

Student Name: _____ Student ID # _____

OU Academic Integrity Pledge

On my honor I affirm that I have neither given nor received inappropriate aid in the completion of this exercise.

Signature: _____ Date: _____

Notes Regarding this Examination

Open Book(s) You may consult any printed textbooks in your immediate possession during the course of this examination.

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No Electronic Devices Permitted You may not use any electronic devices during the course of this examination, including but not limited to calculators, computers, and cellular phones. All electronic devices in the student's possession must be turned off and placed out of sight (for example, in the student's own pocket or backpack) for the duration of the examination.

Violations Copying another's work, or possession of electronic computing or communication devices in the testing area, is cheating and grounds for penalties in accordance with school policies.

Part I. Java Graphics

1. (2 points) Where is the origin of the coordinate system for a `JPanel`?
 - A. Upper left**
 - B. Lower left
 - C. Upper right
 - D. Lower right
 - E. Center

2. (2 points) Which of the following is a Java graphics *component*?
 - A. `JButton`
 - B. `JFrame`
 - C. `JPanel`
 - D. All of the above**
 - E. None of the above

3. (2 points) Which of the following is a Java graphics *container*?
 - A. `JButton`
 - B. `JFrame`
 - C. `JPanel`
 - D. All of the above**
 - E. None of the above

4. (2 points) Which of the following is a *heavyweight* Java graphics container?
 - A. `JButton`
 - B. `JFrame`**
 - C. `JPanel`
 - D. All of the above
 - E. None of the above

5. (2 points) Which of the following is needed in all Java GUI-based programs?
 - A. `JButton`
 - B. `JFrame`
 - C. `JPanel`
 - D. All of the above
 - E. None of the above**

6. (2 points) Which of the following is a service provided by a layout manager?
 - A. To manage graphics drawing locations within a container.
 - B. To manage the relative locations of graphics components within a container.**
 - C. To manage the relative locations of graphics components across containers.
 - D. All of the above
 - E. None of the above

7. (2 points) Which of the following layout managers provides the greatest flexibility to GUI application developers?
- A. GridLayout
 - B. GridBagLayout**
 - C. FlowLayout
 - D. BorderLayout
 - E. BorderLayoutLayout
8. (2 points) When creating a menu, which of the following action sets should be followed?
- A. Add the menu items to the menus and add the menus to the menu bar.**
 - B. Add the menus to the menu items and add the menu items to the menu bar.
 - C. Add the menu items to the menu bars and add the menu bars to the menu.
 - D. Add the menus to the menu bars and add the menu bars to the menu item.
 - E. Add the menu bars to the menu items and add the menu items to the menu.
9. (2 points) When creating a new `JFrame`, which of the following calls should be last?
- A. `setVisible(true);`**
 - B. `setSize(400, 250);`
 - C. `setTitle("My Frame");`
 - D. `setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);`
 - E. `setNewJFrame(final);`
10. (2 points) When drawing a wedge for a pie chart, which of the following calls should be last?
- A. `setColor(color);`
 - B. `fillArc(x, y, width, height, startAngle, arcAngle);`**
 - C. `drawWedge(wedge);`
 - D. `pack();`
 - E. `add(wedge);`

Part II. Event Driven Programming

11. (2 points) Which of the following is a good use for *events*?
- A. Allowing for unordered user interactions with a GUI.
 - B. Notification of outside occurrences such as timers.
 - C. Keeping different parts of a program synchronized with one another.
 - D. All of the above.**
 - E. None of the above.
12. (2 points) A *source* does which of the following?
- A. Creates events to use as messages.
 - B. Sends notifications to listeners.
 - C. Maintains a list of listeners.
 - D. All of the above.**
 - E. None of the above.

13. (2 points) A *listener* does which of the following?
- A. Listens for responses from events.
 - B. Notifies events of messages.
 - C. Maintains a list of sources.
 - D. All of the above.
 - E. None of the above.**
14. (2 points) The purpose of the `actionPerformed` method is which of the following?
- A. To notify listeners when an event has occurred.
 - B. To respond to an event from a source.**
 - C. To add a listener to the list of action listeners.
 - D. All of the above.
 - E. None of the above.
15. (2 points) The purpose of the `processEvent` method is which of the following?
- A. To notify sources when an event has occurred.
 - B. To respond to an event from a listener.
 - C. To add a source to the list of action sources.
 - D. All of the above.
 - E. None of the above.**

Part III. Model, View, Controller

For this exam, all MVC questions refer to the particular version of MVC we have been studying.

