CIS 285: Software Engineering Tools

Final Exam Fall 23

Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Given the Java class below.
   1. Develop and execute three unit tests (**paste your test code and screenshot showing pass or fail**) 10pts
      1. testPositive – testing a list of all positive integers
      2. testNegatives – testing a list of all negative integers
      3. testMixed – testing a list of positive, negative and zero
   2. Can above tests pass? If not, please provide the **correct code and screenshots showing pass of all three tests after correcting** 10pts
   3. Write git command to 10pts
      1. Add a local repository
      2. Add initial production code and test code to staging phase
      3. Commit files
      4. After making changes in codes, show differences
      5. Add and commit updated production code

public class SelectionSort {

public void selectionSort(int[] arr) {

if (arr == null || arr.length <= 1) {

return;

}

for (int i = 0; i < arr.length - 1; i++) {

int minIndex = i;

for (int j = i + 1; j < arr.length; j++) {

if (arr[j] < arr[minIndex]) {

minIndex = j;

}

}

if (minIndex <= i) {

swap(arr, i, minIndex);

}

}

}

private void swap(int[] arr, int i, int j) {

int temp = arr[i];

arr[j] = arr[i];

arr[j] = temp;

}

}

You have been tasked with creating a software solution for a boutique bookstore that enables customers to explore the book inventory, make book purchases, and reserve books. The system should incorporate the following elements:

* Book details (title, author, genre, price, cover image)
* Purchase information (book selection, quantity, customer details, order status)
* Reservation specifics (date, time, customer information, reserved books)
* Customers should be able to peruse the book inventory, initiate purchases, and reserve books. Additionally, bookstore staff members need the capability to oversee and manage both book orders and reservations.

1. Write 5 functional requirements 10pts
2. Write 5 non-functional requirements 10pts
3. Draw a UML use case diagram to complement the functional requirement (2 or 3 use cases are enough). Each use case must contain entry condition, exit condition, flow of event, constraints. 10pts
4. Draw an analysis level class diagram but classes involved in e) and f) must contain both attribute and operation . 10pts
5. Draw one UML sequence diagram 10pts
6. Choose one class in d) and define states and then draw a state diagram for that class, please note, you must first provide definition of the each state in terms of attribute before draw state diagram. 10pts
7. Draw an activity diagram and apply swimlane 10pts

**Use Enterprise Architect to draw diagrams c) to g), you must include Enterprise Architect file in your submission. Please zip this Word and EA file into one file to submit.**