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| **Assignment Case** | Description: LogoBINUS-University |
| JavaH1Special |
| **Periode Berlaku** Semester Ganjil 2023/2024  ***Valid on*** *Odd Year 2023/2024* | **Software Laboratory Center**  **Assistant Recruitment 24-1** |

## Materi

*Material*

* Object Oriented Programming (OOP)
* SOLID Principle
* MySQL

## Soal

*Case*

**VIennese Café**

**VIennese Café,** a charming online cafe specializing in delectable beverages and culinary delights, is in search of a comprehensive program to streamline the management of its menu, orders, and customer information. This innovative solution will empower the Head Chef and Waiter to efficiently oversee the cafe's offerings, ensuring a seamless experience for both staff and customers. With a focus on enhancing operational efficiency and customer satisfaction, Vinnese Cafe aims to embrace a tailored software solution that caters specifically to the unique demands of its culinary business, providing a delightful and organized experience for all involved. You as a programmer are assigned to build this program using **JAVA Programming Language** with **Object** **Oriented** **Programming** concepts such as **Encapsulation**, **Inheritance**, and **Polymorphism**. Please read the **following requirements** for the app **thoroughly**.

* General **Requirements :**
  + **Update** the **Food Supply** and **Water Supply** **every day**. By default, the Food Supply and Water Supply has **1000 points**.
  + Implement the **correct SOLID principle**, especially for the menu items.
  + **Update** the **Array List / Vector** of the **Ready Menu** **every day**.
* **Database ERD** :

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Figure 1. Database ERD

* **Main Page**
* In the beginning, the program will show **2 menus**, which are :

1. **Login**
2. **Register**
3. **Exit**

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Figure 2. Main Page

* If the user chooses **Login (Menu 1)**  then :
  + The program will ask the user to input the **username** and **password**.
  + Then, **validate** the **credentials** must **exist** in the **database**.
  + If the **credential** **does not exist**, then **show an error message**.
  + **Otherwise**, **redirect** the user **to menu based on their role**.



Figure 3. Login

* If the user choose **menu 2 (“Register”),** then :
  + Ask the user to input the **username**. Validate that the username **length** must be **between 5 and 15** **characters** **(inclusive)**.
  + Ask the user to input the **password**. Validate that the password **length** must be **more or equal to 6** **characters**.
  + Ask the user to input the **role**. Validate that the role **must be either “Head Chef” or “Waiter” (case sensitive)**.
  + **Generate** the **User ID**, based on this format :

**USXXX  
X ( random number 0 – 9 )**

* + If the **validation** is **successful**, then **insert the new user into the database**.

