

Library Management System

Data Conceptual Model

- I. List of Physical element
- II. List of entities
- III. Data dictionary
- IV. Dependences
- V. Management rules
- VI. Formalisms of DCM

Step1: List of Physical Element

- Books
- Books Categories
- Books Items
- Reading
- Member
- Registration
- Year
- Registration Item
- Loan
- Member Type

List of Entities

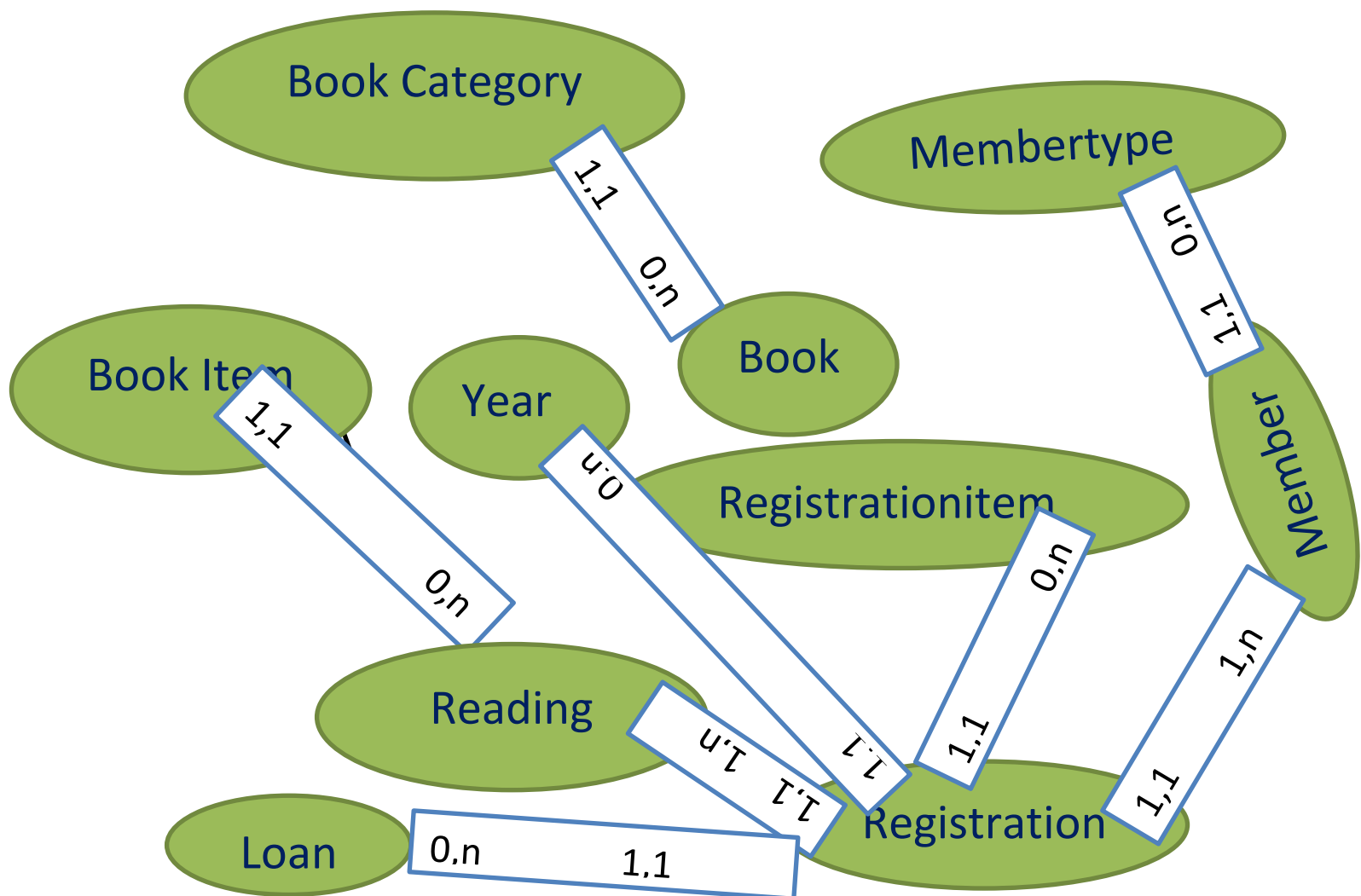
Books	BooksID	Publisher	ISBN	code	name	QRcode	author
BookItems	ItemsID	Quantity					
BookCategiry	bookcategiryid	name					
Reading	Reading ID	date	time				
Year	yearID	startdate	enddate				
Registration	ragistrationid	date	time				
Registrationitem	registrationitemid	payment	price				
Member	memberid	firstname	lastname	gender	number	address	
loan	loanid	loandate	loantime	Enddate	endtime	panalty	
Membertype	membertypeid	membertype					

