RAMAIAH UNIVERSITY OF APPLIED SCIENCES

ASSIGNMENT

Course Code	19CSC314A
Course Name	Web Architecture and Application development
Programme	B.Tech.
Department	CSE
Faculty	FET

Name of the Student	Subhendu Maji
Reg. No	18ETCS002121
Semester/Year	6^{TH} / 2018
Course Leader/s	Mr. Kishore S. M. /Deepak V/ Hari Krishna S M

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Declaration Sheet				
Student Name	Subhendu Maji			
Reg. No	18ETCS002121			
Programme	B.Tech.		Semester/Year	6th / 2018
Course Code	19CSC314A			
Course Title	Web Architecture and Application development			
Course Date		to		
Course Leader	Mr. Kishore S. M. /Deepak V/ Hari Krishna S M			

Declaration

The assignment submitted herewith is a result of my own investigations and that I have conformed to the guidelines against plagiarism as laid out in the Student Handbook. All sections of the text and results, which have been obtained from other sources, are fully referenced. I understand that cheating and plagiarism constitute a breach of University regulations and will be dealt with accordingly.

Signature of the Student		Date	
Submission date stamp (by Examination & Assessment Section)			

Signature of the Course Leader and date	Signature of the Reviewer and date

Contents

Faculty of Engineering and Technology			
Ramaiah University of Applied Sciences			
Department	Computer Science and Engineering	Programme	B. Tech
Semester/Batch	06/2018		
Course Code	19CSC314A	Course Title	Web Architecture and Application development
Course Leader	Mr. Kishore S. M. /Deepak V/ Hari Krishna S M		

Assignment-1 **Marking Scheme**			
Register No.	18ETCS002121	Name of the Student	SUBHENDU MAJI

Sections		**Marking Scheme**	Marks		
			Max Marks	First Examiner Marks	Moderator
Part 1					
	1.1	Functional and non-functional requirements	5		
	1.2	Identification and design of the entity classes using E-R diagrams	5		
	1.3	Design of UML interaction sequence diagrams	8		
	1.4	Design of Algorithm/ Flowchart	7		
		Part- 1 Max Marks	**25**		

Course Marks Tabulation

Component- CET B Assignment	**First Examiner**	**Remarks**	**Second Examiner**	**Remarks**
1				
Total Marks				

Signature of First Examiner **Signature of Second Examiner**

Question No. 1

Solution to Question No. 1:

In an online Smartphone shopping Web application, users can register and login to the web application. The online smartphone application maintains account details for each user (user ID, user name, phone number, shipping address and items purchased etc.). The user may select any item from the list of available smartphones or can search for all the available smartphones.
It is assumed that an item purchased is reserved and made available to the user offline.

1.1 Functional and non-functional requirements

Functional Requirements:

Requirement Tag	FR1
Requirement Description	the system should allow new users to register and existing users to login
User/System interacting with the requirement	user, admin

Requirement Tag	FR2
Requirement Description	the system should allow users to search smartphone by brand.
User/System interacting with the requirement	User

Requirement Tag	FR3
Requirement Description	the system should allow users to filter smartphone with phone specification like RAM, Storage, etc.
User/System interacting with the requirement	User, admin

Requirement Tag	FR4
Requirement Description	the software should display smartphone description
User/System interacting with the requirement	user

Requirement Tag	FR5
Requirement Description	the system should allow user to see the inventory available for the smartphone.
User/System interacting with the requirement	User, admin

Requirement Tag	FR6
Requirement Description	the system should allow users to buy multiple smartphones at a time by adding to cart.
User/System interacting with the requirement	user

Requirement Tag	FR7
Requirement Description	the system should allow users to buy smartphone directly without adding to cart
User/System interacting with the requirement	user

Requirement Tag	FR8
Requirement Description	the system should allow admin to add or update smartphone details.
User/System interacting with the requirement	admin

Non-functional Requirements:

NFR1: the software should have good maintainability.

