



VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE
[Central Technological Institute, Maharashtra State]
Matunga, Mumbai-400 019

SEMESTER EXAMINATION	<i>TA Examination-NOV 2020</i>	DATE :	11/02/2021
SEMESTER & PROGRAM	<i>Sem-VI T.Y. B.Tech (Computer Engg)</i>	TIME	3.00PM to 4.00 PM
TIME ALLOWED	<i>40 .00 min</i>	MARKS	40
COURSE (Course Code)	<i>Software Engineering II</i>		

Instructions

- 1. Solve ALL question**
2. All questions carry equal marks.
3. Figures to the right indicate full marks.
4. Answer to sub question should be answered one below the other.
5. Forward Handwritten Answer Sheet in pdf format from your official login to classroom of software engineering II. before 5.00 PM.

Section A : R4CO3011T Software Engineering II-TA(10 marks)

Que. 1	For your TA ASSIGNMENT-CASE STUDY, Give brief scope and (i)Draw class diagram; clearly specify all attributes and methods with access specifiers and constraints. OR (ii)Give data and process model design using C++ or JAVA.	10
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Section B: R4CO3011P Software Engineering II Lab(30 marks)

Que. 2	For your SOFTWARE ENGINEERING II LAB- CASE STUDY, (i)Give functional and non-functional requirements. (ii) Construct use case diagram in detail. Give your opinion about primary actors and secondary actors involved in the case study. (iii) Identify most important primary actor's use case and write text expression or algorithm using Use case template. (iv) Give state transition diagram <u>OR</u> interaction diagram for the" use case of Que. 2(iii)"	05 10 10 05
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=====The Start=====

SEII, TA and LAB Examination

Srushti Shah
191071902
T.Y.B.Tech.C.S.

Ques1:

(i) scope of the case study: DiagnosHC centre Client Coordination System:-

- I. Register client (patient) on the system
- II. Login in to account (patient, staff, admin)
- III. Book Test Appointment
- IV. Generate Bills for test
- V. Check Test Result
- VI. See patient history
- VII. Store/Update patient data (Admin)
- VIII. Maintain contract with organization.
- IX. Search the patient records.
- X. Set the test frequency
- XI. Avail discount.

Class Diagram

I. Identify the main classes-

Admin Client Organization

Test Bill

II. Identify the attributes of each class

Admin

+name
+username
-password
-designation.
-created-at
~~test~~

client

+name
+username
-password
+DOB
/age
+Gender
+phone-number
-address
-created-at
+email id
+organization_id
+patient_id

organization

+name
+organization_id
+category.

Test

+test_id
+name
+created_on
+conducted_on
+type
+patient_id
+cost
+sample_id.
+test-report.
+comments.