Step2: Data Dictionary

N ^o	Codifications	Description	Data type	size	Observation
1	book	bookid	number	9	Primary key
	publisher	The Publisher of the books	text		
	Isbn	The book Isbn	text		
	code	The book code	number		
	name	The name of the book	text		
	QRcode	The QR code	number		
	author	The Author of the book	text		
2	bookcategory	Bookcategory ID	number	9	Primary key
	name	The name of the category	text		
3	readingID	The id of the reading	number	9	Primary key
	date	The date of the reading	Date/time		
	time	The time of the reading	Date/time		
4	yearID	The id of the year	number	9	Primary key
	stateddate	The date of the starting	date/time		
	enddate	The date it should end	Date/time		
5	registration	Registration ID	number	9	Primary Key
	date	The date of the registration	Date/time		
	time	The time of the registration	Date/time		

6	Registrationitemid	The ID of the registration Item	number	9	Primary key
	payment	The payment of a registration	text		
	price	The price of a registration	text		
7	memberid	The id of the member	number	9	Primary key
	firstname	The member first name	text		
	lastname	Member's last name	text		
	gender	Members Gender	text		
	number	The member's phone number	number		
	address	The member's address	text		
8	Loanid	The ID of the loan	number	9	Primary key
	loandate	The date of the loan	Date/time		
	loantime	The time of the loan	Date/time		
	enddate	The ending date	Date/time		
	quantity	The quantity of the loan	number		
9	membertypeid	The ID of the membertype	number	9	Primary key
	membertype	membertype	text		

Step3: Dependences



Step4: Management rules

1	book \longrightarrow bookcategory	0n \longrightarrow 1,n
	Bookcategory \longrightarrow Book	1,n \longrightarrow 0,n
2	Reading \longrightarrow BookItems	0,n \longrightarrow 1,1
	BookItems \longrightarrow Reading	1,1 \longrightarrow 0,n
3	Reading \longrightarrow registration	1,n \longrightarrow 1,1
	Registration \longrightarrow reading	1,1 \longrightarrow 1,n
4	Registration \longrightarrow Member	1,1 \longrightarrow 1,n
	Member \longrightarrow registration	1,n \longrightarrow 1,1
5	Registration \longrightarrow registrationItems	1,1 \longrightarrow 0,n
	registrationItems \longrightarrow registration	0,n \longrightarrow 1,1
6	registration \longrightarrow Year	1,1 \longrightarrow 0,1
	Year \longrightarrow registration	0,n \longrightarrow 1,1
7	Registration \longrightarrow loan	1,1 \longrightarrow 0,n
	Loan \longrightarrow registration	0,n \longrightarrow 1,1
8	Member \longrightarrow Membertype	1,1 \longrightarrow 0,n
	Membertype \longrightarrow member	0,n \longrightarrow 1,1

Formalisms of DCM

BookItems bookItemsid quantity #Reading	Book Bookid ISBN Publisher Code Name Author #bookcategory	Registration Ragistrationid Date Time #Registrationitem #member #reading #Year #Loan
Reading ReadingID Date Time #Registration	Year YearID Startdate Enddate #Registration	Registrationitem Registrationitemid Payment Price #Registration
Memberid Fullname Address Contact #Registration	Loanid Loandate Enddate Penalty #registration	Membertype Membertypeid #member

