DBMS Normalization Assignment

- Abraham Jacob Kurialanickal

2023-24 Batch 1

1. Employee Information

EmployeeID	EmployeeName	Department	ManagerID	Salary	HireDate
1	John Smith	HR	101	50000	2022-01-15
2	Alice Brown	IT	102	60000	2022-02-20
3	Mark Johnson	Sales	101	55000	2022-03-10

• The table is already 1NF.

101

Sales

• Removing partial dependencies to convert to 2NF.

EmployeeID	EmployeeName	Department	Salary	HireDate
1	John Smith	HR	50000	2022-01-15
2	Alice Brown	IT	60000	2022-02-20
3	Mark Johnson	Sales	55000	2022-03-10
Department	ManagerID			
HR	101			
IT	102			

EmployeeID	EmployeeName	Department Id	Salary	HireDate
1	John Smith	D01	50000	2022-01-15
2	Alice Brown	D02	60000	2022-02-20
3	Mark Johnson	D03	55000	2022-03-10

Department Id	Department
D01	HR
D02	IT
D03	Sales
Department Id	ManagerID
Department Id D01	ManagerID 101
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Employee_information

EmployeeID	EmployeeName	Department Id	Salary	HireDate
1	John Smith	D01	50000	2022-01-15
2	Alice Brown	D02	60000	2022-02-20
3	Mark Johnson	D03	55000	2022-03-10

Department_information

Department Id	Department
D01	HR
D02	IT
D03	Sales

Department_Manager_mapping

Department Id	ManagerID
D01	101
D02	102
D03	101

2. Training Programs

Program ID	ProgramName	Trainer	Departme nt	Employee ID	EmployeeNa me	Date
	Java					2022-03-
1	Fundamentals	John Smith	IT	101	Alice Brown	01
	Project	Sarah				2022-03-
2	Management	White	HR	102	Bob Green	10
		Mark				2022-03-
3	Sales Techniques	Johnson	Sales	103	Charlie Black	20

- The table is already 1NF.
- Removing partial dependencies to convert to 2NF.

ProgramID	ProgramNa	me	Trai	iner		
1	Java Fundamen	tals	John Sn	nith		
2	Project Manage	ement	Sarah V	Vhite		
3	Sales Technique	es	Mark Jo	hnson		
ProgramID	Danastasast	F	a ID	Faranta	Na	Date
Programii	Department	Empi	oyeeID	Empic	yeeName	Date
1	T	101	руеегр	Alice B		2022-03-01
1 2			byeeiD		rown	

ProgramID		ProgramNai	me		Trair	ner
1	Java Fundamentals			John Smi	th	
2	Pro	ject Manager	men	t	Sarah Wh	nite
3	Sale	s Technique	S		Mark Joh	nson
ProgramID	En	nployeeID			Date	
1	101		20	22-	03-01	
2	102	102 20		22-	-03-10	
3	103	}	20	22-	03-20	
EmployeeID	E	mployeeNai	me	I	Departme	nt Id
101	Al	ice Brown		D	01	
102	Вс	b Green		D	02	
103	Cł	narlie Black		D	03	
Department	ld	Departme	nt			
D01		IT				
D02	HR					

Training_programs

ProgramID	ProgramName	Trainer
1	Java Fundamentals	John Smith
2	Project Management	Sarah White
3	Sales Techniques	Mark Johnson

Program_Employee_mapping

ProgramID	EmployeeID	Date
1	101	2022-03-01
2	102	2022-03-10
3	103	2022-03-20

Employee_information

EmployeeID	EmployeeName	Department Id
101	Alice Brown	D01
102	Bob Green	D02
103	Charlie Black	D03

Department_information

Department Id	Department
D01	IT
D02	HR
D03	Sales

3. Customer orders

Orderl D	CustomerNa me	Productl D	ProductNam e	Q t y	UnitPric e	TotalAmo unt	OrderDate
1	John Doe	101	Laptop	2	800	1600	2022-01-15
2	Jane Smith	102	Smartphone	1	500	500	2022-02-20
3	John Doe	103	Printer	1	200	200	2022-03-10

- The table is already 1NF.
- Removing partial dependencies to convert to 2NF.

