

Student Name: _____ Student ID # _____

UOSA Statement of Academic Integrity

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.

Open Notes You may consult any printed notes in your immediate possession during the course of this examination.

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.

Question 1: JCF (10 points)

A. Given a `LinkedHashMap` of 1000 `Employee` objects using `EmployeeID` objects as keys and a `LinkedList` of the same 1000 `Employee` objects, would you expect it to take less time to retrieve a given employee based on **ID** from the `LinkedHashMap` or the `LinkedList`? *Explain* your answer.

B. Given a `LinkedHashMap` of 1000 `Employee` objects using `EmployeeID` objects as keys and a `LinkedList` of the same 1000 `Employee` objects, would you expect it to take less time to retrieve a given employee based on **name** from the `LinkedHashMap` or the `LinkedList`? *Explain* your answer.

Question 2: Binary I/O (10 points)

A. *Explain* the purpose of the `serialVersionUID` number.

B. *Explain* why it is better to set the `serialVersionUID` number yourself, rather than letting the software generate a `serialVersionUID` number for you.

Question 3: Graphics (10 points)

A. *Explain* one reason for drawing on a `JPanel` inside a `JFrame`, rather than drawing on the graphics of the `JFrame` itself.

B. Drawing should typically take place inside a component's `paintComponent` method. *Explain* why.

Question 4: Event Driven Programming (20 points)

A. *Explain* why reading keyboard input from the console **is not** considered an event.

B. *Explain* why reading keyboard input from a `JTextField` **is** considered an event.

C. *Explain* an example event that is **not** related to GUIs.

D. *Explain* why writing to a text file **is not** considered an event.

Question 5: Graphical User Interfaces (15 points)

A. *Explain* one reason for using a `LayoutManager` for a `JFrame` that **will never be** resized.

B. *Explain* one reason for using a `LayoutManager` for a `JFrame` that **will be** resized.

C. *Explain* the difference between a `JMenuBar`, a `JMenu`, and a `JMenuItem`.

Question 6: MVC (35 points)

Jennifer has created an excellent employee information system in Java following the MVC paradigm as we have discussed it in class and using data encapsulation best practices. It contains all of the data you would expect for employees, such as names, ID numbers, salary, addresses, and so forth, along with appropriate accessor and mutator methods for this data. It also contains a GUI that allows end users to put information into the system in text form and view that information in text form.

Karner wants to add to the functionality of this program by having it create a map showing the location of all of the employee's houses. To accomplish this, how will each part of the original program need to be modified? *Explain* each answer.

A. Driver

B. Model

C. View

D. Controller