



Daffodil International University
Faculty of Science & Information Technology
Department of Software Engineering
Course Code: SE216; Course Title: Object Oriented Programming

Time: 40 Mins

Marks: 15

1.	a) Considering following instructions, write java code. 1. Create an interface Borrowable with one abstract method: <code>borrow()</code>. 2. Create another interface Returnable with one abstract method: <code>returnItem()</code>. 3. Create an interface LibraryService that extends both Borrowable and Returnable, and adds one abstract method: <code>reserve()</code>. 4. Create an abstract class LibraryItem that implements LibraryService. It should contain two abstract methods, <code>open()</code> and <code>close()</code>, and one concrete method, <code>displayInfo()</code>. 5. Create two subclasses, Book and Magazine, that extend LibraryItem and provide implementations for all necessary methods. 6. Override the <code>displayInfo()</code> method in both subclasses to display appropriate messages for each type of library item. 7. In a class named TesterClass, create objects of both Book and Magazine. 8. Invoke every available method on each object and display an appropriate message for each method call. Output Book is opening Book is borrowed Book is reserved Book is returned Book information is displayed Book is closing Magazine is opening Magazine is borrowed Magazine is reserved Magazine is returned Magazine information is displayed Magazine is closing	[8]
b)	Create a Java class named EventManager to manage participants for a University Photography Exhibition using <code>ArrayList<String></code>. Perform the following 7 tasks in the given order: 1. Create two <code>ArrayList<String></code> objects named <code>morningParticipants</code> and <code>eveningParticipants</code>. Add the following participants: ○ Morning: Arif, Nabila, Rohan, Tisha ○ Evening: Sami, Nabila, Fahim, Zara 2. Create another <code>ArrayList<String></code> named <code>participants</code> and use <code>addAll()</code> to combine both lists. Display the complete list and its size. 3. Check whether Tisha and Zara are present in <code>participants</code>. Display their positions if they exist; otherwise, display "Participant not found." 4. Find and display the first and last occurrence of Nabila in the combined list. 5. Replace Fahim with Hasan, then insert Maya at the third position. Display the updated list. 6. Use <code>removeAll()</code> to remove all participants from the <code>eveningParticipants</code> list from <code>participants</code>. Display the remaining participants and their total number.	[7]

		7. Finally, use clear() to remove all remaining participants. Use isEmpty() to verify the list and display: - o "The participant list is empty." - o or "The participant list is not empty."
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