OrderID	CustomerName
1	John Doe
2	Jane Smith
3	John Doe

OrderID	ProductID	ProductName	UnitPrice	Qty	TotalAmount	OrderDate
1	101	Laptop	800	2	1600	2022-01-15
2	102	Smartphone	500	1	500	2022-02-20
3	103	Printer	200	1	200	2022-03-10

OrderID	CustomerId
1	C01
2	C02
3	C03

CustomerId	CustomerName
C01	John Doe
C02	Jane Smith
C03	John Doe

OrderID	Qty	TotalAmount	OrderDate
1	2	1600	2022-01-15
2	1	500	2022-02-20
3	1	200	2022-03-10

ProductID	ProductName	UnitPrice
101	Laptop	800
102	Smartphone	500
103	Printer	200

Customer_Order_mapping

OrderID	CustomerId
1	C01
2	C02
3	C03

Customer_details

CustomerId	CustomerName
C01	John Doe
C02	Jane Smith
C03	John Doe

Order_details

OrderID	ProductID	Qty	TotalAmount	OrderDate
1	101	2	1600	2022-01-15
2	102	1	500	2022-02-20
3	103	1	200	2022-03-10

Product_details

ProductID	ProductName	UnitPrice
101	Laptop	800
102	Smartphone	500
103	Printer	200

4. Stress management

Employee ID	FirstNa me	LastNa me	StressLev el	HoursOfWor k	BreaksTak en	PhysicalActivit y	CounselingSessio ns
			Modera				
101	Sarah	White	te	45	3	Yoga	2
102	Bob	Green	High	50	2	Jogging	1
103	Charlie	Black	Low	40	4	Meditation	3
104	David	Miller	High	48	1	Gym	2
			Modera				
105	Jane	Doe	te	42	3	Walking	1

- The table is already 1NF.
- Removing partial dependencies to convert to 2NF.

EmployeeID	FirstName	LastName
101	Sarah	White
102	Bob	Green
103	Charlie	Black
104	David	Miller
105	Jane	Doe

EmployeeID	StressLevel	HoursOfWork	BreaksTaken	PhysicalActivity	CounselingSessions
101	Moderate	45	3	Yoga	2
102	High	50	2	Jogging	1
103	Low	40	4	Meditation	3
104	High	48	1	Gym	2
105	Moderate	42	3	Walking	1

• The table is already 3NF.

Employee_information

EmployeeID	FirstName	LastName
101	Sarah	White
102	Bob	Green
103	Charlie	Black
104	David	Miller
105	Jane	Doe

Employee_stressinformation

EmployeeID	StressLevel	HoursOfWork	BreaksTaken	PhysicalActivity	CounselingSessions
101	Moderate	45	3	Yoga	2
102	High	50	2	Jogging	1
103	Low	40	4	Meditation	3
104	High	48	1	Gym	2
105	Moderate	42	3	Walking	1

5. Flee Market

Ite	SellerNam	ItemNa		Pric	Quan		Conditi		
mID	е	me	Category	е	tity	Description	on	Location	DateListed
10	John's Treasure s	Vintag e Chair	Furnitur e	50. 00	2	Beautiful vintage chair, excellent condition	Like New	Booth 15, Section A	2022-01-15
10 2	Alice's Finds	Antiqu e Clock	Home Decor	80. 00	1	Authentic antique clock with Roman numerals	Good	Stall 8, Section B	2022-02-20
10	Mark's Collectib les	Vinyl Record s	Music	15. 00	10	Various artists and genres, in good condition	Used	Booth 20, Section C	2022-03-10
10	Emma's Treasure s	Vintag e Jewelry	Accessor	35. 00	5	Assorted vintage jewelry pieces, unique designs	Excell ent	Stall 12, Section D	2022-04-05
10 5	Robert's Finds	Retro Camer a	Electroni cs	60. 00	1	Vintage Polaroid camera with original case	Good	Booth 5, Section A	2022-05-15