16. (2 points) The purpose of a *model* is to do which of the following?
- A. Encapsulate data related to application objects.
 - B. Respond to controller requests to modify data.
 - C. Notify view(s) of data updates.
 - D. All of the above.**
 - E. None of the above.
17. (2 points) The purpose of a *view* is to do which of the following?
- A. Display data related to application objects.
 - B. Respond to controller requests to modify displays.
 - C. Notify controller(s) of GUI component updates.
 - D. All of the above.**
 - E. None of the above.
18. (2 points) The purpose of a *controller* is to do which of the following?
- A. Relay data related to application objects.**
 - B. Respond to model requests to modify control flow.
 - C. Notify driver(s) of control updates.
 - D. All of the above.
 - E. None of the above.

19. (2 points) The purpose of a *driver* is to do which of the following?
- A. Load data related to application objects.
 - B. Respond to view requests to update data.
 - C. Notify model(s) of user gestures.
 - D. All of the above.
 - E. None of the above.**
20. (2 points) When creating an MVC application from a non-MVC application, we often extend non-MVC application classes to create which of the following?
- A. Models**
 - B. Views
 - C. Controllers
 - D. All of the above
 - E. None of the above
21. (2 points) When extending a non-MVC application class to be an MVC class, we should override which methods?
- A. Mutators**
 - B. Accessors
 - C. Constructors
 - D. All of the above
 - E. None of the above
22. (2 points) Which of the following statements about *listeners* is true?
- A. Models generally register themselves as listeners on views.
 - B. Views generally register themselves as listeners on controllers.
 - C. Controllers generally register themselves as listeners on models.
 - D. All of the above.
 - E. None of the above.**
23. (2 points) Which of the following statements about *sources* is true?
- A. Models generally register themselves as sources for views.
 - B. Views generally register themselves as sources for controllers.
 - C. Controllers generally register themselves as sources for models.
 - D. All of the above.
 - E. None of the above.**
24. (2 points) Which of the following statements about *events* is true?
- A. Events are often generated by models.
 - B. Events are often generated by views.
 - C. Events are often received by views.
 - D. All of the above.**
 - E. None of the above.

25. (2 points) Which of the following statements about *controllers* is true?
- A. A controller should have one listener class for each GUI component in the view(s).
 - B. A controller should have one listener class for each application object in the model(s).
 - C. A controller should have one listener class for each event type in the application.
 - D. All of the above.
 - E. None of the above.**
26. (2 points) Which of the following statements about *models* is true?
- A. A model should keep track of views that want to listen for data changes.**
 - B. A model should keep track of controllers that want to listen for data changes.
 - C. A model should keep track of events generated by GUI components due to data changes.
 - D. All of the above.
 - E. None of the above.
27. (2 points) Which of the following statements about *views* is true?
- A. Views often display model data to users.
 - B. Views often pass user input to controllers.
 - C. Views often respond directly to user actions.
 - D. All of the above.**
 - E. None of the above.
28. (2 points) Which of the following statements about *drivers* is true?
- A. Drivers often create action listeners for controllers.
 - B. Drivers often create events for models.
 - C. Drivers often reply to sources with messages.
 - D. All of the above.
 - E. None of the above.**
29. (2 points) Which of the following statements about *MVC* is true?
- A. MVC provides a design pattern for GUI-based programs.
 - B. MVC uses sources to send events to listeners.
 - C. MVC uses method calls to access and modify application data.
 - D. All of the above.**
 - E. None of the above.
30. (2 points) Which of the following statements about *MVC* is true?
- A. MVC integrates application methods with GUI components in the same class.
 - B. MVC is a set of Java libraries for GUI-based programs.
 - C. MVC models controllers with GUI listeners on source views.
 - D. All of the above.
 - E. None of the above.**

