Addis Ababa Institute of Technology

Course: Computer Database Systems- ECEG-4191

PROJECT TITLE: <u>BOOK AND ELECTRONICS GALLERY</u>
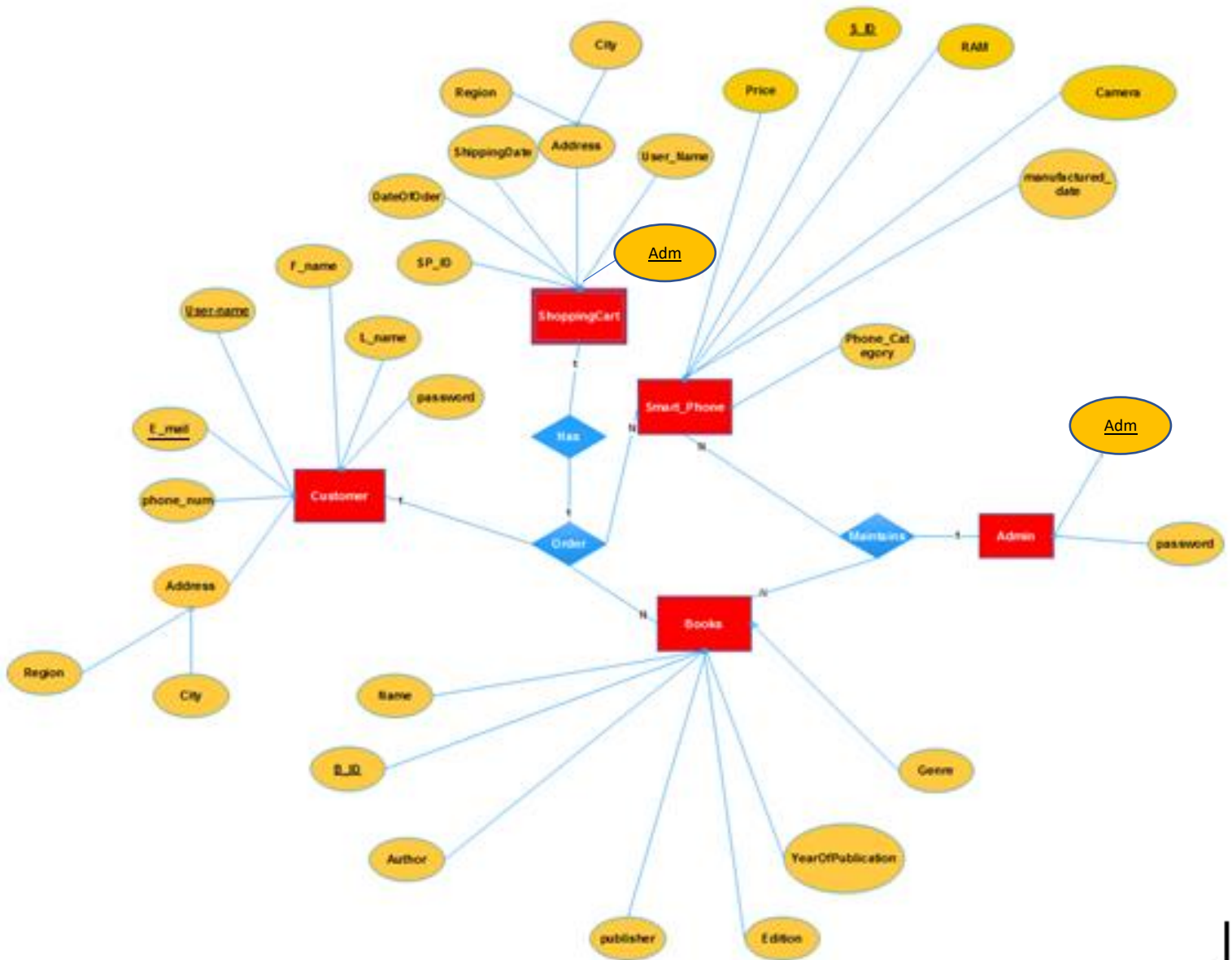
Group 7- Members

Name	ID
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Due date: 03/05/2021 G.C

UPDATED ER DIAGRAM (PHASE ONE)

PHASE TWO

LIST OF FUNCTIONAL DEPENDENCIES

-Here are the functional dependencies on minimal basis:

CUSTOMER

FD1: Username $\longrightarrow$ {Password, F_Name, L_Name, Region, City, Phone_Num, E-mail}

ADMIN
FD2: AdUser $\longrightarrow$ {Password}

BOOKS
FD3: B_ID $\longrightarrow$ {B_Name, Author, Publisher, Ed., YearOfPublish, Price, Genre}

SMARTPHONES
FD4: S_ID $\longrightarrow$ {RAM, Price, Camera, Manu_Year, Phone_Num}

SHIPPING CART
FD5: Sh_ID $\longrightarrow$ {Shipping_Date, AdUser, Username, Region, City}

Other dependencies:

FD6: E-mail $\longrightarrow$ {Phone_Num, F_Name, Last_Name} ….. (Under Customer)