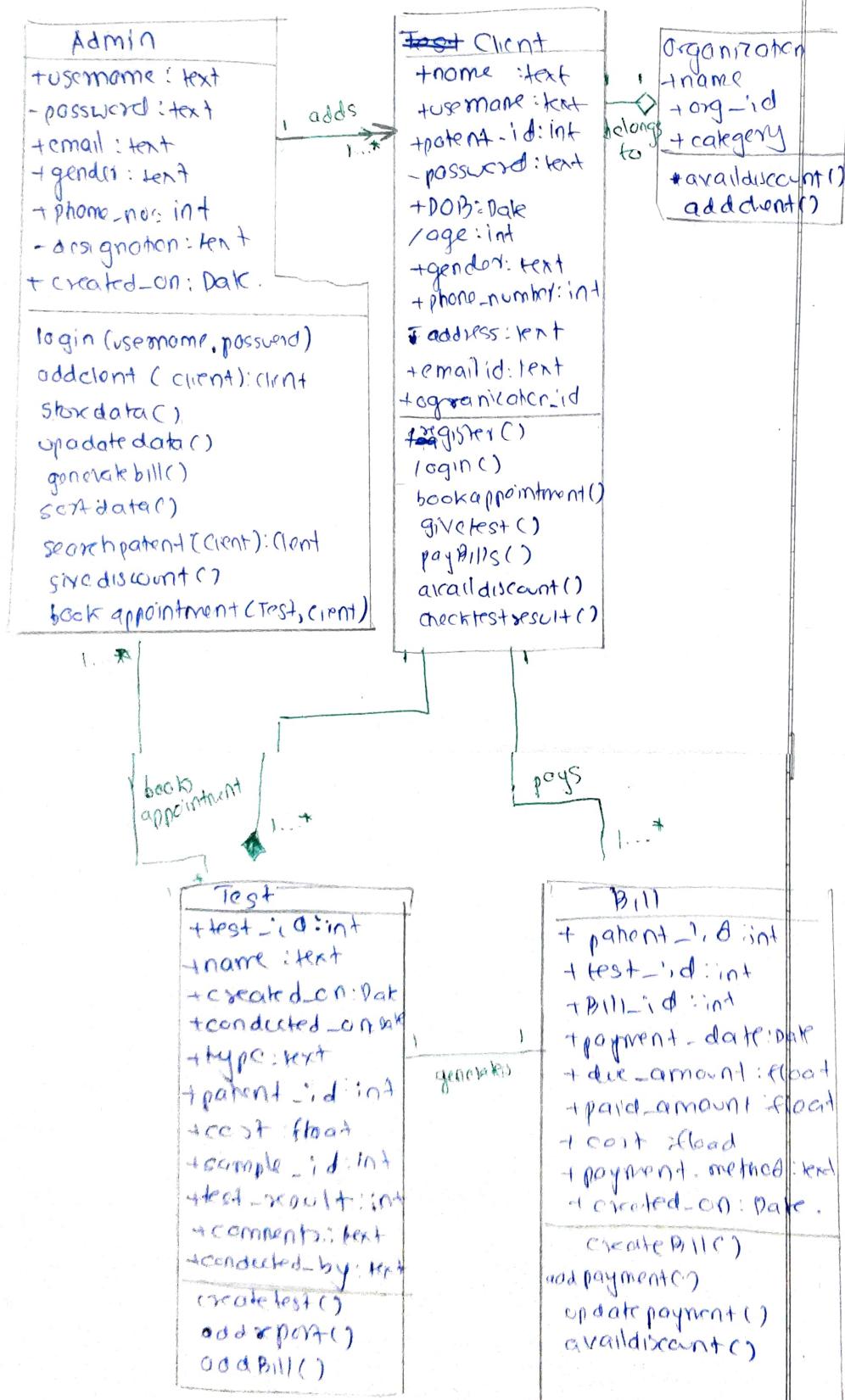
bill

+patient_id
+test_id
+payment_date
+cost
+paid_amount
+amount_due.
+payment_method
+created_on.

III. Identify relationships between classes.

- (i) Client : Test (1:n)
 - (ii) Client : Organization (1:1)
 - (iii) Client : Bill (1:n)
 - (iv) Admin : Client (1:n)
 - (v) Test : Bill (1:1)
- ~~(vi)~~

IV : Formulate functions. for each class.



Ques 2 :

(i) Functional Requirements ex:

I. Register Client

(i) FRI : The patient/client adds his details to enter into the system

(ii) FRI : He enters personal and billing details

II. Login into account

Actors : Admin and Client

(iii) FRI : Enter username, password and account type to enter into system

(iv) FRI : If password and username doesn't match
the user is denied access

III. Book Test Appointment

(v) FRI : Client sends a request to book an appointment for a particular test

(vi) FRI : Admin gives to client an appointment slot for the test

IV. Generate Bill for test

(vii) The system generates the bill amount for the client to pay.

V. Check Test Result.

(viii) After the test is completed the result is added to the system

(ix) The client can check the result by logging in

VII See patient history

- (x) The admin can check the history of all the tests performed by the client.