Online course Enrollment System

Step1: List of physical element for online course enrollment system

- Courses
- Lectures
- Lessons
- Languages
- Enrollment
- CouseCategory
- Students
- Profession

Step2: List of Entities for online course enrollment system

courses	courseid	name	Description	price	createdAt
Lecturesid	createdAt	name	email	p-number	bio
lessons	lessonsId	content	ordernumber	createdAt	tittle
languages	languagesid	LanguageName			

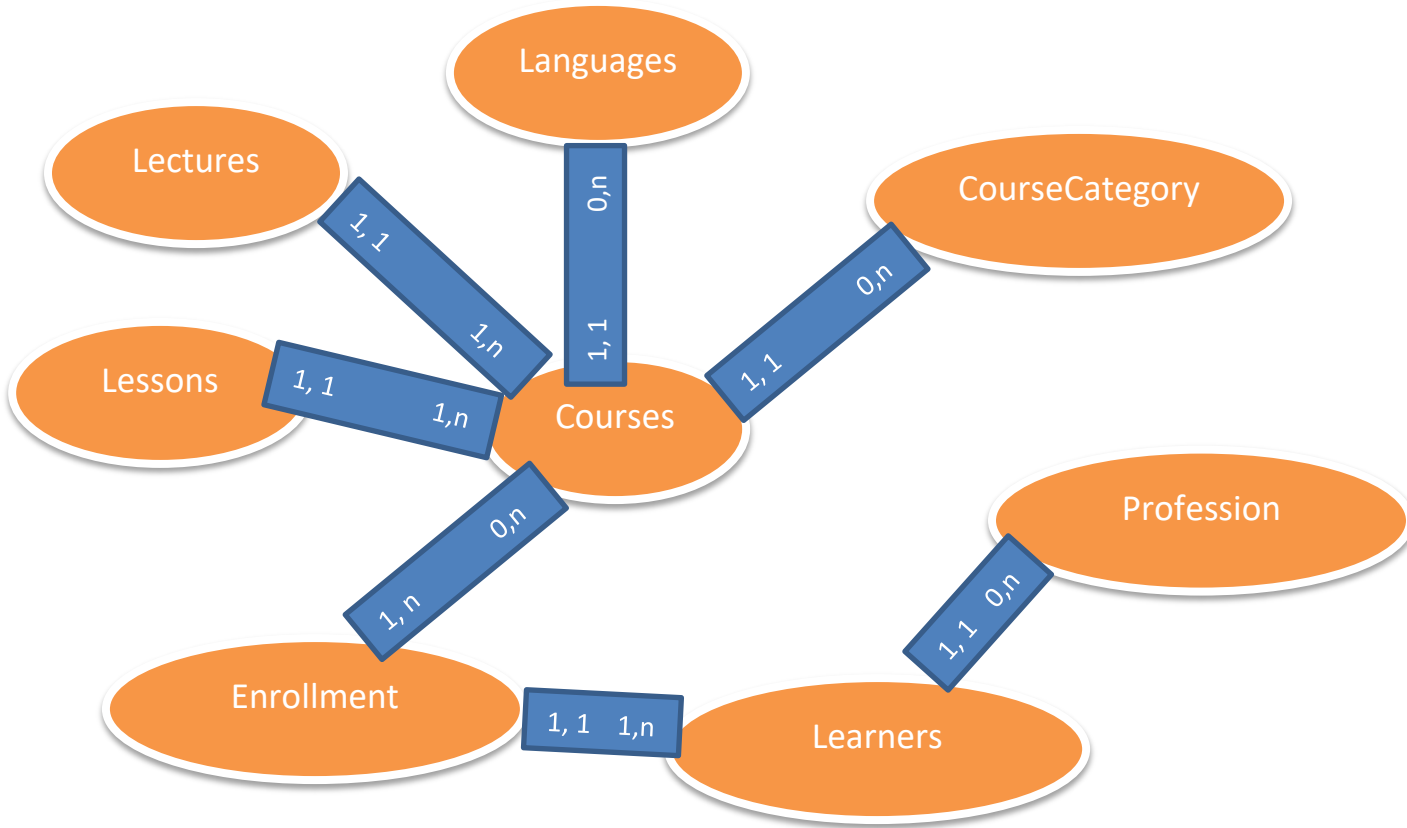
enrollment	enrollmentid	date	status	progress	
category	categoryid	categoryname			
student	studentid	name	email	p-number	registrationdate
profession	Professionid	professionname			

