CIS 285: Software Engineering Tools

Final Exam Winter 23

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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;

}

}

A screenshot of a computer

Description automatically generated

Ran out of time! Did the Enterprise work first and it took a while to make the diagrams per your instruction.

1. You are required to develop an application for a restaurant that allows customers to browse the menu, place orders, and make reservations. Below is the information included in the menu, orders and reservations.

• Menu items (name, description, price, image)

• Order details (item, quantity, customer information, order status)

• Reservation details (date, time, customer information, table size)

customers can browse the menu and place orders and make reservations. The restaurant staff can manage 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.**

a.) Functional Requirements:

The system must allow customers to select view menu.

Customers should be able to log in to the system and view their order details.

Customers should be able to log out of the system.

The system must create reservations based on customer specifications and availability.

The system must allow customers to place an order.

b.) Non-functional Requirements:

The system will provide results within a reasonable amount of time.

The system will not crash when site traffic is high.

The system will keep data information secure.

The system will compress and decompress any images on the website to fit the user’s device.

The system should authenticate any user attempting to access it.

c.) Diagram

Description automatically generated

d.) Diagram

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e.)

Diagram

Description automatically generated

Diagram

Description automatically generated

States:

Reading Customer Information: Attribute came from WebUser & Customer Log in going to Account Class.

Choosing View Menu: Customer selects ViewMenu() operation.

Performing View Menu: This comes from Menu class, the images, prices, and descriptions are displayed to screen.

Returning to Main View Screen: Customer is finished viewing the menu and is taken back to their main screen

Returning to Log in Screen: Customer selects log out button, and is returned to the WebUser main screen.

Diagram, schematic

Description automatically generated

Files included in the zipped folder