The maintenance team should update the software periodically. The bugs should be fixed as soon as discovered. the team should update the software with trending UI. New features should be added periodically.

NFR2: the system should have a secure payment gateway.

The system should be secure and clean. The gateway should be taken from a reputative bank server. The system should not be easy to hack.

NFR3: the system should have a good server support.

The system should not get crashed frequently. the system should have a backup server support when doing maintenance. the system should not be down for too long.

NFR4: The system should be user-friendly.

The system should have clear navigation.

NFR5: the system should be responsive in multiple platforms.

The system should be supportive in mobile, tablet and desktop. The software should be supportive in multiple operating system - Linux, Mac and Windows. The system should be working on Android as well as iOS.

1.2 Identification and design of the entity classes using E-R diagrams

ER Diagram stands for Entity Relationship Diagram, is a diagram that displays the relationship of entity sets stored in a database. In other words, ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships.

The purpose of ER Diagram is to represent the entity framework infrastructure.

- **Entity**: a thing with distinct and independent existence.
- **Attributes**: these are properties of entity.
- **Relationship**: the number of occurrences in one entity that is associated with the number of occurrences in another entity.

Entities of Online Smartphone shopping system	
USER	It is a strong entity. It is a person who deals with the system and who select the products and buy the products and interact with entire online Furniture system
PRODUCT	It is a strong entity. It is the item or thing that the customer buys
PAYMENTS	It is a strong entity; it associates a user to the product or cart he has purchased
CART	It is a weak entity. A cart only exists if a user exists, because each user has his own cart
BRAND	It is a strong entity. The products are classified into different categories(brand) for the user to search
ADMIN	It is a strong entity. Admin manages the products and categories.
VARIANTS	It is a strong entity. Different variants of a smartphone like RAM, storage etc.

Relationship of Online Smartphone shopping system	
Category_contains	Binary relationship between category and product entity. It is n:n relationship, because n products can have n categories
Searches	It is a binary relationship between customer and categories, it is a 1:n relationship, because a customer can search for n categories
Buys	It is ternary relationship between customer, product and payment. It is n:n:1, relationship, as n customers can buy n products and make 1 payment for it
Makes_payment	It's a binary relationship between, a customer and payment. It's a 1:n relationship, as 1 customer can make n payments
Owns	It's a weak relationship between a user and a cart. This means if the user exists, then he owns a cart, it's a 1:1 relationship
Cart_contains	It's a weak relationship between a cart and a product. If a cart exists, then it can contain multiple products, 1: n relation
Payment_for_cart	It's a weak relationship between a car and a payment. If a cart exists, then a payment can be made for it, 1:1 relation
Manages_product	Binary relationship between admin and product entity. It is n:n relationship, because n admins can manage n products
Manages_admin	Binary relationship between admin and category entity. It is n: n relationship, because n admins can manage n categories

Attributes of Online Smartphone shopping system	
USER	**name** – name of the customer **email** – email id of the customer, it has to be unique **password** – password of the user, required to login or signup **address** – the delivery address of the user **user_id** – the user_id of the user, also used as the login id. It is used to uniquely identify each user (primary key) **phone_no** – the users contact number
SMARTPHONE	**smartphone_id** – the primary key used to uniquely id the product **model_name** – name of the product
VARIANTS	**variant_id** – the primary key used to uniquely id the product **color** – the color of the product **price** – the cost of a single unit of the product **RAM** – the RAM of the smartphone **Storage** – the storage (HDD) of the smartphone. **inventory** – the current stock or the number of units to be sold
PAYMENTS	**payment_id** – the primary key used to uniquely identify each transaction **user_id** – the foreign key used to id the user associated to the payment
CART	**quantity** – the units of product ordered **payment_id** – the payment associated with the cart **user_id** – the user that owns the cart **product_id** – the product that is added to the cart
BRAND	**brand_title** – the title of the brand **brand _id** – the primary key of each brand
ADMIN	**email** – the admins email address **password** – the password used by the admin to login or sign-up **admin _id** – the primary key or the login id of the admin

