

class MTMContract:

The MTMContract class is one of the subclasses of Contract, used to indicate a phoneline is in a month-to-month contract with the company. On the initialization of a MTMContract class object, The start date of the contract is passed as an argument of type datetime.date, and is recorded in the object as an attribute. This attribute should only be used by this class's methods and is therefore considered private. The class inherits Contract's bill attribute of type Bill and sets it to None when a MTMContract class object is initialized.

The method new_month should be called when the contract starts, and whenever the contract enters a new month. The method updates the attribute bill to a new bill of the new month. The past bill is discarded in this process. The new bill is already initialized with the correct minute cost rate and monthly cost.

The method bill_call is inherited from its parent class Contract. This method takes a Call object and add the duration (in minutes) of this call to the attribute bill's billed_minutes. The attribute bill must store a valid Bill representing the month the call happens. In the absence of such bill, the method new_month must be called to update the bill attribute prior to calling this method.

The method cancel_contract is inherited from its parent class Contract. This method takes no attribute. When called, this method marks the contract as ended by setting the start date to None, and returns the amount owed for the current month's bill. This method should only be called when a bill exists for this contract.

class TermContract:

The TermContract class is one of the subclasses of Contract, used to indicate a phoneline is in a term contract with the company. On the initialization of a TermContract class object, The start date <start> and term end date <end> of the contract is passed as an argument of type datetime.date, which is recorded in the object as attributes. Note that the contract is not automatically canceled on the end date. During initialization, an class attribute <current> indicating the current date is set to be the same date as the contract start date. This attribute is updated whenever a new month starts or a new outgoing Call is registered for this TermContract object. These attributes should only be used by this class's methods and is therefore considered private. The class inherits Contract's bill attribute of type Bill and sets it to None when a new class object is initialized.

The method new_month should be called when the contract starts, and whenever the contract enters a new month. The method updates the attribute bill to a new bill of the new month. The past bill is discarded in this process. The new bill is already initialized with the correct minute cost rate and monthly cost, as well as the monthly free minutes. Additionally, if this is the first month of the contract, a term deposit fee is added to the fixed cost in the bill. Calling this method sets the <current> attribute to the 1st day of the new month.

The method bill_call takes a Call object and add the duration (in minutes) of this call to the attribute bill's billed_minutes. If there are free minutes left for this month, the free minutes is

used first, and any remaining time goes into billed_minutes. Additionally, set the <current> attribute to the date when this call happens. The attribute bill must store a valid Bill representing the month the call happens. In the absence of such bill, the method new_month must be called to update the bill attribute prior to calling this method.

The method cancel_contract takes no attribute. When called, this method checks whether the term end date <end> is passed by comparing the current date to it. If already passed the end date, the method returns the amount owed for the current month's bill, minus the term deposit; else, the term deposit is forfeited and only the amount owed is returned. This method should only be called when a bill exists for this contract.

class PrepaidContract:

The PrepaidContract class is one of the subclasses of Contract, used to indicate a phoneline is in a prepaid contract with the company. On the initialization of a PrepaidContract class object, The start date <start> of the contract is passed as an argument of type datetime.date, which is recorded in the object as attributes. The amount prepaid by the user <paid> is also passed as an argument into the initializer, and is recorded as credits (negative value) in the <balance> attribute. These attributes should only be used by this class's methods and is therefore considered private. The class inherits Contract's bill attribute of type Bill and sets it to None when a new class object is initialized.

The method new_month should be called when the contract starts, and whenever the contract enters a new month. The method updates the attribute bill to a new bill of the new month. The past bill is discarded in this process. The new bill is already initialized with the correct minute cost rate. Additionally, if the balance exceeds -10, i.e. the balance is less than \$10, a credit of \$25 is added to the balance to represent the required payment made by the user.

The method bill_call takes a Call object and add the duration (in minutes) of this call to the attribute bill's billed_minutes. In addition, the cost of this call is added to the contract's <balance> attribute. The attribute bill must store a valid Bill representing the month the call happens. In the absence of such bill, the method new_month must be called to update the bill attribute prior to calling this method.

The method cancel_contract takes no attribute. When called, this method checks whether the contract has unused credit. If such credits exist, the credit is forfeited and 0 is returned to represent no amount owed; else, the balance is owed represented by a positive <balance> is returned. This method should only be called when a bill exists for this contract.

