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A:  
**Requirements:**  
**Regular Service**:

* Costs $10.00 .
* The first 50 minutes of service are free.
* Any usage over 50 minutes is charged at $0.20 per minute.

**Premium Service**:

* Costs $25.00.
* For calls made from 6:00 A.M. to 6:00 P.M., the first 75 minutes are free. Any usage over 75 minutes is charged at $0.10 per minute.
* For calls made from 6:00 P.M. to 6:00 A.M., the first 100 minutes are free. Any usage over 100 minutes is charged at $0.05 per minute.

**Testcases:**

**Test Case 1 – Opt-In Regular Service within Free Limit**:

* + Input: Account Number: 12345, Service Code: R, Minutes Used: 30
  + Expected Output: Account Number: 12345, Service Type: Regular, Minutes Used: 30, Amount Due: $10.00

**Test Case 2 - Opt-In Regular Service over Free Limit**:

* + Input: Account Number: 12345, Service Code: R, Minutes Used: 60
  + Expected Output: Account Number: 12345, Service Type: Regular, Minutes Used: 60, Amount Due: $12.00(10\*0.20)

**Test Case 3 - Opt-In Premium Service within Free Limit (Day and Night)**:

* + Input: Account Number: 12345, Service Code: P, Day Minutes: 60, Night Minutes: 80
  + Expected Output: Account Number: 12345, Service Type: Premium, Day Minutes: 60, Night Minutes: 80, Amount Due: $25.00

**Test Case 4 - Opt-In Premium Service over Free Limit (Day and Night)**:

* + Input: Account Number: 12345, Service Code: P, Day Minutes: 80, Night Minutes: 110
  + Expected Output: Account Number: 12345, Service Type: Premium, Day Minutes: 80, Night Minutes: 110, Amount Due: $25.50

**Test Case 5 – Enter Invalid Service Code**:

* + Input: Account Number: 12345, Service Code: X, Minutes Used: 60
  + Expected Output: Error Message: “Invalid Service Code

**Test Case 6 - Opt-In Premium Service with Day Usage over Free Limit to check charged correctly** :

* + Input: Account Number: 12345, Service Code: P, Day Minutes: 80, Night Minutes: 70
  + Expected Output: Account Number: 12345, Service Type: Premium, Day Minutes: 80, Night Minutes: 70, Amount Due: $25.50

**Test Case 7 - Premium Service with Night Usage over Free Limit**:

* + Input: Account Number: 12345, Service Code: P, Day Minutes: 70, Night Minutes: 110
  + Expected Output: Account Number: 12345, Service Type: Premium, Day Minutes: 70, Night Minutes: 110, Amount Due: $25.50

**Test Case 8 - Regular Service with Zero Usage**:

* + Input: Account Number: 12345, Service Code: R, Minutes Used: 0
  + Expected Output: Account Number: 12345, Service Type: Regular, Minutes Used: 0, Amount Due: $10.00

**Test Case 9 - Premium Service with Zero Usage (Day and Night)**:

* + Input: Account Number: 12345, Service Code: P, Day Minutes: 0, Night Minutes: 0
  + Expected Output: Account Number: 12345, Service Type: Premium, Day Minutes: 0, Night Minutes: 0, Amount Due: $25.00

**Test Case 10 - Negative Minutes Used**:

* + Input: Account Number: 12345, Service Code: R, Minutes Used: -10
  + Expected Output: Error Message: “Invalid Minutes Used”

**Test Case 11 - Premium Service with Maximum Possible Usage (Day and Night)**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: 1000, Night Minutes: 1000
* Expected Output: Account Number: 12345, Service Type: Premium, Day Minutes: 1000, Night Minutes: 1000, Amount Due: $140.00

**Test Case 12 - Regular Service with Maximum Possible Usage**:

* Input: Account Number: 12345, Service Code: R, Minutes Used: 1000
* Expected Output: Account Number: 12345, Service Type: Regular, Minutes Used: 1000, Amount Due: $200.00

**Test Case 13 - Invalid Account Number**:

* Input: Account Number: ABCDE, Service Code: R, Minutes Used: 60
* Expected Output: Error Message: “Invalid Account Number”

**Test Case 14 - No Account Number Provided**:

* Input: Account Number: null, Service Code: R, Minutes Used: 60
* Expected Output: Error Message: “No Account Number Provided”