Step3: Data Dictionary for online enrollment system

N ^o	Codifications	Description	Data type	size	Observation
1	courseid	The ID of the courses	number	9	Primary key
	name	The name of course	text		
	description	Course description	text		
	price	The price for the course	text		
2	Lecturesid	The ID of the lectures	number	9	Primary key
	name	The name of the lectures	text		
	Email	The lecture's email	text		
	Phonenumber	The number of the lecture	number		
	bio	The lecture bio	text		
3	Lessonsid	The lessons ID	number		Primary key
	content	The content of the lessons	text		
	ordernumber	The ordernumber of the lesson	number		
	Tittle	The tittle of the lesson	text		
4	Languagesid	The ID of the languages	number	9	Primary key
	name	The name of the language	text		
5	enrollmentid	The ID of the enrollment	number	9	Primary key
	date	The date of the enrollment	Date/time		
	Status	The status of the enrollment	text		
	progress	The enrollment status	text		
6	Categoryid	Category's ID	number		Primary key
	Categoryname	The name of the category	text		
7	Studentid	The ID of the student	number		Primary key
	name	The name of the student	text		

	email	The email of the student	text		
	Phonenumber	The phone number of the student	number		
	Registrationdate	The date of the registration	Date/time		
8	Professionid	The ID of the profession	number	9	Primary key
	Profession name	The name of the profession	text		

step4: Dependences



Step5: Management Rules

1	Courses → CourseCategory	1,1 → 0,n
	CourseCategory → Courses	0,n → 1,1
2	Courses → Languages	1,1 → 0,n
	Languages → Courses	0,n → 1,1
3	Courses → Lectures	1,n → 1,1

	Lectures → course	1,1 → 1,n
4	Courses → lessons	1,n → 1,1
5	lessons → courses	1,1 → 1,n
6	enrollment → Learners	1,1 → 1,n
7	Learners → profession	1,1 → 0,n

Step6 Formalism of DCM

Studentid Name Email Phonenumber Registrationdate #Professionid	Courseid Coursename Description Price #categoryid #languagesid
Professionid Professionname	Lecturesid Name Email Phonenumber #Professionid
Enrollmentid Enrollmentdate status #studentid #Courseid	Lessonsid Tittle createdAt content ordernumber #courseid
CourseCategoryid Categoryname	Languagesid Name

Hospital patient management system

Step1: List of physical element

- Rooms
- Beds
- Hospitalization
- Categories
- Medicines
- Consultation
- Prescription
- Patients
- Resultants
- Disease
- Profession