Part IV. Exceptions, Assertions, Preconditions, and Postconditions

31. (2 points) Exceptions are meant to handle which of the following?
- A. Normal control flow through a program.
 - B. Situations in which something has gone wrong in a program.**
 - C. Unrecoverable errors in a program.
 - D. All of the above.
 - E. None of the above.
32. (2 points) An exception should be generated when which of the following happens?
- A. A method is called with a parameter of an invalid type.
 - B. A method is called with a parameter of an invalid value.**
 - C. A method is called with a null parameter.
 - D. All of the above.
 - E. None of the above.
33. (2 points) In general, when should a method create a new exception and throw it?
- A. When the method finds a problem that it lacks sufficient context to address.**
 - B. When the method has sufficient context to address the problem.
 - C. When the method is alerted to a problem that it lacks sufficient context to address.
 - D. All of the above.
 - E. None of the above.
34. (2 points) In general, when should a method re-throw an exception that was thrown to it?
- A. When the method finds a problem that it lacks sufficient context to address.
 - B. When the method has sufficient context to address the problem.
 - C. When the method is alerted to a problem that it lacks sufficient context to address.**
 - D. All of the above.
 - E. None of the above.
35. (2 points) In general, when should a method catch an exception that was thrown to it?
- A. When the method finds a problem that it lacks sufficient context to address.
 - B. When the method has sufficient context to address the problem.**
 - C. When the method is alerted to a problem that it lacks sufficient context to address.
 - D. All of the above.
 - E. None of the above.
36. (2 points) In general, when a method throws an exception, where should that exception be thrown to?
- A. To the program's main method.
 - B. To the method's caller.**
 - C. To the method at the bottom of the call stack.
 - D. All of the above.
 - E. None of the above.

37. (2 points) Assertions are meant to help with which of the following?
- A. Ensuring the design conforms to the specification.
 - B. Ensuring the implementation conforms to the design.**
 - C. Ensuring execution correctness after deployment.
 - D. All of the above.
 - E. None of the above.
38. (2 points) Which of the following statements about *preconditions* is true?
- A. A method's preconditions should be tested at its start.
 - B. Preconditions are requirements that must be satisfied to ensure the method will execute correctly.
 - C. Preconditions are determined during project design.
 - D. All of the above.**
 - E. None of the above.
39. (2 points) Which of the following statements about *postconditions* is true?
- A. A method's postconditions should be tested at its end.**
 - B. Postconditions are requirements that must be satisfied to ensure the method will execute correctly.
 - C. Postconditions are determined at the project's completion.
 - D. All of the above.
 - E. None of the above.
40. (2 points) An assertion should succeed when which of the following is true?
- A. A precondition on a public method is satisfied.
 - B. A precondition on a private method is not satisfied.
 - C. A postcondition on a public method is satisfied.**
 - D. All of the above.
 - E. None of the above.

Part V. MVC in Practice

For this exam, all MVC questions refer to the particular version of MVC we have been studying.

Scenario: Dane wants to develop an MVC-based program for handling inventory for a grocery chain.

41. (2 points) A variable to keep track of all the stores in the chain belongs in which of the following?
- A. The model**
 - B. The view
 - C. The controller
 - D. The driver
 - E. An event

42. (2 points) A method to add a new store to the list of stores in the chain belongs in which of the following?
- A. The model**
 - B. The view
 - C. The controller
 - D. The driver
 - E. An event
43. (2 points) A method to allow a user to select a store from a list showing the stores in the chain belongs in which of the following?
- A. The model
 - B. The view**
 - C. The controller
 - D. The driver
 - E. An event
44. (2 points) A variable to keep track of which store a user has selected from a list showing the stores in the chain belongs in which of the following?
- A. The model
 - B. The view**
 - C. The controller
 - D. The driver
 - E. An event
45. (2 points) A method to display the inventory of a particular store belongs in which of the following?
- A. The model
 - B. The view**
 - C. The controller
 - D. The driver
 - E. An event
46. (2 points) A variable to keep track of the size of the display window belongs in which of the following?
- A. The model
 - B. The view**
 - C. The controller
 - D. The driver
 - E. An event
47. (2 points) A method to respond to events that come from user interactions belongs in which of the following?
- A. The model
 - B. The view
 - C. The controller**
 - D. The driver
 - E. An event

48. (2 points) A variable to keep track of which methods to call based on user interactions belongs in which of the following?
- A. The model
 - B. The view**
 - C. The controller
 - D. The driver
 - E. An event
49. (2 points) A method to inform a controller about its model belongs in which of the following?
- A. The model
 - B. The view
 - C. The controller**
 - D. The driver
 - E. An event
50. (2 points) A variable to keep track of when an action took place belongs in which of the following?
- A. The model
 - B. The view
 - C. The controller
 - D. The driver
 - E. An event**