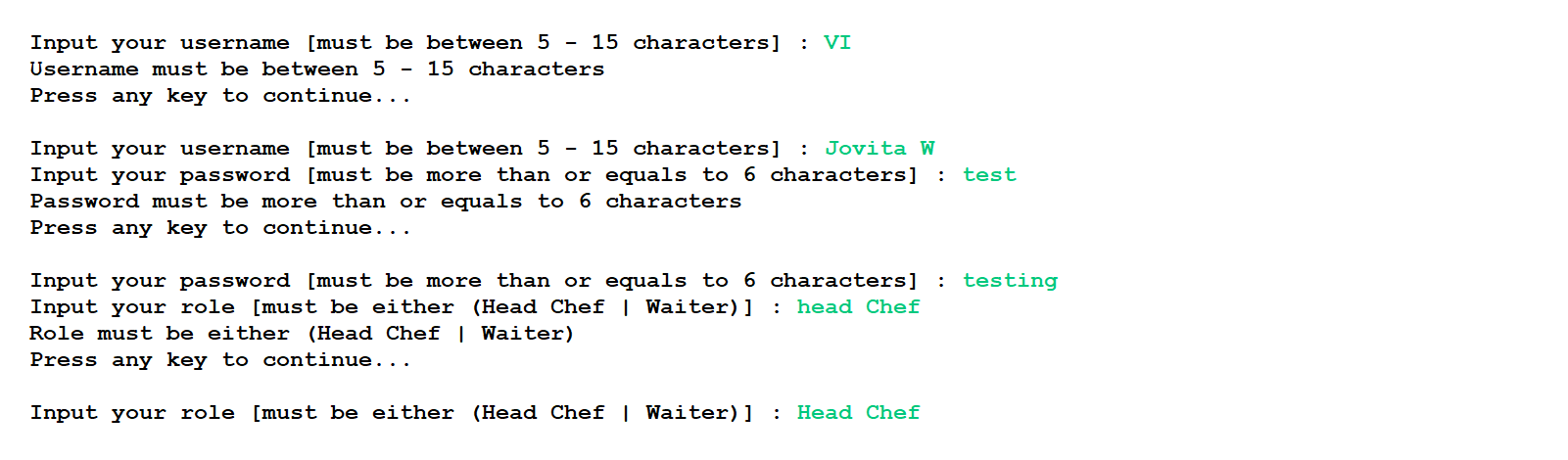


Figure 4. Register New User

* If the user choose **menu 3 (“Exit”)**, then the **program will be closed.**
* **Head Chef Menu**
* In this menu consist of **6 menus**, which are :

1. **Add Menu**
2. **View All Menu**
3. **View Ready Menu**
4. **Delete Menu**
5. **Prepare Food and Drinks**
6. **Exit**



Figure 5. Head Chef Menu

* If the user chooses **menu 1 (“Add Menu”)**, then :
  + Ask the user to input the **menu.** Validate that the menu **length must be more or equal to 3 characters**.
  + Ask the user to input **price.** Validate that the price **must be more than or equal to 1000**.
  + Ask the user to inpu**t the type of the menu.** Validate that the type **must be either of “Food”, “Drink”, or “Soup” (case sensitive)**.
  + **Generate** the **Menu ID,** based on this format :

**MNXXX  
X ( random number 0 – 9 )**

* + Validate that the **Menu ID must be unique**.
  + After the **validation** is **successful,** then **insert the new menu into the database**.

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Figure 6. Insert New Menu

* If the user chooses **menu 2 (“View All Menu”)**, then :
  + If the list of the **menu** from the databas**e is empty, then show an empty message**.
  + **Otherwise, display all menu** data that consist of **Menu ID, Menu, and Price**.

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Figure 7. Display All Menu

* If the user chooses menu 3 (“View Ready Menu”), then :
  + If the **Array List / Vector** **is empty**, **then show an empty message**.
  + **Otherwise**, **display all** the **ready menu** from the Array List / Vector. The ready menu data is **consisting of Menu ID, Menu, and Price**.

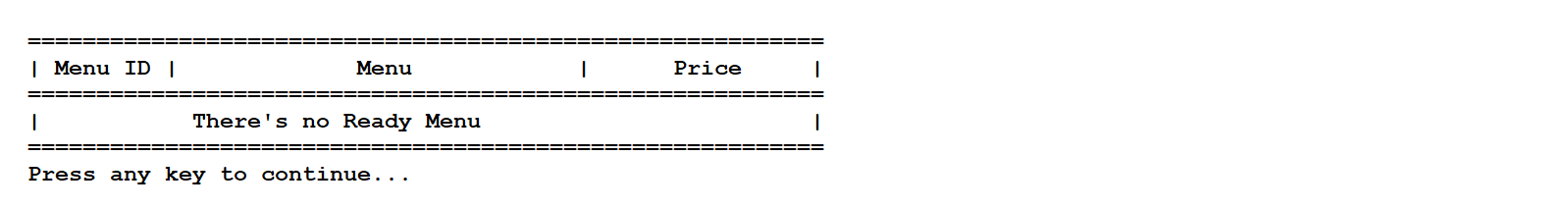


Figure 8. Empty Message

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Figure 9. Display Ready Menu

* If the user chooses **menu 4 (“Delete Menu”)**, then :
  + **Display** **all the menu** from the database.
  + Ask the user to input the **Menu ID** that want to be deleted. Validate that the **Menu ID must be exists**.
  + If the **Menu ID doesn’t exist**, **then show an error message**.
  + **Otherwise**, **delete** the Menu ID **from the database**.