Step2: List of entities

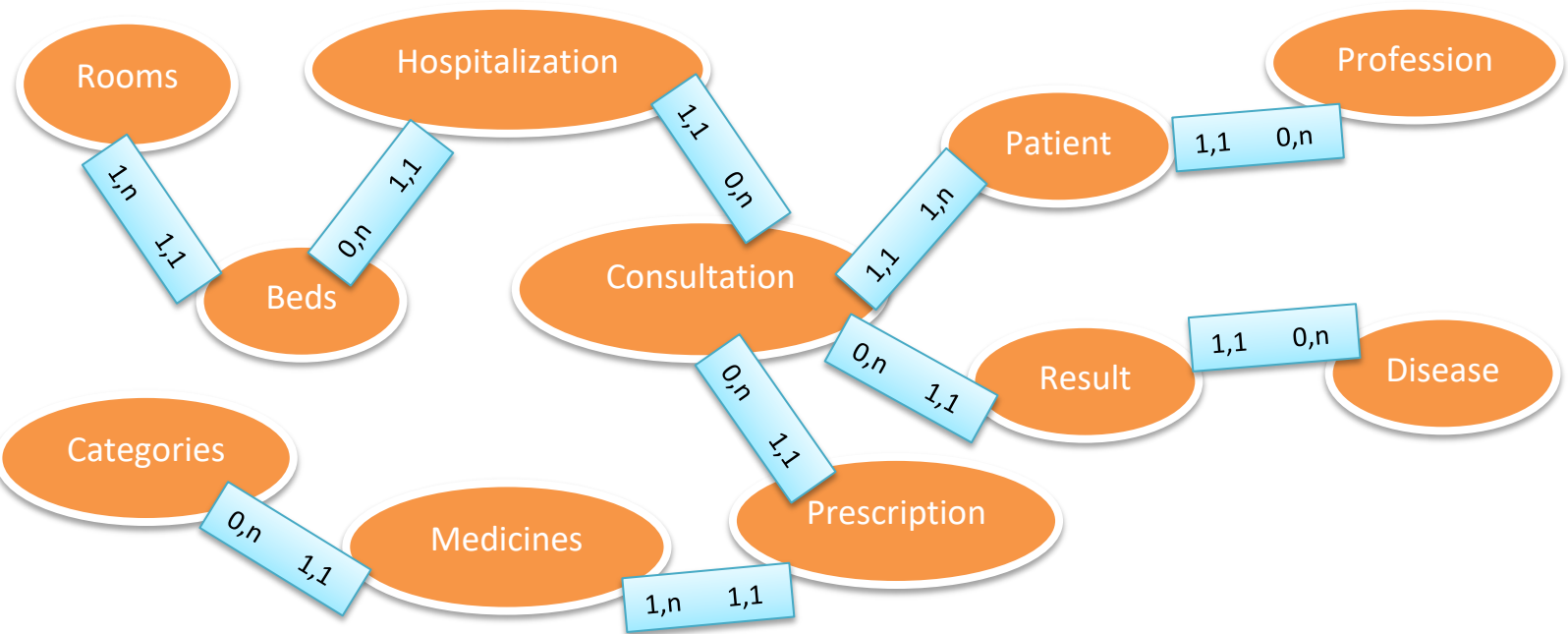
Roomsid	roomnumber	roomtype	capacity	status	
bedsid	bednumber	status			
hospitalizationid	Admissiondate	Dischargedate	status		
categoriesid	categoryname				
Medicinesid	name	description	expirydate	stockquantity	
consultationid	Consultationdate	notes	diagnosis		
Prescriptionid	dosage	frequency	duration		
patientsid	name	dateofbirth	gender	Phonenumber	address
Resultid	Testname	testdate	details		
diseaseid	name	description	symptoms	treatment	
Professionid	Professionname	specialty			

Step3: data dictionary

N ^o	Codifications	Description	Data type	size	Observation
1	Roomsid	The rooms ID	number	9	Primary key
	roomtype	The room number	text		
	roomtype	The type of room	text		
	capacity	The capacity of the room	number		
	status	The status of the room	text		
2	bedsid	The ID of the bed	number	9	Primary key
	bednumber	The number of the bed	text		
	Status	The room's status	number		
3	Hospitalizationid	The ID of the hospitalization	number	9	Primary key
	Admissiondate	The date of the admission	Date/time		
	Dischargedate	The date for the discharge	Date/time		
	Status	The status			
4	Categoriesid	The ID of the categories	number	9	Primary key
	Categoryname	The name of the category	text		
5	Medicinesid	The ID of the medicines	number	9	Primary key
	name	The name of the medicines	text		
	Description	Medicines description	text		
	Expirydate	The medicines expiry date	Date/time		