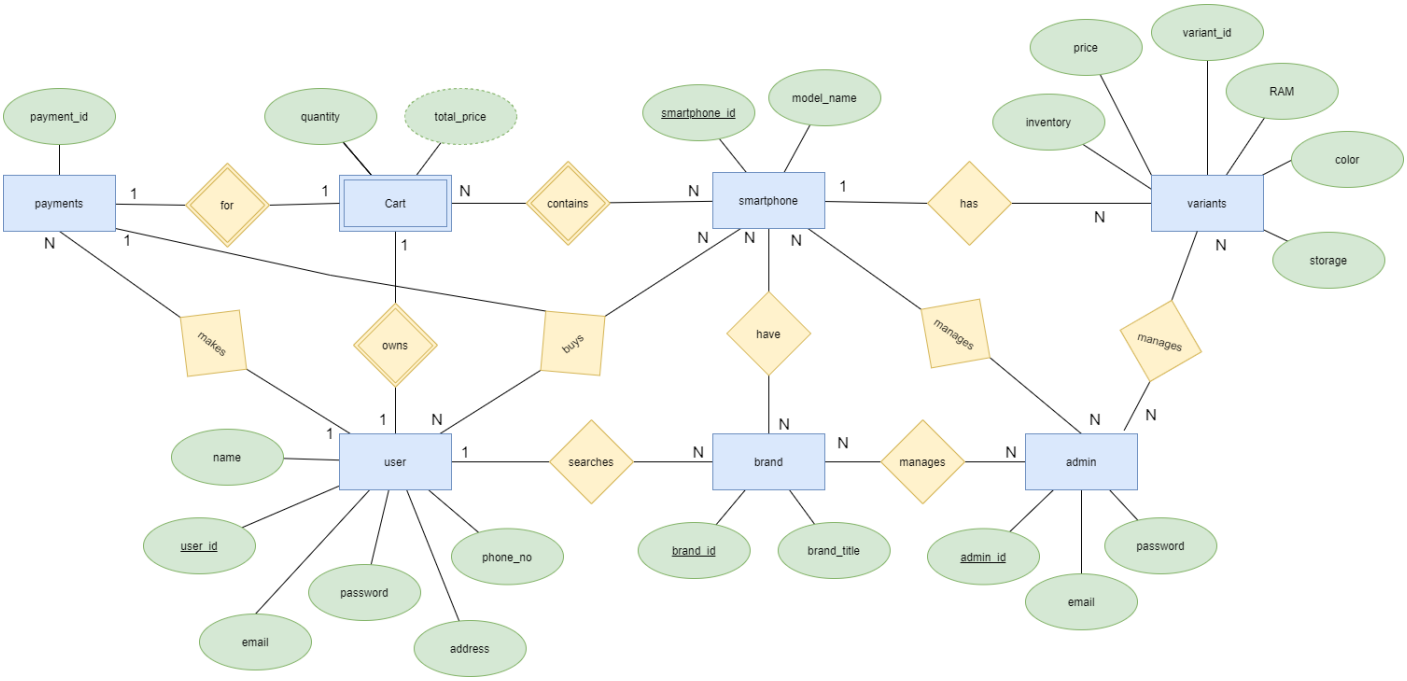

Figure 1 ER Diagram

1.3 Design of UML interaction sequence diagrams

Sequence Diagrams are interaction diagrams that detail how operations are carried out. They capture the interaction between objects in the context of a collaboration. Sequence Diagrams are time focus and they show the order of the interaction visually by using the vertical axis of the diagram to represent time what messages are sent and when.