**Test Case 15 - No Service Code Provided**:

* Input: Account Number: 12345, Service Code: null, Minutes Used: 60
* Expected Output: Error Message: “No Service Code Provided”

**Test Case 16 - Premium Service with Negative Day Minutes**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: -10, Night Minutes: 70
* Expected Output: Error Message: “Invalid Day Minutes”

**Test Case 17 - Premium Service with Negative Night Minutes**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: 70, Night Minutes: -10
* Expected Output: Error Message: “Invalid Night Minutes”

**Test Case 18 - Regular Service with Large Number of Minutes**:

* Input: Account Number: 12345, Service Code: R, Minutes Used: 10000
* Expected Output: Account Number: 12345, Service Type: Regular, Minutes Used: 10000, Amount Due: $1990.00

**Test Case 19 - Premium Service with Large Number of Day and Night Minutes**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: 10000, Night Minutes: 10000
* Expected Output: Account Number: 12345, Service Type: Premium, Day Minutes: 10000, Night Minutes: 10000, Amount Due: $1925.00

**Test Case 20 - No Minutes Provided for Regular Service**:

* Input: Account Number: 12345, Service Code: R, Minutes Used: null
* Expected Output: Error Message: “No Minutes Provided”

**Test Case 21 - Premium Service with No Day Minutes Provided**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: null, Night Minutes: 70
* Expected Output: Error Message: “No Day Minutes Provided”

1. **Test Case 22 - Premium Service with No Night Minutes Provided**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: 70, Night Minutes: null
* Expected Output: Error Message: “No Night Minutes Provided”

**Test Case 23 - Regular Service with Non-numeric Minutes**:

* Input: Account Number: 12345, Service Code: R, Minutes Used: “Sixty”
* Expected Output: Error Message: “Invalid Minutes Used”

**Test Case 24 - Premium Service with Non-numeric Day and Night Minutes**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: “Seventy”, Night Minutes: “Eighty”
* Expected Output: Error Message: “Invalid Day and Night Minutes”

**Test Case 25 - No Service Code and Minutes Provided for Regular Service**:

* Input: Account Number: 12345, Service Code: null, Minutes Used: null
* Expected Output: Error Message: “No Service Code and Minutes Provided”

**Test Case 26 - Premium Service with Zero Day Minutes and Non-zero Night Minutes**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: 0, Night Minutes: 70
* Expected Output: Account Number: 12345, Service Type: Premium, Day Minutes: 0, Night Minutes: 70, Amount Due: $25.00

**Test Case 27 - Premium Service with Non-zero Day Minutes and Zero Night Minutes**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: 70, Night Minutes: 0
* Expected Output: Account Number: 12345, Service Type: Premium, Day Minutes: 70, Night Minutes: 0, Amount Due: $25.00

**Test Case 28 - No Account Number, Service Code, and Minutes Provided for Regular Service**:

* Input: Account Number: null, Service Code: null, Minutes Used: null
* Expected Output: Error Message: “No Account Number, Service Code, and Minutes Provided”

**Test Case 29 - Regular Service with Minimum Integer Value for Minutes**:

* Input: Account Number: 12345, Service Code: R, Minutes Used: -2147483648
* Expected Output: Error Message: “Invalid Minutes Used”

**Test Case 30 - Premium Service with Minimum Integer Value for Day and Night Minutes**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: -2147483648, Night Minutes: -2147483648
* Expected Output: Error Message: “Invalid Day and Night Minutes”

**Test Case 31 - Regular Service with Floating Point Number for Minutes**:

* Input: Account Number: 12345, Service Code: R, Minutes Used: 50.5
* Expected Output: Error Message: “Invalid Minutes Used”

**Test Case 32 - Premium Service with Floating Point Number for Day and Night Minutes**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: 75.5, Night Minutes: 100.5
* Expected Output: Error Message: “Invalid Day and Night Minutes”

**Test Case 33 - Regular Service with Empty String for Minutes**:

* Input: Account Number: 12345, Service Code: R, Minutes Used: “”
* Expected Output: Error Message: “No Minutes Provided”

**Test Case 34 - Premium Service with Empty String for Day and Night Minutes**:

* Input: Account Number: 12345, Service Code: P, Day Minutes: “”, Night Minutes: “”
* Expected Output: Error Message: “No Day and Night Minutes Provided”

**Test Case 35 - Regular Service with Space in Minutes**:

* Input: Account Number: 12345, Service Code: R, Minutes Used: “50 60”
* Expected Output: Error Message: “Invalid Minutes Used”

**B-**   **The vacation type should be selectable based on the employee type.**

* Ambiguity: employee type and vacation type ,what are they?
* To make it clear: Specify the different employee types and vacation types that are available. For example, (Full-time employees) can select from annual leave, sick leave, or personal leave. Part-time employees can select from annual leave or personal leave. and should specify the vacation for outsourcing.

