

**Entity-Relationship Diagram for Precision Diagnostic Lab System**

### **Relational schema**

User (UId, Name, Address, Phone, Uname, Pwd)

Customer (CustId, Uid, DOB, Pin\_code, Email)

Test (TId, TestName, Did, Price, Preparation)

Booking (BId, TId, CustId, BDate, Collection\_Type, Amount, Transaction\_Id, Status, Result, Report)

Allotted (BId, CId, Status, CDate)

Operator (OId, Uid)

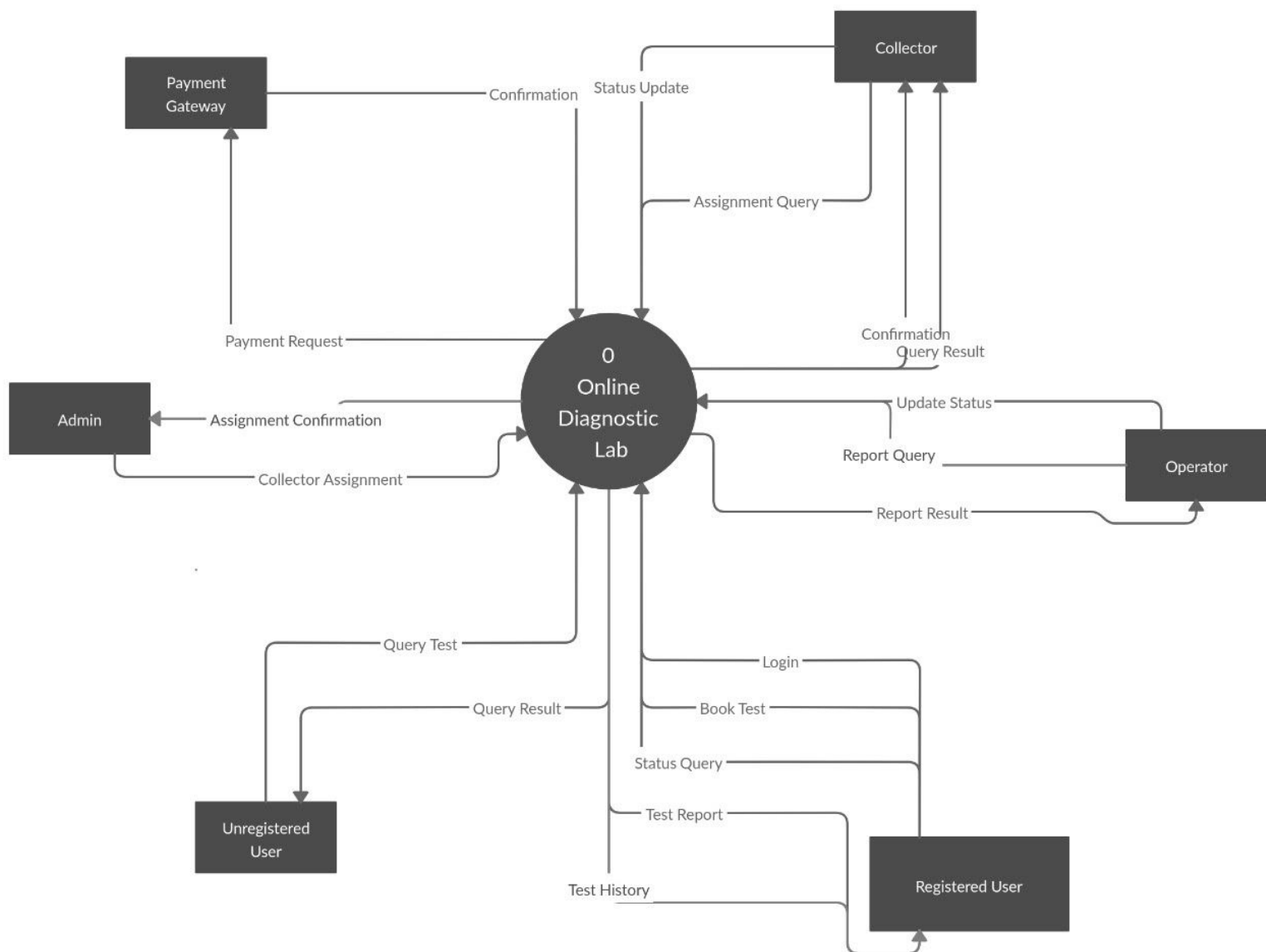
Admin(AId, Uid)

Collector(CId, Uid)