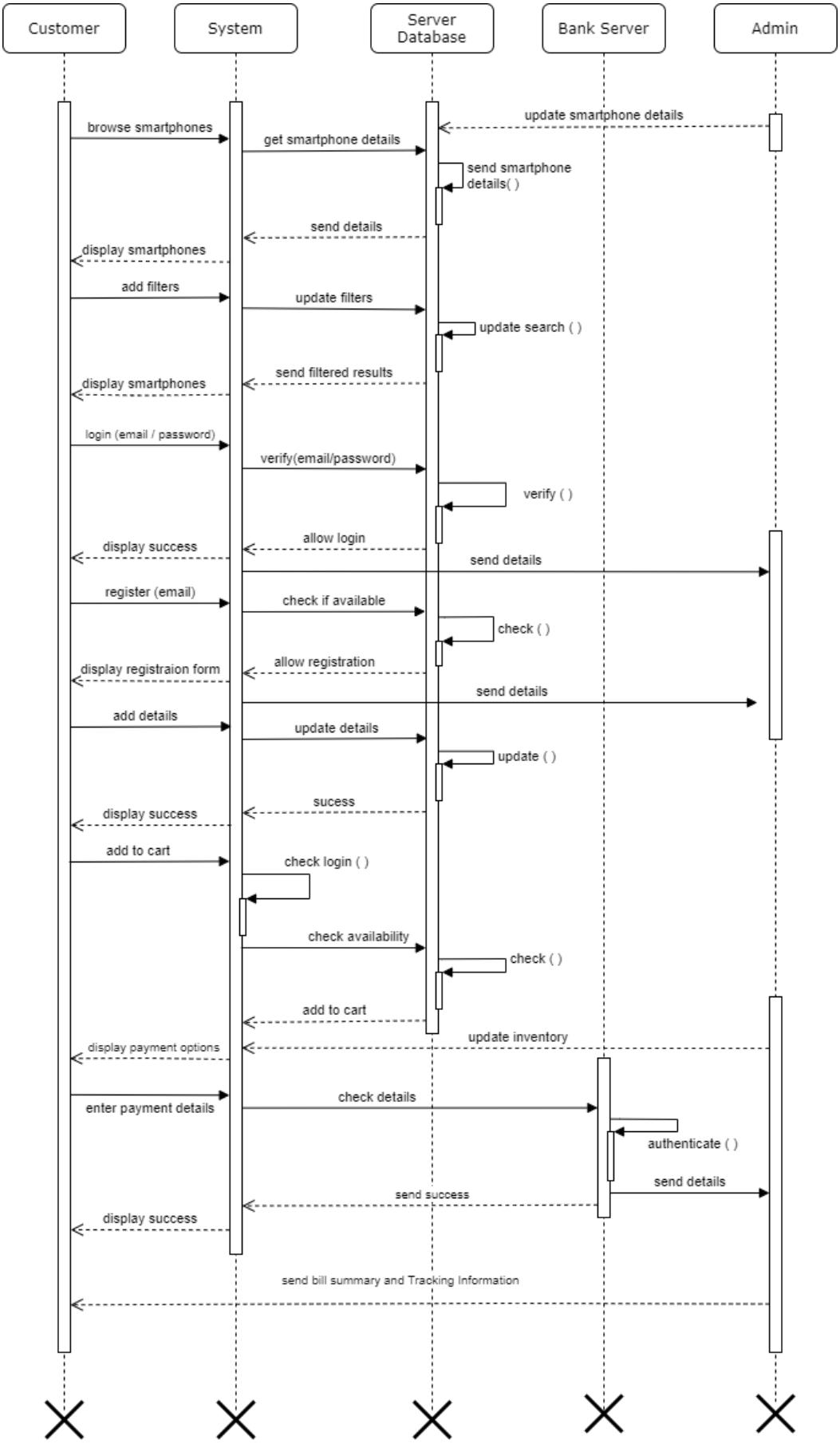

Figure 2 Sequence Diagram

1.4 Design of Algorithm/ Flowchart

A new user can register and the old user can login into system to browse smartphones. User can search or filter from brand name and specifications like RAM, storage, etc. User can either buy the product now or add the product to cart for later purchase or for multiple product purchase. Then user can view the total amount of the cart and add the shipping address. Then, user can complete the payment process and on successful payment user will receive a order summary and shipping tracking info.

