CSE 471
Fall 2023
Assignment 2 and 3
Deadline: 08 December 2023 11:59 pm

Instructions for preparing the solution script:
- **Write your name, ID#, and Section number clearly on the very front page.**
- **Write all answers sequentially.**
- **Start answering a question (not the part of the question) from the top of a new page.**
- **You have to submit a handwritten scanned copy of your assignment Late submissions will not be accepted.**
- **Write down the answers to both assignments and make only one PDF. Rename it 'name_id_section_assigment_2_3.pdf'**
- **Submission link: https://forms.gle/EwgWobSkCk1TtMBY6**

Assignment 2

Suppose you are developing an e-commerce website and it contains several components. The website component contains five components that are: database, product catalog, inventory, cart, and invoice. The Database component provides an interface, storeInformation, that is required by the product catalog component. Product Catalog component provides an interface, productInformation which is required by the Inventory component. Database component requires the stockDetails interface which is provided by the Inventory component. Product Catalog component provides another interface, readProductDetails which is required by both the Inventory and Cart components. The inventory component provides an interface called syncDB which is dependent on database updates from the Database component. The inventory and cart components both provide an interface called readCustomerBill which is required by the Invoice component. There are three components outside the Website component. They are payment gateway, vat, and tax. Cart, Invoice, and Inventory components provide inventoryStatus, customerInvoice, and cartStatus interfaces respectively and all of these are required by the Payment Gateway component. The Payment Gateway component also requires vatAmount from the Vat component and taxAmount from the Tax component.

Draw a component diagram based on the above scenario. **[10 marks]**

Assignment 3

1. Let's assume you are planning an e-commerce startup company called Rent-a-Boi. In this system, the User needs to input his/her user id and password. If the credentials are wrong, the system will show an error message to the user. A user can search for a book. If the book is unavailable, users can request that too. Users can also buy books from this system. Users can make payments to the system and the system will send an acknowledgement to the user. The system can send the requested book list to the Admin. Admin can add new books and update the book database.
   Now Design the **context diagram** of the Rent-a-Boi system. **[3 marks]**

2. A user inputs his/her credentials to the login process. Login process verifies the information by checking with the user datastore. When a user searches for a book, check the availability process takes that input and checks the availability by looking at the Book datastore. A user can buy books from the system that is handled by the AB2C (add book to cart) process. The checkout process takes all books from the AB2C process, updates the Book datastore and forwards the total price to make payment process. On the other hand, the user provides the payment information to the payment process too and it sends an acknowledgment to the user. When a user requests a new book, the request book process forwards the requested book information to the Admin. Admin can add new books to the Book datastore or update the datastore with the new collection.

Now Design the **Level-1 diagram** of the Rent-a-Boi system. **[7 marks]**

**Make necessary assumptions where needed.