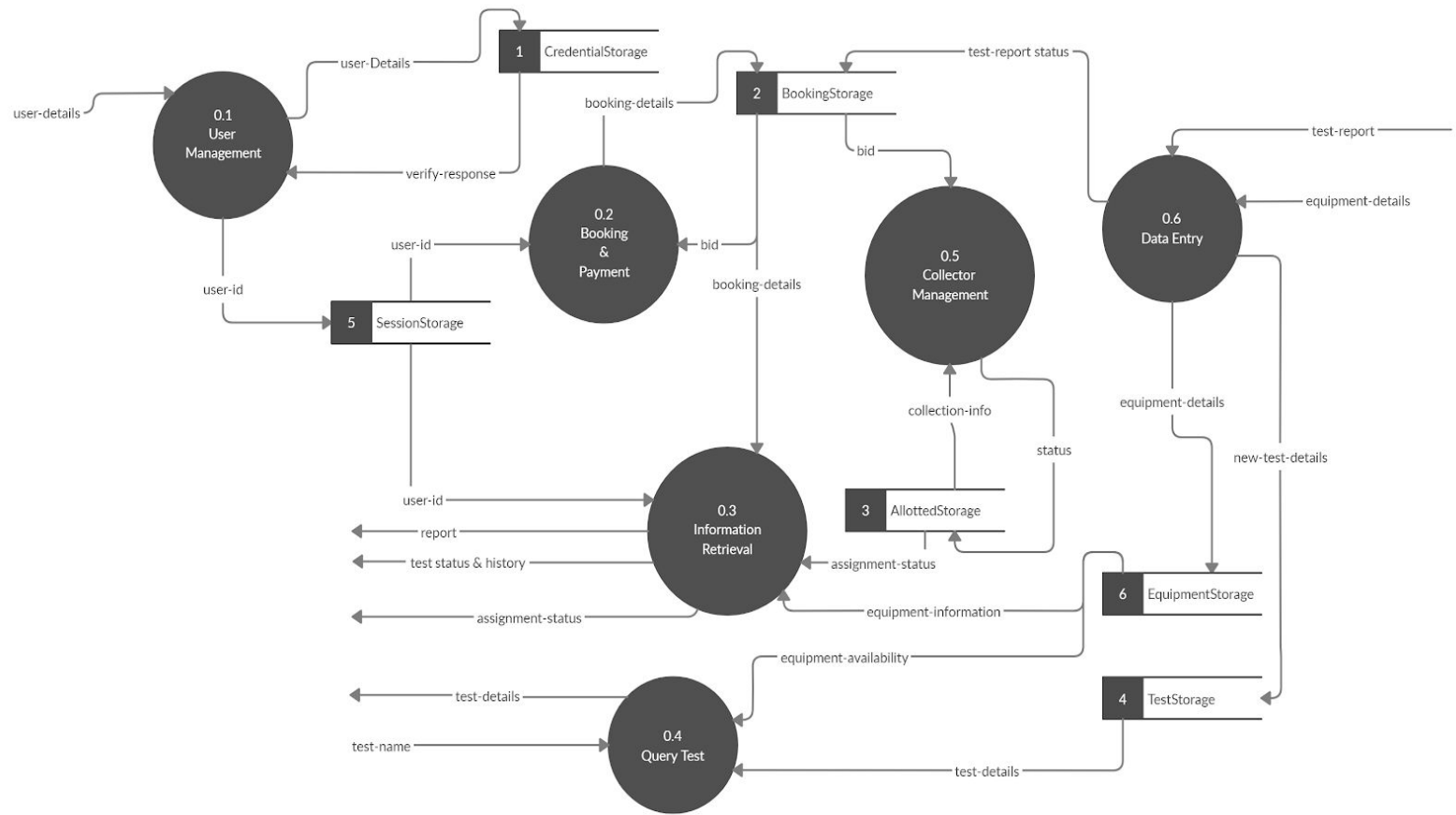
Equipment(Eid, Name, Did, Quantity, Working)

Department(Did, Dname)