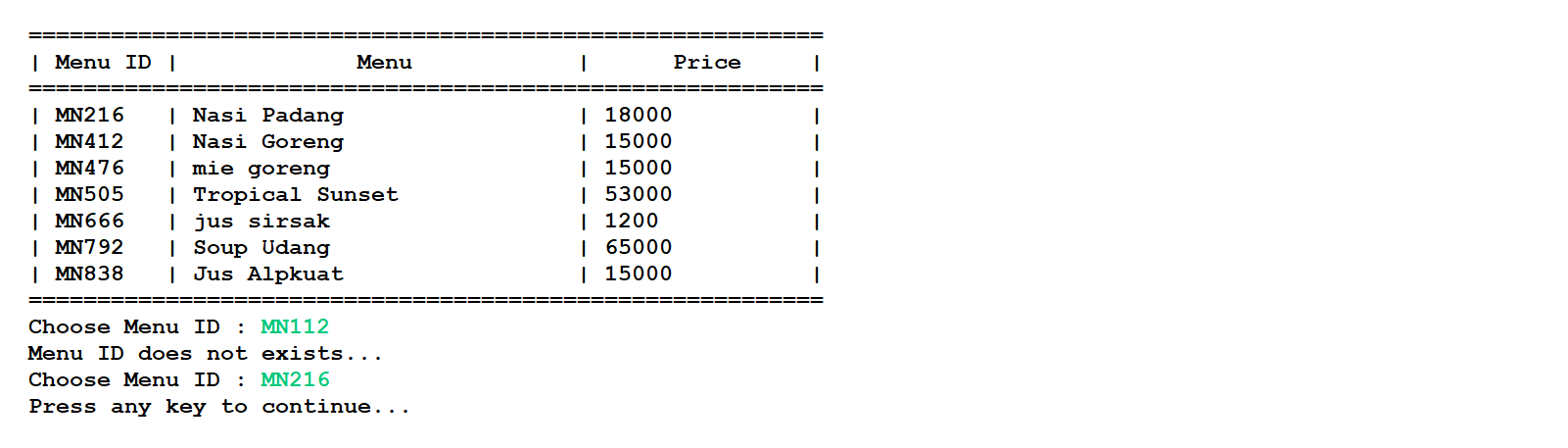


Figure 10. Delete Menu

* If the user **chooses menu 5 (“Prepare Food and Drinks”)**, then **redirect** user to **Prepare Menu**.
* If the user **chooses menu 6 (“Exit”)**, then **redirect** user to **Main Menu**.
* Prepare Menu
* In this menu consist of **7 menus**, which are :

1. **Prepare Food**
2. **Prepare Drink**
3. **Prepare Soup**
4. **Prepare All Food**
5. **Prepare All Drink**
6. **Prepare All Soup**
7. **Exit**

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Figure 11. Prepare Menu

* If the user chooses **menu 1 (“Prepare Food”)**, then :
  + **Display** **All Order** data from the **Array List / Vector**. The order data **consists of Order ID, Menu ID, and Menu**. Validate the **Order** only for the **type ‘Food’**.
  + Ask the user to input the **Order ID**. Validate that the Order ID **must be exist**.
  + After the **validation** is **successful**, then :
    - If the **Menu ID is exist** from Array List / Vector of **Ready Menu**, then :
      * **Delete** the Menu ID **from** the **Array List / Vector of Need to Prepare**.
      * **Set** the **Order Status to “Done”**.
      * **Decrease** the Restaurant **Food Supply** by **20 points**.
      * Validate that the **Food Supply must be more or equal to 20 points**.
    - **Otherwise**, then **show an error message**.

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Figure 12. Empty Message

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Figure 13. Prepare Food

* If the user chooses **menu 2 (“Prepare Drink”)**, then :
  + **Display** **All Order** data from the **Array List / Vector**. The order data **consists of Order ID, Menu ID, and Menu**. Validate the **Order** only for the **type ‘Drink’**.
  + Ask the user to input the **Order ID**. Validate that the Order ID **must be exist**.
  + After the **validation** is **successful**, then :
    - If the **Menu ID is exist** from Array List / Vector of **Ready Menu**, then :
      * **Delete** the Menu ID **from** the **Array List / Vector of Need to Prepare**.
      * **Set** the **Order Status to “Done”**.
      * **Decrease** the Restaurant **Water Supply** by **20 points**.
      * Validate that the **Water Supply must be more or equal to 20 points**.
* **Otherwise**, then **show an error message.**