• Convert to 1NF by splitting non-atomic values

lte ml D	SellerNa me	ItemNa me	Category	Pri ce	Qua ntity	Description	Condit	Location	Section	DateListed
10	John's Treasur	Vintag e Chair	Furnitur	50 .0 0	2	Beautiful vintage chair, excellent condition	Like New	Booth	Sectio n A	2022-01- 15
10 2	Alice's Finds	Antiq ue Clock	Home Decor	80 .0	1	Authentic antique clock with Roman numerals	Good	Stall 8	Sectio n B	2022-02-
10	Mark's Collecti bles	Vinyl Recor ds	Music	15 .0 0	10	Various artists and genres, in	Used	Booth 20	Sectio n C	2022-03- 10

						good condition				
10	Emma's Treasur es	Vintag e Jewelr	Access	35 .0 0	5	Assorted vintage jewelry pieces, unique designs	Excell ent	Stall 12	Sectio n D	2022-04- 05
10 5	Robert' s Finds	Retro Camer	Electro nics	60 .0 0	1	Vintage Polaroid camera with original case	Good	Booth 5	Sectio n A	2022-05- 15

• Removing partial dependencies to convert to 2NF.

ItemID	ItemName	Category	Price	Quan tity	Description	Condition	DateListed
	Vintage				Beautiful vintage chair,		
101	Chair	Furniture	50.00	2	excellent condition	Like New	2022-01-15
	Antique	Home			Authentic antique clock		
102	Clock	Decor	80.00	1	with Roman numerals	Good	2022-02-20
	Vinyl				Various artists and genres, in good		
103	Records	Music	15.00	10	condition	Used	2022-03-10
104	Vintage Jewelry	Accessori	35.00	5	Assorted vintage jewelry pieces, unique designs	Excellent	2022-04-05
	Retro	Electroni			Vintage Polaroid camera with original		
105	Camera	CS	60.00	1	case	Good	2022-05-15

ItemID	SellerName	Location	Section
101	John's Treasures	Booth 15	Section A
102	Alice's Finds	Stall 8	Section B
103	Mark's Collectibles	Booth 20	Section C
104	Emma's Treasures	Stall 12	Section D
105	Robert's Finds	Booth 5	Section A

ItemName	Category	Price	Quan tity	Description	Condition	DateListed
Vintage				Beautiful vintage chair,		
Chair	Furniture	50.00	2	excellent condition	Like New	2022-01-15
Antique	Home			Authentic antique clock		
Clock	Decor	80.00	1	with Roman numerals	Good	2022-02-20
				Various artists and		
Vinyl				genres, in good		
Records	Music	15.00	10	condition	Used	2022-03-10
				Assorted vintage		
Vintage	Accessori			jewelry pieces, unique		
Jewelry	es	35.00	5	designs	Excellent	2022-04-05
				Vintage Polaroid		
Retro	Electroni			camera with original		
Camera	CS	60.00	1	case	Good	2022-05-15
	Vintage Chair Antique Clock Vinyl Records Vintage Jewelry	Vintage Chair Furniture Antique Clock Home Decor Vinyl Records Music Vintage Jewelry Retro Electroni	Vintage Chair Furniture 50.00 Antique Clock Decor Vinyl Records Music 15.00 Vintage Jewelry Retro Electroni	ItemNameCategoryPricetityVintage ChairFurniture50.002Antique ClockHome Decor80.001Vinyl RecordsMusic15.0010Vintage JewelryAccessori es35.005RetroElectroni	ItemNameCategoryPricetityDescriptionVintage ChairFurniture50.002Beautiful vintage chair, excellent conditionAntique ClockHome DecorAuthentic antique clock with Roman numeralsVinyl RecordsVarious artists and 	ItemNameCategoryPricetityDescriptionConditionVintage ChairFurniture50.002excellent conditionLike NewAntique ClockHome DecorAuthentic antique clock with Roman numeralsGoodVinyl RecordsVarious artists and genres, in goodUsedVintage JewelryAccessori esAssorted vintage jewelry pieces, unique designsExcellentRetroElectroniVintage Polaroid camera with original