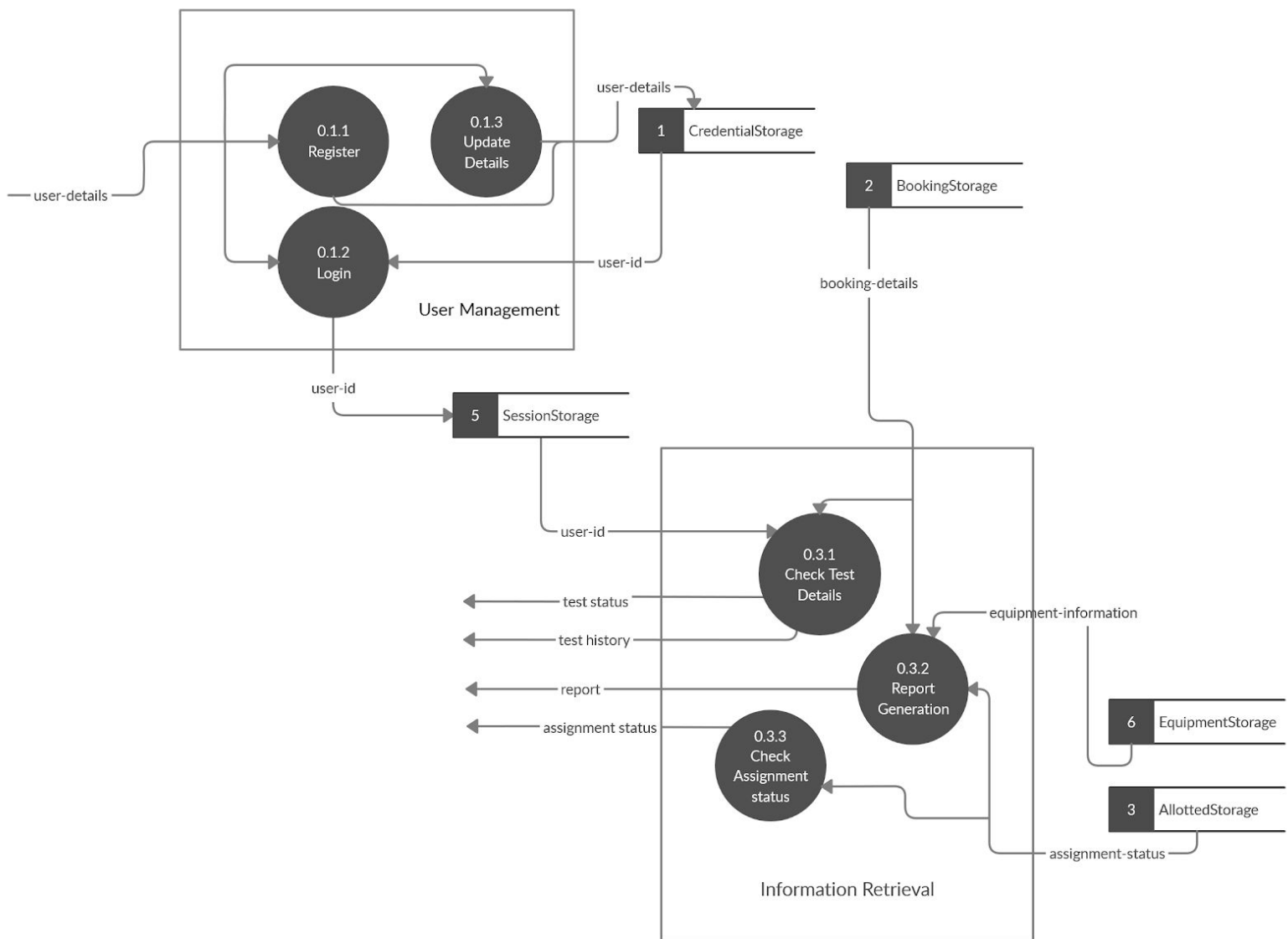
Requires(Tid, Eid)