 **The employee should be notified about his vacations balance.**

* Ambiguity: The method of notification is not specified. Should it be via email, a notification in an app
* Suggestion: Specify the method of notification. For example, “The employee should be notified about his vacation balance via email.”

 **The financial impact of the vacation type should be verifiable.**

* Ambiguity: It’s unclear what “financial impact” refers to. Does it refer to the cost to the company, the employee’s salary, or something else? Also, who should be able to verify this impact?!
* Suggestion: Clarify what is meant by “financial impact” and who should be able to verify it. For example, the reduction in the employee’s salary due to unpaid vacation should be verifiable by the HR department

 **There should be a notification about the employees that already consumed all of their vacation balance.**

* Ambiguity: It’s not clear who should receive this notification. Is it the employee themselves, their manager, the HR department, or someone else?
* Suggestion: Specify the recipient of the notification. For example, “The HR department should receive a notification when an employee has consumed all of their vacation balance.”

 **The eligible persons only should be able to approve vacations (whenever applicable).**

* Ambiguity: The term “eligible persons” . Who are these eligible persons? Are they managers, HR personnel, or someone else?
* Suggestion: Define who the “eligible persons” are. For example, “Only direct managers or HR personnel should be able to approve vacation requests.”

C: Here’s a brief explanation and you can find the files in the repo Named:ItqanAPITesting

1. **Get All Employees**: This test sends a GET request to the /api/v1/employees endpoint to retrieve all employee data. The test checks for a successful response and then stores the ID of the first employee in an environment variable for use in future requests.
2. **Get Single Employee**: This test sends a GET request to the /api/v1/employee/{id} endpoint to retrieve data for a single employee. The test checks for a successful response and the correct response code.
3. **Create Employee**: This test sends a POST request to the /api/v1/create endpoint to create a new employee record. The request body includes the employee’s name, salary, and age, which are stored in environment variables to allow for dynamic data. The test checks for a successful response and the correct response code.
4. **Update Employee**: This test sends a PUT request to the /api/v1/update/{id} endpoint to update an existing employee record. The request body includes the updated name, salary, and age, which are stored in environment variables to allow for dynamic data. The test checks for a successful response, a ‘success’ message in the response body, and verifies that the updated data is correctly reflected in the response.
5. **Delete Employee**: This test sends a DELETE request to the /api/v1/delete/{id} endpoint to delete an existing employee record. The test checks that the deleted employee no longer exists in the list of employees.

In all these tests, environment variables are used to store and manipulate data. This allows for dynamic data in the requests and helps check the correctness of the responses. The tests are designed to ensure that the API is functioning correctly and that it handles data as expected.

**D- Create an SQL script for one table “Users”**

• ID, Name, and Type[employee/manager].

Answer:

CREATE TABLE Users (

ID INT PRIMARY KEY,

Name VARCHAR(100),

Type ENUM('employee', 'manager')

);

• **Enter sample records in the table.**

Answer:  
INSERT INTO Users (ID, Name, Type) VALUES

(1, Ahmed, 'employee'),

(2, Ali, 'Direct manager'),

(3, Mohamed, 'employee'),

(4, AbdElAziz, Supervisor);

• **Execute different types of queries to manipulate the data in the table (insert, select, edit**

**and delete) trying different alternative conditions in sql statements**

Answer:

1-Select all users from the table

SELECT \* FROM Users;

2- Update a record in the table with conditions

UPDATE Users SET Name = 'Eve' WHERE ID = 1;

3- Delete a record from the table

DELETE FROM Users WHERE ID = 2;

4- Select all records of employees from the table

SELECT \* FROM Users WHERE Type = 'employee';

5- Select all records of managers from the "Users" table

SELECT \* FROM Users WHERE Type = Supervisor;

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E-  
The Task is uploaded on GitHub:

https://github.com/ahmedabdelazizoct1994/nopcommerce

and documented in README file

Thanks