ItemID	SellerId
101	S01
102	S02
103	S03
104	S04
105	S05

103			
SellerId	SellerName	Location	Section
S01	John's Treasures	Booth 15	Section A
S02	Alice's Finds	Stall 8	Section B
S03	Mark's Collectibles	Booth 20	Section C
S04	Emma's Treasures	Stall 12	Section D
S05	Robert's Finds	Booth 5	Section A

Item_information

ItemID	ItemName	Category	Price	Quan tity	Description	Condition	DateListed
	Vintage				Beautiful vintage chair,		
101	Chair	Furniture	50.00	2	excellent condition	Like New	2022-01-15
102	Antique Clock	Home Decor	80.00	1	Authentic antique clock with Roman numerals	Good	2022-02-20
103	Vinyl Records	Music	15.00	10	Various artists and genres, in good condition	Used	2022-03-10
104	Vintage Jewelry	Accessori es	35.00	5	Assorted vintage jewelry pieces, unique designs	Excellent	2022-04-05
	Retro	Electroni			Vintage Polaroid camera with original		
105	Camera	CS	60.00	1	case	Good	2022-05-15

Item_Seller_mapping

ItemID	SellerId
101	S01
102	S02
103	S03
104	S04
105	S05

Seller_information

SellerId	SellerName	Location	Section
S01	John's Treasures	Booth 15	Section A
S02	Alice's Finds	Stall 8	Section B
S03	Mark's Collectibles	Booth 20	Section C
S04	Emma's Treasures	Stall 12	Section D
S05	Robert's Finds	Booth 5	Section A

6. Learning Management System

				Enrolle d				
CourseName	Instruct	Departme	Credi	Studen	Ctaut Data	EndD	Locatio	Availabil
Coursename	or	nτ	ts	ts	StartDate		п	ity
							Roo	
ntroduction to	Prof.				2022-01-			
		Science	3	25				Open
5)								- 1
		Comput				2-	Lab 3,	
Programming in	Prof.	er			2022-02-	06-	Buildi	
ython	Brown	Science	4	30	20	15	ng B	Closed
						202		
						2-	Roo	
	Prof.						m	
Accounting	Green	Finance	3	20	10		201	Open
							_	
	5 (2222	_		
. 1. 1. 1			2	22				
inglish Literature	vvnite	ies	3	22	05		301	Open
							Lab 2	
Web Development	Prof				2022-05-			
· ·		IT	4	28				Closed
3	ython inancial	CourseName or Introduction to iology Smith Prof. Smith Prof. Brown Inancial Prof. Green Prof. White Web Development Prof.	CourseName or nt Introduction to iology Smith Science Comput er Comput er Science Introduction to iology Smith Science Comput er Science Introduction to iology Smith Science Comput er Science Frof. Green Finance Prof. Humanit ies Web Development Prof.	CourseName or nt ts Introduction to iology Smith Science 3 Comput er Green Science 4 Introduction to iology Smith Science 3 Comput er Science 4 Introduction to iology Smith Science 3 Comput er Science 4 Introduction to iology Smith Science 3 Comput er Science 4 Introduction to iology Smith Science 3 Comput er Science 4 Introduction to iology Smith Science 3 Introduction to iology Smith Smith Science 3 Introduction to iology Smith Smith Smith Smith Smith Smith Smith Smi	CourseName or nt ts ts Introduction to iology Smith Science 3 25 Comput er gramming in ython Prof. Brown Science 4 30 Inancial Prof. Green Finance 3 20 Prof. Humanit white ies 3 22 Veb Development Prof.	CourseName or nt ts ts StartDate Introduction to iology Prof. Smith Science 3 25 15 Comput er Science 4 30 20 Inancial Prof. Green Finance 3 20 Prof. Humanit ies 3 22 Veb Development Prof. 2022-04- Veb Development Prof. 2022-05-	CourseName or nt ts ts StartDate ate 202 2- 202 202 2- 202 202 2- 202 202 2- 202 202 2- 202 2- 202 2- 202 202 2- 202 2- 202	CourseName or nt ts sts StartDate ate n attroduction to iology Prof. 2022-01- 05- m 100 101 101 attroduction to iology Smith Science 3 25 15 10 101 1