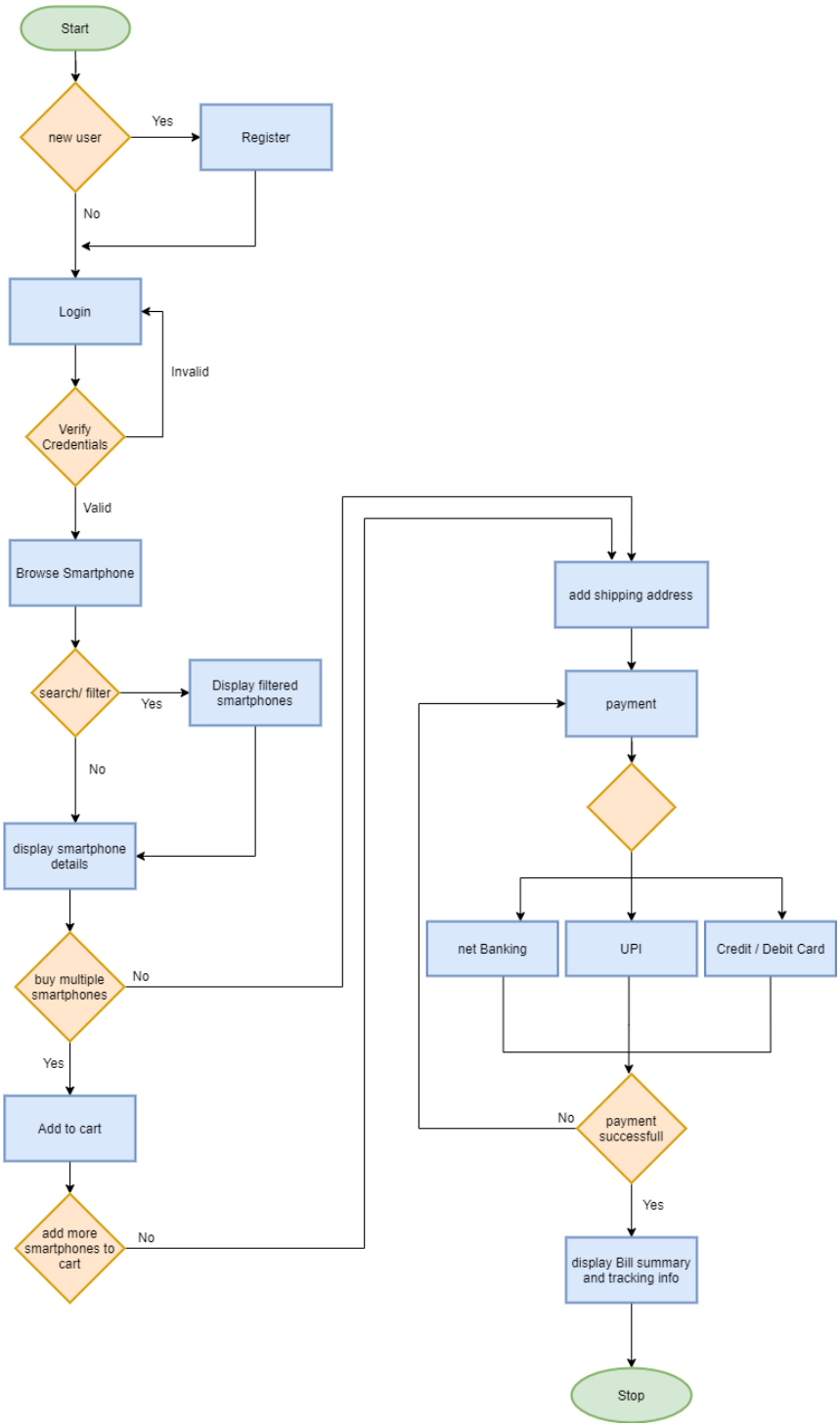

Figure 3 Flowchart