2.30 P.M. – 4.30 P.M.

CANDIDATE INSTRUCTIONS:

- Answer question one and any other two questions

Question One (30 marks)

- (a) Explain what is Java Foundation Classes? (2 marks)
- (b) State four differences between Java AWT and Java Swing components. (4 marks)
- (c) Briefly explain two types of user interfaces. (4 marks)
- (d) In the design of user interfaces, explain why errors generated in the application logic of the program should be relayed to the user interface. (4 marks)
- (e) For the errors in (a) above, explain how they are propagated to the user interface. Give an illustration for your answer. (4 marks)
- (f) Briefly discuss the following user interface design guidelines
- (i) Visibility of system status (2 marks)
 - (ii) User control and freedom (2 marks)
 - (iii) Consistency and standards (2 marks)
 - (iv) Error prevention (2 marks)

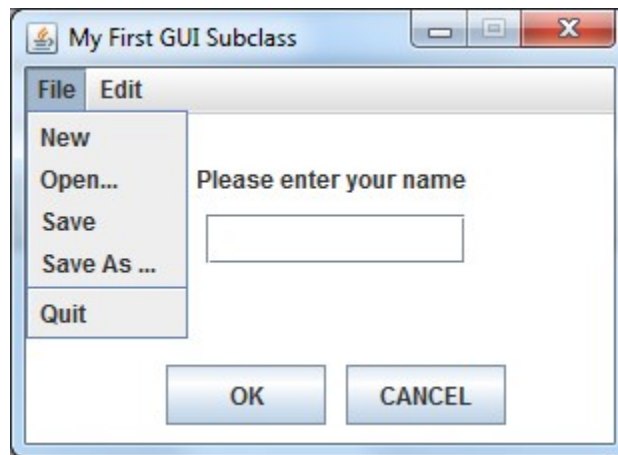
- (g) Write Java code sample for creating and adding the components JLabel, JTextField, and two JButton “okay” and “cancel” in a JFrame frm. (4 marks)

Question Two (20 marks)

- (a) Explain four swing top-level components. (4 marks)
- (b) Discuss three layout managers used in JFC. (6 marks)
- (c) Suppose, in your industrial attachment, you are assigned a task to design and develop a user interface for an appointment booking system for the manager. Discuss five user interface design principles that would guide you in this task. (10 marks)

Question Three (20 marks)

Consider a GUI interface given below.



- (a) Discuss the possible Swing components used in the GUI and the order of their insertion to get a similar look. (8 marks)
- (b) Using code samples, show how the objects ok, cancel, new, open and Quit were inserted on the interface. (8 marks)
- (c) Identify the necessary interface that ought to be implemented and which method ought to be overridden. Give an illustration using Java code sample. (4 marks)

Question Four (20 marks)

- (a) Identify five event classes in AWT and the interfaces they implement. Explain how each of the identified event class is used. (10 marks)

- (b) Implement a simple Java Swing application that displays on the JFrame two buttons “click me” and “see me”. The click button displays a message on a label “You clicked me” when clicked. The see me button displays the message “See I know how to program in Java Swing” and exits the application. Hint: the application should use all necessary Java swing components. (10 marks)

Question Five (20 marks)

- (a) Discuss the MVC pattern and its use in the development of interactive applications. (8 marks)
- (b) Design and implement a calculator program using Java Swing components with the following operations: add, sub, mult, and mod (all represented as buttons). The application has three text entry fields value one, value two and result. The application should illustrate error handling both in the application logic and the user interface level for illegal entries and errors in computations. Remember to separate the user interface logic from the application logic. (12 marks)
- Expected design should look like shown below*