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Figure 14. Empty Message

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Figure 15. Prepare Drink

* If the user chooses menu 3 (“Prepare Soup”), then :
  + **Display** **All Order** data from the **Array List / Vector**. The order data **consists of Order ID, Menu ID, and Menu**. Validate the **Order** only for the **type ‘Soup’**.
  + Ask the user to input the **Order ID**. Validate that the Order ID **must be exist**.
  + After the **validation** is **successful**, then :
    - If the **Menu ID is exist** from Array List / Vector of **Ready Menu**, then :
      * **Delete** the Menu ID **from** the **Array List / Vector of Need to Prepare**.
      * **Set** the **Order Status to “Done”**.
      * **Decrease** the Restaurant **Water Supply** by **20 points**.
      * **Decrease** the Restaurant **Food Supply** by **20 points**.
      * Validate that the **Water Supply or Food Supply must be more or equal to 20 points**.
* **Otherwise**, then **show an error message.**

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Figure 16. Empty Message

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Figure 17. Prepare Soup

* If the user chooses menu 4 (“Prepare All Food”), then :
  + **Display** **All Order** data from the **Array List / Vector**. The order data **consists of Order ID, Menu ID, and Menu**. Validate the **Order** only for the **type ‘Food’**.
  + Ask the user to input the **confirmation**. Validate the confirmation **must be either ‘Y’ or ‘N’ (case sensitive)**.
  + If the **confirmation** is equal to **‘Y’**, then :
    - If the **Menu ID is exist** from Array List / Vector of **Ready Menu**, then :
      * **Delete** **each** Menu ID **from** the **Array List / Vector** of items that **Need to Prepare**.
      * **Set** **each** of the **Order Status to “Done”**.
      * **Decrease** the Restaurant **Food Supply** by **10 points** for **each Order ID**.
      * Validate that the **Food Supply must be more or equal to 10 points**.
  + If the **confirmation** is equal to **‘N’**, then **redirect** the user tothe **previous menu.**
  + **Otherwise**, then **show an error message.**

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Figure 18. Cancel Prepare All Food

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Figure 19. Prepare All Food

* If the user chooses menu 5 (“Prepare All Drink”), then :
  + **Display** **All Order** data from the **Array List / Vector**. The order data **consists of Order ID, Menu ID, and Menu**. Validate the **Order** only for the **type ‘Drink’**.
  + Ask the user to input the **confirmation**. Validate the confirmation **must be either ‘Y’ or ‘N’ (case sensitive)**.
  + If the **confirmation** is equal to **‘Y’**, then :
    - If the **Menu ID is exist** from Array List / Vector of **Ready Menu**, then :
      * **Delete** **each** Menu ID **from** the **Array List / Vector** of items that **Needs to be Prepared**.
      * **Set** **each** of the **Order Status to “Done”**.
      * **Decrease** the Restaurant **Water Supply** by **10 points** for **each Order ID**.
      * Validate that the **Water Supply must be more or equal to 10 points**.
  + If the **confirmation** is equal to **‘N’**, then **redirect** the user tothe **previous menu.**
  + **Otherwise**, then **show an error message.**

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Figure 20. Cancel Prepare All Drink

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Figure 21. Prepare All Drink

* If the user chooses menu 6 (“Prepare All Soup”), then :
  + **Display** **All Order** data from the **Array List / Vector**. The order data **consists of Order ID, Menu ID, and Menu**. Validate the **Order** only for the **type ‘Soup’**.
  + Ask the user to input the **confirmation**. Validate the confirmation **must be either ‘Y’ or ‘N’ (case sensitive)**.
  + If the **confirmation** is equal to **‘Y’**, then :
    - If the **Menu ID is exist** from Array List / Vector of **Ready Menu**, then :
      * **Delete** **each** Menu ID **from** the **Array List / Vector** of items that **Needs to be Prepared**.
      * **Set** **each** of the **Order Status to “Done”**.
      * **Decrease** the Restaurant **Food Supply** by **10 points** for **each Order ID**.
      * **Decrease** the Restaurant **Water Supply** by **10 points** for **each Order ID**.
      * Validate that the **Food Supply or Water Supply must be more or equal to 10 points**.
  + If the **confirmation** is equal to **‘N’**, then **redirect** the user tothe **previous menu.**
  + **Otherwise**, then **show an error message.**

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Figure 22. Cancel Prepare All Soup

