Payment - Inheritance

Grade settings: Maximum grade: 100
Disable external file upload, paste and drop external content: Yes
Run: Yes **Evaluate**: Yes
Automatic grade: Yes **Maximum execution time**: 16 s

Payment Status

Roy is a wholesale cloth dealer who sells cloth material to the local tailors on monthly installments. At the end of each month, he collects the installment amount from all his customers. Some of his customers pay by Cheque, some pay by Cash and some by Credit Card. He wants to automate this payment process.

Help him to do this by writing a java program.

Requirement 1: Make Payment

The application needs to verify the payment process and display the status report of payment by getting the inputs like due amount, payment mode and data specific to the payment mode from the user and calculate the balance amount.

Component Specification: Payment Class (Parent Class)

Component Name	Type(Class)	Attributes	Methods	Responsibilities
Make payment for EMI amount	Payment	int dueAmount	Include a public getter and setter method	
Make payment for EMI amount	Payment		public boolean payAmount()	The boolean payAmount() method should return true if there is no due to be paid, else return false.

Note:

- The attributes of Payment class should be private.
- The payment can be of three types: Cheque, Cash, Credit Card.

Component Specification: Cheque class (Needs to be a child of Payment class)

Component Name	**Type(Class)**	**Attributes**	**Methods**	**Responsibilities**
	Cheque	String chequeNo int chequeAmount Date dateOfIssue	Include a public getter and setter method for all the attributes.	
Make payment for EMI amount	Cheque		public boolean payAmount()	This is an overridden method of the parent class. It should return true if the cheque is valid and the amount is valid. Else return false.

Note:

- The cheque is valid for 6 months from the date of issue.
- Assume the current date is 01-01-2020 in dd-MM-yyyy format.
- The chequeAmount is valid if it is greater than or equal to the dueAmount.

Component Specification: Cash class (Needs to be a child of Payment class)

Component Name	**Type(Class)**	**Attributes**	**Methods**	**Responsibilities**
Make payment for EMI amount	Cash	int cashAmount	Include a public getter and setter method for the attribute.	
Make payment for EMI amount	Cash		public boolean payAmount()	This is an overridden method of the parent class. It should return true if the cashAmount is greater than or equal to the dueAmount. Else return false.

Component Specification: Credit class (Needs to be a child of Payment class)

Component Name	Type (Class)	Attributes	Methods	Responsibilities
Make payment for EMI amount	Credit	int creditCardNo String cardType int creditCardAmount	Include a public getter and setter method for all the attributes.	
Make payment for EMI amount	Credit		public boolean payAmount()	This is an overridden method of the parent class. It should deduct the dueAmount and service tax from the creditCardAmount and return true if the credit card payment was done successfully. Else return false.

Note:

· The payment can be done if the credit card amount is greater than or equal to the sum of due amount and service tax. Else payment cannot be made.

· The cardType can be "silver" or "gold" or "platinum". Set the creditCardAmount based on the cardType.

· Also service tax is calculated on dueAmount based on cardType.

Credit Card Type	Credit Card Amount	Service Tax
Silver	10000	2% of the due amount

Gold	50000	5% of the due amount
platinum	100000	10% of the due amount

· The boolean payAmount() method should deduct the due amount and the service tax amount from a credit card. If the creditCardAmount is less than the dueAmount+serviceTax, then the payment cannot be made.

· The balance in credit card amount after a successful payment should be updated in the creditCardAmount by deducting the sum of dueAmount and serviceTax from creditCardAmount itself.

Component Specification: Bill class

Component Name	**Type(Class)**	**Attributes**	**Methods**	**Responsibilities**
Payment Status Report	Bill		public String processPayment (Payment obj)	This method should return a message based on the status of the payment made.

Note:

- If the payment is successful, processPayment method should return a message "Payment done successfully via cash" or "Payment done successfully via cheque" or "Payment done successfully via creditcard. Remaining amount in your <<cardType>> card is <<balance in CreditCardAmount>>"

- If the payment is a failure, then return a message "Payment not done and your due amount is <<dueAmount>>"

Create a **public class Main** with the main method to test the application.

Note:

- Assume the current date as 01-01-2020 in dd-MM-yyyy format.
- In the Sample Input / Output provided, the highlighted text in bold corresponds to the input given by the user and the rest of the text represents the output.
- Ensure to follow the object oriented specifications provided in the question.
- Ensure to provide the names for classes, attributes and methods as specified in the question.
- Adhere to the code template, if provided.
- Adhere to the sample input and output.

Sample Input 1:

Enter the due amount:

3000
Enter the mode of payment(cheque/cash/credit):

cash
Enter the cash amount:

2000

Sample Output 1:

Payment not done and your due amount is 3000

Sample Input 2:

Enter the due amount:

3000
Enter the mode of payment(cheque/cash/credit):

cash
Enter the cash amount:

3000

Sample Output 2:

Payment done successfully via cash

Sample Input 3:

Enter the due amount:

3000
Enter the mode of payment(cheque/cash/credit):

cheque
Enter the cheque number:

123
Enter the cheque amount:

3000
Enter the date of issue:

21-08-2019

Sample Output 3:

Payment done successfully via cheque

Sample Input 4:

Enter the due amount:

3000
Enter the mode of payment(cheque/cash/credit):

credit
Enter the credit card number:

234
Enter the card type(silver,gold,platinum):

silver

Sample Output 4:

Payment done successfully via credit card. Remaining amount in your silver card is 6940