**Learning Program**

**:**

**Level 1**

**–**

**Java**

**& C#**

**Fundamentals**

Problem Statement for Solution Development

**Coffee Vending Machine Reporting**

**System**

Instructions & Assumptions

Read the following instructions carefully before you begin working on the solution.

* The duration of this assessment is 4.0 hours.
* Follow the format of input/output given in the detailed specifications.
* Implement the solution in the language of your track: C# or Java
* C# and Java developers are expected to design an object-oriented solution, and use database tables for persistence.
* This is a single user application. Do not implement authentication or authorization.

Deliverables

The following deliverables, encompassing all the phases of the SDLC, are expected to be submitted at the end of the solution development test.

* Complete source code and configuration files. Ensure that there are no compile errors while submitting the source code.
* Class design: Describe the purpose of each class in the application, and each attribute/method in the classes. Also specify the relationships between the classes: association, inheritance, composition etc.
* Database design: describe the purpose of each table in the database, and each column in the tables. Also specify the primary keys, foreign keys, and constraints for each table.
* Test cases for feature #1 of the application i.e. Enter requested drink details. The status (passed, failed) for each test case should be marked before submitting the source code for review. Test cases should cover:  normal flows

 alternate flows  error flows

* Readme document, which includes instructions for deploying and running the packaged application.

Problem Statement

Zeus Office Solution is engaged in supplying of coffee/tea in offices using the awarded home grown coffee vending machine. There are two types of hot drinks available i.e. Coffees-Hot and Teas-Hot. There is a lot of scope to add various new drink types in future like Teas-cold etc. At present, the machine doesn’t have the feature to record the overall usage of various drink options available under each drink type. The proposed system will fill this gap. Employees can approach the operator who will make an entry into the system and will provide their ordered drink as requested. Based on this, the system generates some useful report to know the various kinds of drinks consumption trend in the office over a period of time. Refer the following data to know the various kinds of drink options available under each drink type.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Coffees-Hot** |  | **Teas-Hot** |
| **Name** | **Description** | **Name** | **Description** |
| ESPRESSO ITALIANO | It is a shot of espresso, which is pure coffee served without milk | MASALA TEA | These traditional teas provide both woody aromatic flavors and fullbodied earthiness. |
| CAPPUCCINO | Espresso topped with steamed and foamed milk | CARDAMOM  CHAI LATTE | A full bodied, frothy mug of cardamom flavored tea and steamed milk. |
| CAFFE LATTE  MUG | Hearty Mug of a espresso double shot & milk | LEMON GINGER | Premium Assam tea flavored with fresh lemon and ginger extract, served without milk. |

The main menu contains the following options.

1. Enter requested drink details
2. Show drink consumption trend
3. Exit

This menu is redisplayed after each operation is completed, except for the “Exit‟ option. The details for each option are specified in the rest of the document.

Enter requested drink details

This feature is used by the coffee vending machine operator to enter the total number of drinks requested. The system records the drink name, quantity and date. All drinks details as shown in the above table are already available in the application database. When the operator selects a drink type, the system lists the name and description of all drink options available in the application database that belongs to selected drink type.

Perform the required validations:

* The date format should be YYYY-MM-DD. If user enters the wrong format for entry date, the system displays the message “The date format should be in the YYYY-MM-DD format”  The drink quantity will always be a positive integer.

The responses entered by the user are given in red color.

|  |
| --- |
| Main Menu:   1. Enter requested drink details 2. Show drink consumption trend 3. Exit     Please choose an option [1, 2, 3]: 1  Enter drink details  Drink Type   * 1. Coffees-Hot   2. Teas-Hot     Choose a Drink Type [1,2] 4  Error Message : Invalid drink type option  Drink Type   * 1. Coffees-Hot   2. Teas-Hot     Choose a Drink Option [1,2] 1 Coffees-Hot   * 1. ESPRESSO ITALIANO - It is a shot of espresso, which is pure coffee served without milk   2. CAPPUCCINO - Espresso topped with steamed and foamed milk   3. CAFFE LATTE MUG - Hearty Mug of a espresso double shot & milk |

Choose a coffee [1,2,3] 2

Enter total number of units: 3

Enter Delivery Date (YYYY-MM-DD) : 2011-9-21

The drink details have been saved successfully.

Show drink consumption trend

The system maintains the consumption details and can show the report for the chosen drink type. The report shows the records based on the decreasing order of total number of consumption for different drink options under a chosen drink type between the selected date ranges.

Perform the required validations & business rule:

* From date & to date should be in the format (YYYY-MM-DD, YYYY-MM, or YYYY)
* If you would like to search for consumption trend on, or after certain dates. (E.g. consumption on March 13th, 2010 or later), enter 2010-03-13 in the 'from date', and leave the 'to date' blank. If you would like to search for consumption before a certain date (e.g. consumption no later than 2011), leave the 'from date' blank, and enter 2011 in the 'to date'.

If you would like to search for consumption trend between two dates, enter the earlier date in the 'from date' and the later date in the 'to date'.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | |
|  | Main Menu:   1. Enter requested drink details 2. Show drink consumption trend 3. Exit     Please choose an option [1, 2, 3]: 2    Enter the from date (YYYY-MM-DD) : 2010-1-1  Enter the to date (YYYY-MM-DD) : 2011-1-1  Drink Type   * 1. Coffees-Hot   2. Teas-Hot     Choose a Drink Option [1,2] 2 | | | | | |
|  |  | | | | |
|  | **Teas-Hot** drink usage trend between **2010-1-1 and 2011-1-1** | | |  |
|  | | |
| **Type** | | **Total unit consumption** |
| MASALA TEA | | 100 |
| CARDAMOM CHAI LATTE | | 50 |
| LEMON GINGER | | 20 |
|  |  |  |  |  | | |
|  | | | | | | |

Exit

The user can choose to exit the application

Main Menu:

1. Enter requested drink details
2. Show drink consumption trend
3. Exit

Please choose an option [1, 2, 3]: 3

Do you really want to Exit from the application [YES/NO]? NO

Main Menu:

1. Enter requested drink details
2. Show drink consumption trend
3. Exit

Please choose an option [1, 2, 3]: 3

Do you really want to Exit from the application [YES/NO]? YES

Application is closed.