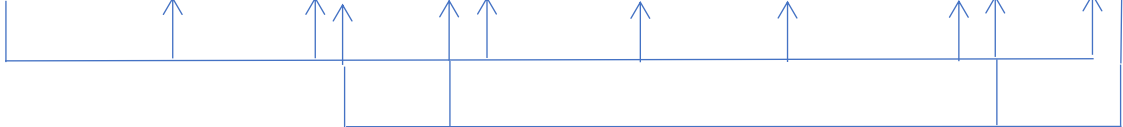FD7: Username $\longrightarrow$ {Region, City} …… (Under Shipping Cart)

NORMALIZATION

The normalization of the given database has been given using the following normal forms:
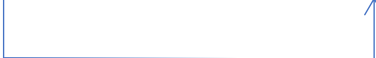
1st Normal Form

CUSTOMER

Username	Password	F_Name	L_Name	Region	City	Phone_Num	E-mail

ADMIN

AdUser	Password

BOOKS

B_Name	B_ID	Author	Publisher	Ed.	PublishedYear	Price	Genre

SMARTPHONES

S_ID	RAM	Price	Camera	Manufactured_Year	Phone_Category

SHIPPING CART

Sh_ID	Shipping_Date	AdUser	Username	Region	City

2nd Normal Form

The 2NF remains the same as the 1st NF, because there is no any partial dependency here.

CUSTOMER

Username	Password	F_Name	L_Name	Region	City	Phone_Num	Email

ADMIN

AdUser	Password

BOOKS

B_Name	B_ID	Author	Publisher	Ed.	PublishedYear	Price	Genre

SMARTPHONES

S_ID	RAM	Price	Camera	Manufactured_Year	Phone_Category

SHIPPING CART
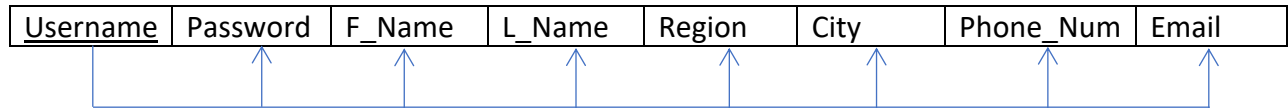
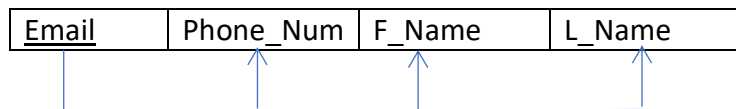| Sh_ID	Shipping_Date	AdUser	Username	Region	City

3rd Normal Form

This normalization is in 3rd normal form since there is no transitive dependency.

CUSTOMER

Username	Password	F_Name	L_Name	Region	City	Phone_Num	Email
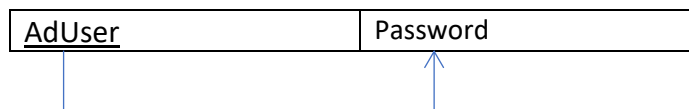
Email	Phone_Num	F_Name	L_Name
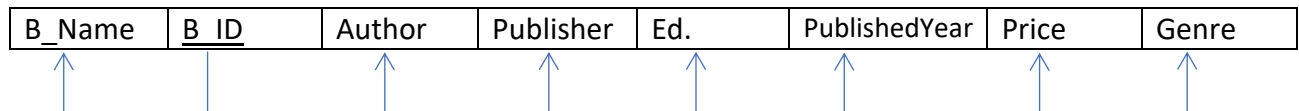
ADMIN

AdUser	Password
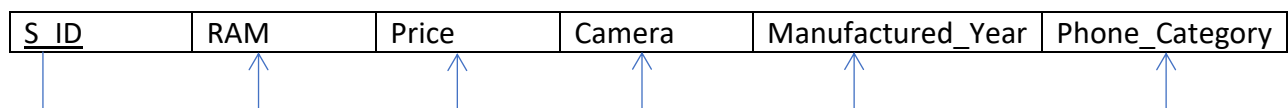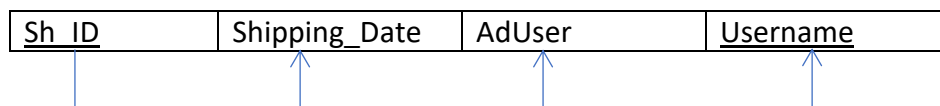
BOOKS

B_Name	B_ID	Author	Publisher	Ed.	PublishedYear	Price	Genre

SMARTPHONES

S_ID	RAM	Price	Camera	Manufactured_Year	Phone_Category
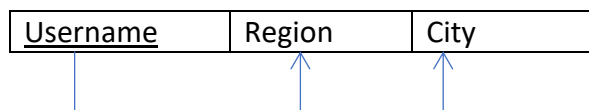
SHIPPING CART

Sh_ID	Shipping_Date	AdUser	Username

Username	Region	City

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Boyce-Codd Normal Form (the same as 3NF)

The given 3rd normal form is also a Boyce-Codd Normal form, since there is a super key in each functional dependency that determines the rest attributes, as it can be seen in the list of dependencies.

Therefore, the highest normal form is the Boyce-Codd Normal form.

MAPPING

CUSTOMER

Username	Password	F_Name	L_Name	Region	City	Phonenumber	Email

ADMIN

Admin_Username	Password

BOOK

B_Name	B_ID	Author	Publisher	Edition	YearofPublish	Publisher	Genre

SMARTPHONE

S_ID	RAM	Price	Camera	Manufacture	Phone_Category

SHIPPING CART

SH_ID	Shipping Date	Region	City	Ad_User	Username