**Context Diagram for Precision Diagnostic Lab System**



**Level 1 Dataflow Diagram for Precision Diagnostic Lab System**

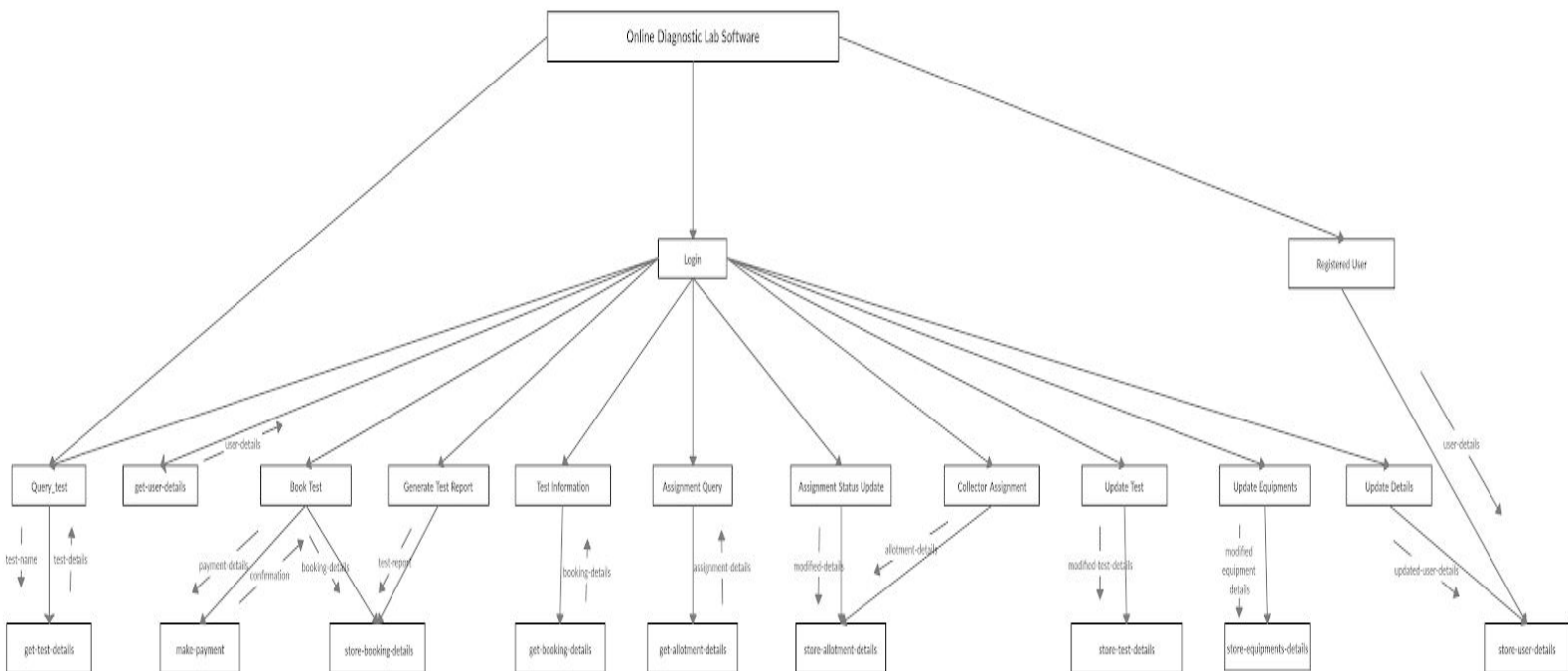


**Level 2 Dataflow Diagram for Precision Diagnostic Lab System**

## **Data Dictionary**

1. Status -> Booked (Not yet paid) / Cancelled\_NoRefund / Cancelled\_Refund ( Scheduled (Not yet collected) / Rescheduled Collected (Not yet tested) Completed
2. BID = Booking ID
3. TID = Test ID
4. CustID = Customer ID
5. DOB = Date Of Birth
6. OID = OperatorID
7. AID = Admin ID
8. CID = Collector ID
9. BDate = Booking Date
10. User-details = [name + address + phone + [DOB + PinCode + Email, OID, CID, AID], user-name + password ]
11. Test-details = testname + department + price + (preparation)
12. Booking-details = BID + TID + CustID + BDate + CollectionType + Amount + Transaction\_ID
13. Payment-Details = PaymentID + Amount
14. Payment-confirmation = PaymentID + Confirmation + Transaction\_ID
15. Query\_module=Assignment query(collector)+history checking(Registered user)+ongoing test status(registered user)
16. User management=authentication+log\_in+Update details
17. information retrieval=booking id+booking status
18. Collector-management = collectorAssignment + assignmentStatusUpdate
19. Report = [EquipmentReport, SalesReport, CollectorReport]
20. AllottedStorage = Details of which collector is allotted for which booking (will store CID+BID+Status)

## Structure chart for Precision Diagnostic Lab System



### Structure Chart Assumptions

1. Update Details can only store the new-details and cannot view the old details
2. Login module performs the verification of user details
3. Booking related info, test-status and test-report is returned to Test Information by Get-Booking-Details.
4. The test-report can be returned only if the report has been generated.
5. Any modification to user details is passed as new-details.