VIII : Store / update patient data

- (xi) The admin adds the details of all patients & tests conducted to the database.
- (xii) The admin can update the details of patients.

IX. Maintain contract with organizations

- (xiii) Each client belongs to a organization with whom the ~~sys~~ centre has a contract for discounts.
- (xiv) Renew and update contracts.
- (xv) Search the patient records.
- (xvi) The admin can search for the records of a patient on the system.

X). Sort the test frequency

- (xvii) The admin maintains the count of test conducted by a client
- (xviii) The admin sorts the data ^{available count}.
- (xix) The system gives the client a discount on every 11th test.

Non-functional Requirements are :-

1) Performance Requirement

- (a) Response Time : The page should refresh and load with a second.
- (b) Admin Response : The admin should respond in a day.
- (c) Throughput : no of transactions is dependent on no of users.
- (d) Resource Utilization : all resources should be used efficiently.

2) Security Requirements.

- (a) Login Verification : each user fills in username, password, before entering into the system.
- (b) SQL injection Attack : The system should keep track of the queries and users.
- (c) DDoS attack ~~it~~ should not flood the system.
- (d) Man-in-the-middle attack should be safest from.
- (e) Brute-force password : The password should be complicated.

3) Safety Requirement

- the system should be secured from heat,
- the system should have UPS in case of power failure
- . safeguard from people, earthquake, fire, temperature & humidity

④ Software quality requirement

① Usability Requirement : The system should easy and responsive

② Availability : In case of server failure, another server should be made ready.

- database should be backed up at different sites.

- . it should be available 24*7

③ Capacity requirement

The system should be able to handle at maximum double the average (250 users) at a time without fail.

④ Serviceability requirement

- Online Help

- Manual : How To Operate .

- Installation Guide

⑤ Reliability

(a) Mean Time to Repair : One hour

(b) Mean time between failure : One year.

① Scalability:

- More users hitting the server (web traffic)
- Scale up the hardware resources of the system.
- Scale out number of processing machines
- Scale the database.

② Maintainability:

- Periodic maintenance of system should be done.

(a) Use case Diagram

① Identify the Actors.

① Admin

② Patient

③ ~~Organization~~

④ Organization

→ Primary Actor is one that initiates a use case.

→ Secondary Actor is the one that helps complete the user case through specific support.