• Convert to 1NF by splitting non-atomic values

CID	CourseName	Instruc tor	Departme nt	Cred its	Enroll ed Stude nts	StartDate	End Date	Room	Buildi ng	Availab ility
							202			
							2-	Roo		
10	Introduction to	Prof.				2022-01-	05-	m		
1	Biology	Smith	Science	3	25	15	10	101		Open
							202			
		Prof.	Comput				2-		Build	
10	Programming in	Brow	er			2022-02-	06-	Lab	ing B	Close
2	Python	n	Science	4	30	20	15	3	пу в	d

10	Financial Accounting	Prof. Gree	Finance	3	20	2022-03- 10	202 2- 07- 05	Roo m 201		Open
10	English Literature	Prof. Whit	Humani	3	22	2022-04-	202 2- 08- 20	Roo m		Open
10 5	Web Development Fundamentals	Prof. Black	IT	4	28	2022-05- 15	202 2- 09- 25	Lab 2	Build ing A	Close

• Removing partial dependencies to convert to 2NF.

CID	CourseName	Credits	Enrolled Students	StartDate	EndDate
101	Introduction to Biology	3	25	2022-01-15	2022-05-10
102	Programming in Python	4	30	2022-02-20	2022-06-15
103	Financial Accounting	3	20	2022-03-10	2022-07-05
104	English Literature	3	22	2022-04-05	2022-08-20
105	Web Development Fundamentals	4	28	2022-05-15	2022-09-25

CID	Instructor	Department
101	Prof. Smith	Science
102	Prof. Brown	Computer Science
103	Prof. Green	Finance
104	Prof. White	Humanities
105	Prof. Black	IT

CID	Room	Building	Availability
101	Room 101		Open
102	Lab 3	Building B	Closed
103	Room 201		Open
104	Room 301		Open
105	Lab 2	Building A	Closed

CID	CourseName	Credits	Enrolled Students	StartDate	EndDate
101	Introduction to Biology	3	25	2022-01-15	2022-05-10
102	Programming in Python	4	30	2022-02-20	2022-06-15
103	Financial Accounting	3	20	2022-03-10	2022-07-05
104	English Literature	3	22	2022-04-05	2022-08-20
	Web Development				
105	Fundamentals	4	28	2022-05-15	2022-09-25

CID	InstructorId
101	P01
102	P02
103	P03
104	P04
105	P05

InstructorId	Instructor	Department
P01	Prof. Smith	Science
P02	Prof. Brown	Computer Science
P03	Prof. Green	Finance
P04	Prof. White	Humanities
P05	Prof. Black	IT

CID	RoomID	
101	R01	
102	R02	
103	R03	
104	R04	
105	R05	

RoomID	Room	Building	Availability
R01	Room 101		Open
R02	Lab 3	Building B	Closed
R03	Room 201		Open
R04	Room 301		Open
R05	Lab 2	Building A	Closed

$Course_information$

CID	CourseName	Credits	Enrolled Students	StartDate	EndDate
101	Introduction to Biology	3	25	2022-01-15	2022-05-10
102	Programming in Python	4	30	2022-02-20	2022-06-15
103	Financial Accounting	3	20	2022-03-10	2022-07-05
104	English Literature	3	22	2022-04-05	2022-08-20
	Web Development				
105	Fundamentals	4	28	2022-05-15	2022-09-25

Course_Instructor_mapping

CID	InstructorId
101	P01
102	P02
103	P03
104	P04
105	P05

Instructor_information

InstructorId	InstructorId Instructor Departmen	
P01	Prof. Smith	Science
P02	Prof. Brown	Computer Science
P03	Prof. Green	Finance
P04	Prof. White	Humanities
P05	Prof. Black	IT

Course_Room_mapping

CID	RoomID
101	R01
102	R02
103	R03
104	R04
105	R05

Room_information

RoomID	Room	Building	Availability
R01	Room 101		Open
R02	Lab 3	Building B	Closed
R03	Room 201		Open
R04	Room 301		Open

R05 Lab 2	Building A	Closed
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