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Figure 23. Prepare All Soup

* If the user chooses **menu 7 (“Exit”)**, then **redirect** the user to the **previous menu**.
* Waiter Menu
* Waiter menu consist of **4 menus**, which are :
  + - 1. **Add Order**
      2. **View Order**
      3. **View Ready Menu**
      4. **Exit**



Figure 24. Waiter Menu

* If the user **chooses menu 1 (“Add Order”)**, then :
  + Ask the user to input the **customer’s** **name**. Validate that the customer’s name **must be filled**.
  + Determine one **menu** by **random** from the **list menu**.
  + Ask the user to input the **quantity**. Validate that the quantity **must be between 1 – 3 (inclusive)**.
  + After the **validation** is **successfully**, then **add** the **new order into database**.

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Figure 25. Insert New Order

* If the user **chooses menu 2 (“View Order”)**, then :
  + If the **Array List / Vector** of the Order is **empty**, then **show an empty message**.
  + **Otherwise**, **display all the order** data that **consist of Customer Name, Order ID, Menu Name, Quantity, Price, Total Price, Order Status**.
  + **Calculate** the **total price** by this formula :

**Total Price = Quantity \* Price**

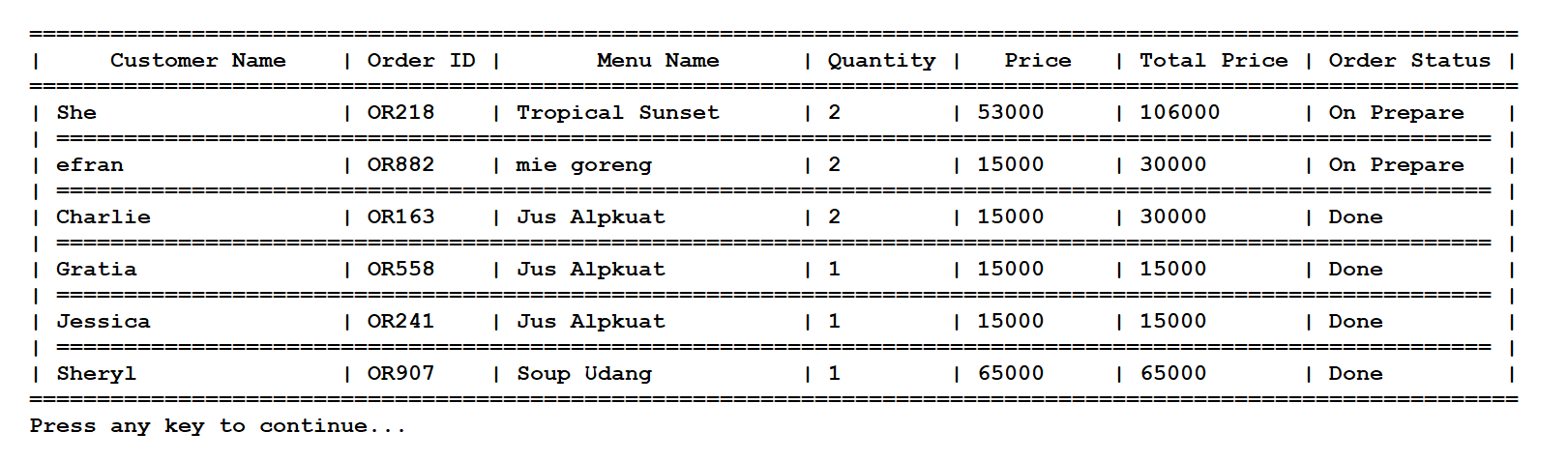


Figure 26. Display All Order

* If the user **chooses menu 3 (“View Ready Menu”)**, then :
  + If the **Array List / Vector** of the Ready Menu is **empty**, then **show an error message**.
  + Otherwise, **display** **all** **the ready menu** data that **consist of Menu ID, Menu, and Price**.

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Figure 27. Empty Message

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Figure 28. Display Ready Menu

Please run the BAT or JAR file to see the sample program.

## Komponen Penilaian

*Scoring Component*

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| --- | --- | --- |
| No | Component | Weight |
| 1 | OOP Concept | 15 |
| 2 | Design Pattern | 5 |
| 3 | CRUD | 20 |
| 4 | SOLID Principle | 30 |
| 5 | Architectural Design | 8 |
| 6 | Actions | 12 |
| 7 | Validations | 10 |