	Stockquantity	The amount of medicines	number		
6	consultationid	Consultation's ID	number	9	Primary key
	Consultationdate	The date of the consultation	Date/time		
	notes	Consultation's notes	number		
7	Prescriptionid	The ID of the prescription	number	9	Primary key
	Dosage	The dosage	number		
	frequency	Prescription's frequency	text		
	Duration	Prescription's Duration	text		
8	patientsid	The ID of the patient	number	9	Primary key
	name	The name of the patient's	text		
	dateofbirth	Patient's date of birth	Date/time		
	gender	Patient's Gender	text		
	address	Patient's address	text		
	Phonenumber	Patient's phone number	number		
9	Resultid	The ID of the result	number	9	Primary key
	Testname	The name of the test	text		
	testdate	The date for the results	Date/time		
	Details	Result details	text		
10	diseaseid	Disease ID	number	9	Primary key
	name	The name of the disease	text		
	Description	Disease description	text		
	Symptoms	The symptoms of the disease	text		
	Treatment	The treatment for the disease	text		
11	Professionid	Profession's ID	number	9	Primary key
	name	The name of the profession	text		
	Specialty	Professions Specialty	text		

Step4: Dependences



Step5: Management Roles

1	Consultation	→	Hospitalization	0,n	→	1,1
	Hospitalization	→	Consultation	1,1	→	0,n
2	Consultation	→	patient	1,1	→	1,n
	Patient	→	Consultation	1,n	→	1,1
3	Hospitalization	→	beds	0,n	→	1,1
	beds	→	hospitalization	1,1	→	0,n
4	Consultation	→	Results	0,n	→	1,1
	Results	→	consultation	1,1	→	0,n
5	Prescription	→	Consultation	1,1	→	0,n
	Consultation	→	prescription	0,n	→	1,1
6	Beds	→	rooms	1,1	→	1,n
	Rooms	→	beds	1,n	→	1,1
7	Medicenes	→	prescription	1,n	→	1,1

	Prescription	→	medicenes	1,1	→	1,n
8	Categories	→	medicenes	0,n	→	1,1
	Medicenes	→	categories	1,1	→	0,n
9	Result	→	Disease	1,1	→	0,n
	Disease	→	results	0,n	→	1,1
10	Patient	→	profession	1,1	→	0,n
	Profession	→	patient	0,n	→	1,1

step6: Management Rules

Roomsid
Roomnumber
Roomtype
Capacity
Status

Bedid
Bednumber
Status
#Roomsid

Medicinesid
Name
Description
Expirydate
Stockquantity

Hospitalization
Admissiondate
Dischargedate
Status
#Patientsid
#Roomsid

Consultation
Roomnumber
Roomtype
Capacity
Status

Patientsid

Roomnumber
Roomtype

Profession
Roomnumber
Roomtype
Capacity
Status

Disease
Roomnumber
Roomtype
Capacity
Status

Categories
Roomnumber
Roomtype
Capacity
Status

Profession
Roomnumber
Roomtype
Capacity
Status

Result
Roomnumber
Roomtype
Capacity
Status

Inventory management system

✓ Identifying the purpose of the system (ISMS)

+ Purpose:

- The main purpose of the system to track inventory movement (Stock in and out), Manage products and record staff handing in the store