② Identify Use cases

~~Primary~~

Admin → ① login to his account

as primary actor ② add user

③ generate reports

④ update details

⑤ generate bills

⑥ start test

⑦ book Test appointment

⑧ generate result

Patient ① login to his account

as primary actor ② register

③ request test appointment

④ give the test

⑤ check result

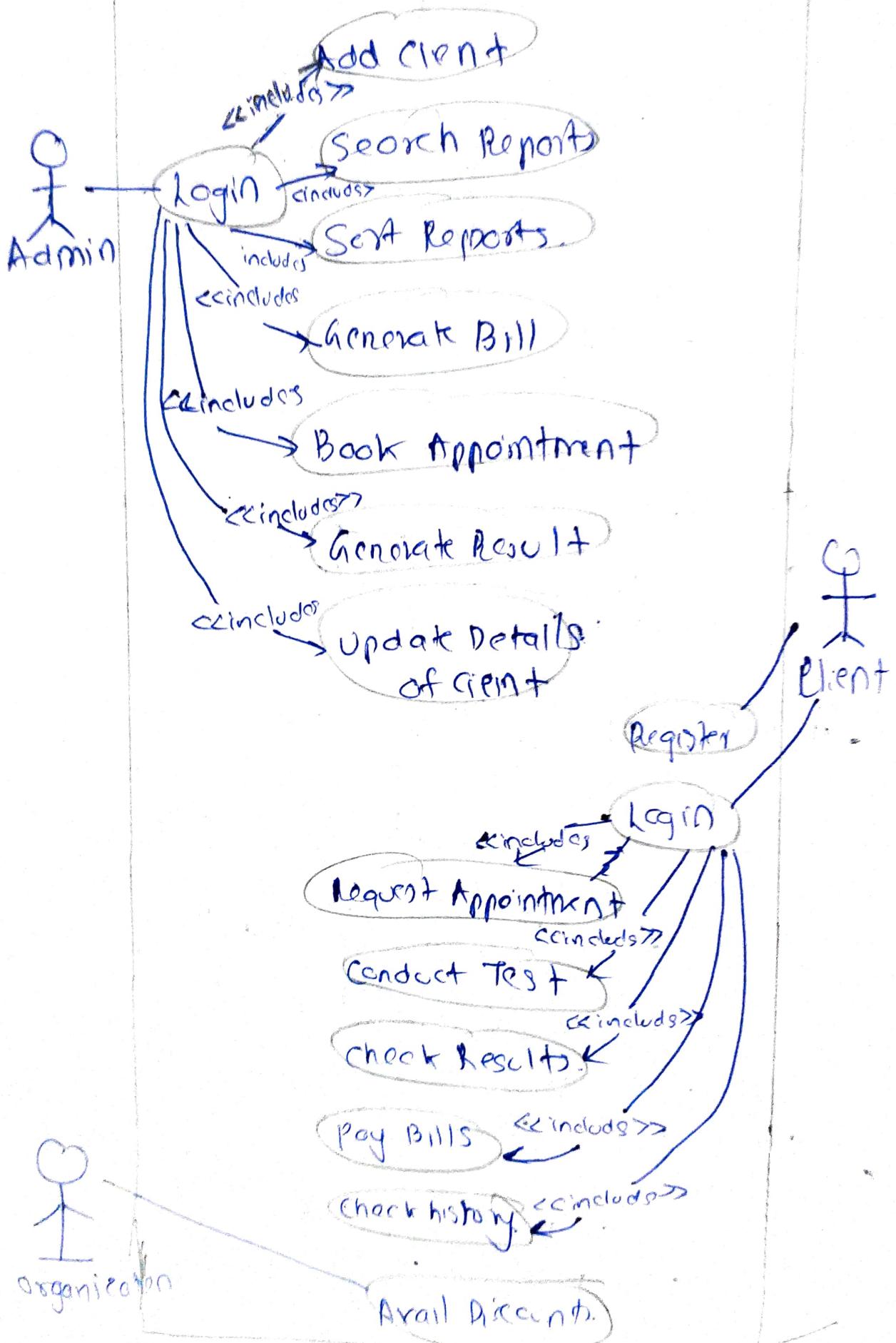
⑥ pay bills

⑦ check history

Organization ① avail discount

Diagnositc centre

Log



(iii) The most Primary use case is :-

Book Appointment

Name :	Book Appointment RV Test
Description :	The patient requests to book test , and admin assigns a slot
Actor	Client and Admin
ViewPoint :	Scheduling .
Pre Condition:	① The client is a valid user ② the slot he asks for is free .
Post Condition	The client is given a slot for the test
Primary Flow	<ol style="list-style-type: none">1. The patient (client) logs into the system2. The patient requests for an appointment using test name , preferable time .3. The admin checks if the slot is free4. The admin assigns the test slot to the patient .
Alternative Flow 1	<ol style="list-style-type: none">1. The admin denies the appointment as he finds the user malicious
Alternative Flow 2	<p>→ The time slot is not available</p> <ol style="list-style-type: none">a. The admin sends a message to request for another slotb. The admin assigns a nearby time slot .
Exceptions	<p>EX1 : The appointment is marked as urgent .</p> <p>EX2 : The admin adjust the time slot given to someone else .</p> <p>EX3 : System fails to give appointment</p> <ol style="list-style-type: none">a. The patient has to request again .

(iv) Sequence (Interaction Diagram) for Book Appointment