Precision Diagnostic Lab	Query tests	Book a test	Profile
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## Test History

Completed Tests

Booking ID	Booking Date	Test Name	Status	Report	Feedback
B000131	01-08-2015	Pure Tone Audiometry	Completed	<a href="#">View Report</a>	<a href="#">Submit</a>
B000359	12-09-2016	CT Scan	Completed	<a href="#">View Report</a>	<a href="#">Submit</a>
B001031	23-02-2017	ECG	Completed	<a href="#">View Report</a>	<a href="#">Submit</a>
B002456	10-01-2018	EEG	Completed	<a href="#">View Report</a>	<a href="#">Submit</a>

Ongoing tests

Booking ID	Booking Date	Test Name	Status	Cancel Booking
B002854	05-01-2019	CBC	Collected	<a href="#">Cancel</a>
B007438	01-06-2019	Complete Metabolic Panel	Collected	<a href="#">Cancel</a>
B009847	03-02-2020	Complete Lipid Panel	Scheduled for collection	<a href="#">Cancel</a>
B012848	18-04-2020	Partial Thromboplastin Time	Scheduled for collection	<a href="#">Cancel</a>

Test History Interface



Precision Diagnostic Lab
Query tests
Book a test
Profile

## Book a test

Search for a test

Your query matched 1 test(s)

Lipid Profile

Rs. 250

This test may be measured any time of the day without fasting. However, if the test is drawn as part of a total lipid profile, it requires a 12-hour fast (no food or drink, except water).
[Add test](#)

Pending Bookings

Booking ID	Booking Date	Test Name	Test Price	Cancel Booking
B002854	05-01-2019	CBC	250	<a href="#">Cancel</a>
B007438	01-06-2019	Complete Metabolic Panel	350	<a href="#">Cancel</a>
B009847	03-02-2020	Complete Lipid Panel	290	<a href="#">Cancel</a>
B012848	18-04-2020	Partial Thromboplastin Time	680	<a href="#">Cancel</a>

Total Amount : Rs. 1570

## Test Booking Interface

## **Algorithm for Important Modules:**

### **Login:**

This module is responsible for logging into the system. The users have to give their username and password to log in into the system. The input is verified against the database. The user can log in if a match is found.

#### **Algorithm :**

Step 1: Get UserName and Password

Step 2: Crosscheck input with database entries

Step 3: If credentials are valid then

    Login Successful.

    Otherwise,

    Login failure

Step 4: End procedure

### **Register:**

This module is used by any unregistered user to register themselves. The unregistered users have to enter their basic details. The module then checks if any duplication of username occurs then the system asks for a new username or if any duplication of phone no. occurs then the module cancels the registration assuming that the user is already registered. If details are non-conflicting, then the user is registered successfully.

#### **Algorithm :**

Step 1: Enter basic details

Step 2: If Customer is registering,

    Then include Customer details

Step 3: Cross-check input username with database entries

    If the username exists, then show an error.

    Otherwise goto step 4

Step 4: Cross-check input Phone number with database entries to check duplication

    If the phone number exists, then show the account already exists.

    Otherwise goto step 5

Step 5: If all credentials are correct, then register user.

Step 6: End procedure.

## Booking:

This module is responsible for adding test bookings. Customers can book any number of tests one by one. Once all the desired tests have been booked, customers are shown the cumulative price of all the tests. The module accepts the payment option from the customer and forwards the payment details to Payment Gateway if Online mode of payment is chosen. The module does not handle issues related to offline payment.

### **Algorithm :**

Step 1: Select Test to add

Step 2: Select Collection option (Home/In-house)

Step 3: Check available slot

Step 4: If user wants to add more tests,

    Then go to Step 1

    Otherwise,

    Go to Step 5.

Step 5: Calculate amount = SUM(price of each selected test)

Step 6: Select Payment option (Online/Offline)

Step 7: If Payment option is Online

    Then, redirect to Payment Gateway and wait for Confirmation

    Step 7.1: If Payment is successful then confirm booking

        Otherwise,

        Show Payment Failure and go to Step 6.

Step 8: End procedure.

## Check Test History:

This module is responsible for displaying the details of previously performed tests as well as the status of ongoing tests for the currently logged in customer.

**Algorithm :**

- Step 1: If for any Booking of current user, Status != Complete  
Then, display status of that booking as Ongoing Test
- Step 2: For bookings where Status = Complete,  
Display details of those bookings as Previous Tests  
Provide an option to download Report and submit Feedback
- Step 3: End procedure.

**Cancel Booking:**

This module helps any user to cancel their booking provided that the cancellation is being attempted at least 24 hours prior to collection. On successful cancellation, necessary database entries are modified and refund is made (if applicable).

**Algorithm :**

- Step 1: For bookings where Status != Complete,  
If Sample Collection is due by > 24 hours, show Cancellation option
- Step 2: If Cancellation is selected, then  
Step 2.1: Update Bookings Table  
Step 2.2: Update Allotted Table to inform Collector  
Step 2.3: Refund accordingly
- Step 3: End procedure