✓ Data Conceptual Model STEPS

VII. List of Physical element

VIII. List of entities

IX. Data dictionary

X. Dependences

XI. Management rules

XII. Formalisms of DCM

I. Step 1: List of physical element for inventory store

- Product
- Staff
- Stock in
- Stock out

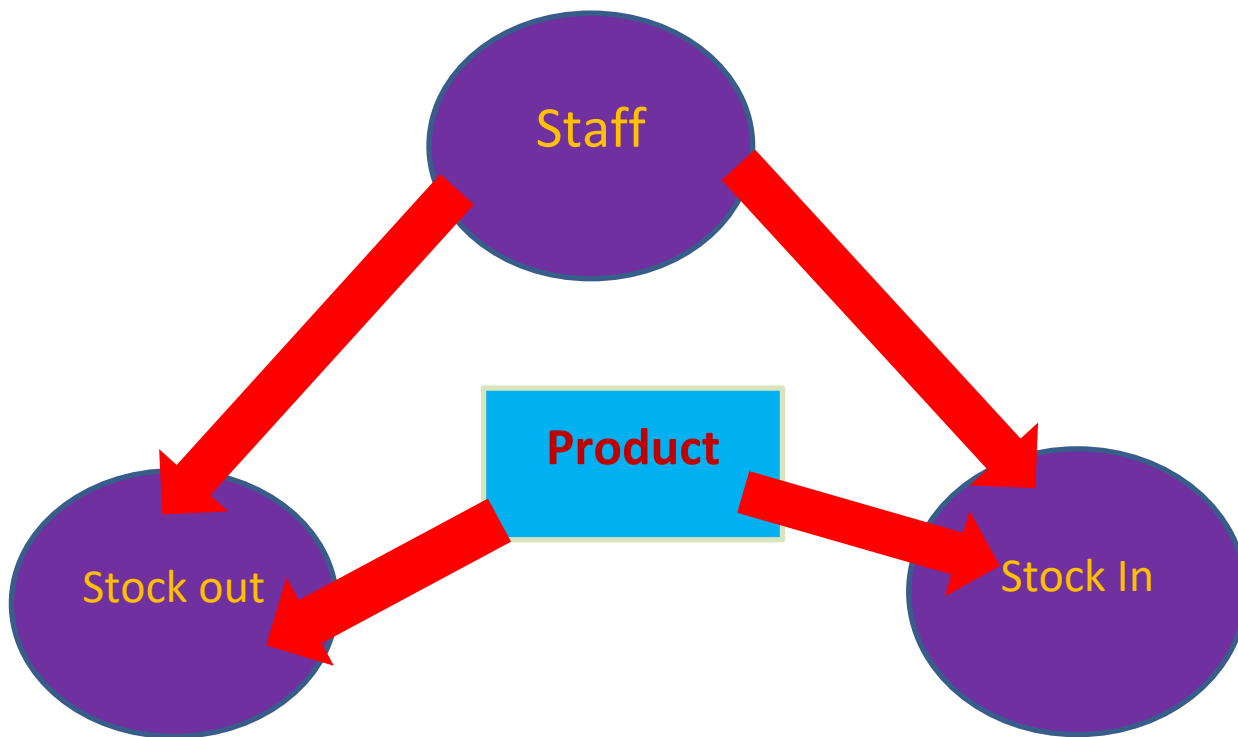
II. Step 2: List of Entities

Product	Product ID	Product name	supplier	date	time	Product photo
Staff	Staff id	name	number	nationality	address	photo
Stock in	Stock in id	date	time	quantity		
Stock out	Stock out id	date	time	quantity		

III. Step 3: Data dictionary

N ^o	codification	Description	Data type	Size	Observation
1	Staffid	Staff's id	number	9	Primary key
	name	The name of the staff	text	152	
	number	Staff's phone number	number	12	
	nationality	Staff's nationality	text	90	
	address	Staff's Address	text	100	
	photo	Staff's photo	attachment		
2	Productid	The id of the product	number	9	Primary key
	name	Product's name	text	150	
	supplier	Supplier's full name	text	130	
	date	The date that the product was added	Date/time	30	
	photo	The photo of the product	attachment		
3	stuckinid	Stock in ID	number	9	Primary key
	date	The date that the stuck was added	Date/time	30	
	time	The time that the stock was added	Date/time	30	
	quantity	The amount of items that was added	number		
4	stockoutid	Stock out ID	number	9	Primary key
	date	Stock out date	Date/time	30	
	time	Stock out time	Date/time	30	
	quantity	Stock out quantity	Number		

IV. Step 4: Dependences:



V. Step 4: Management rules

Rules	Relationship	Cardinalities
1	product → Stock in	1 → n
	Stock in → product	0 → 1
2	product → stock out	1 → n
	Stock out → Product	0 → 1
3	Staff → Stock in	1 → n
	Stock in → Staff	0 → 1
4	Staff → Stock out	1 → n
	Stock out → Staff	0 → 1

VI. Formalisms of DCM:

