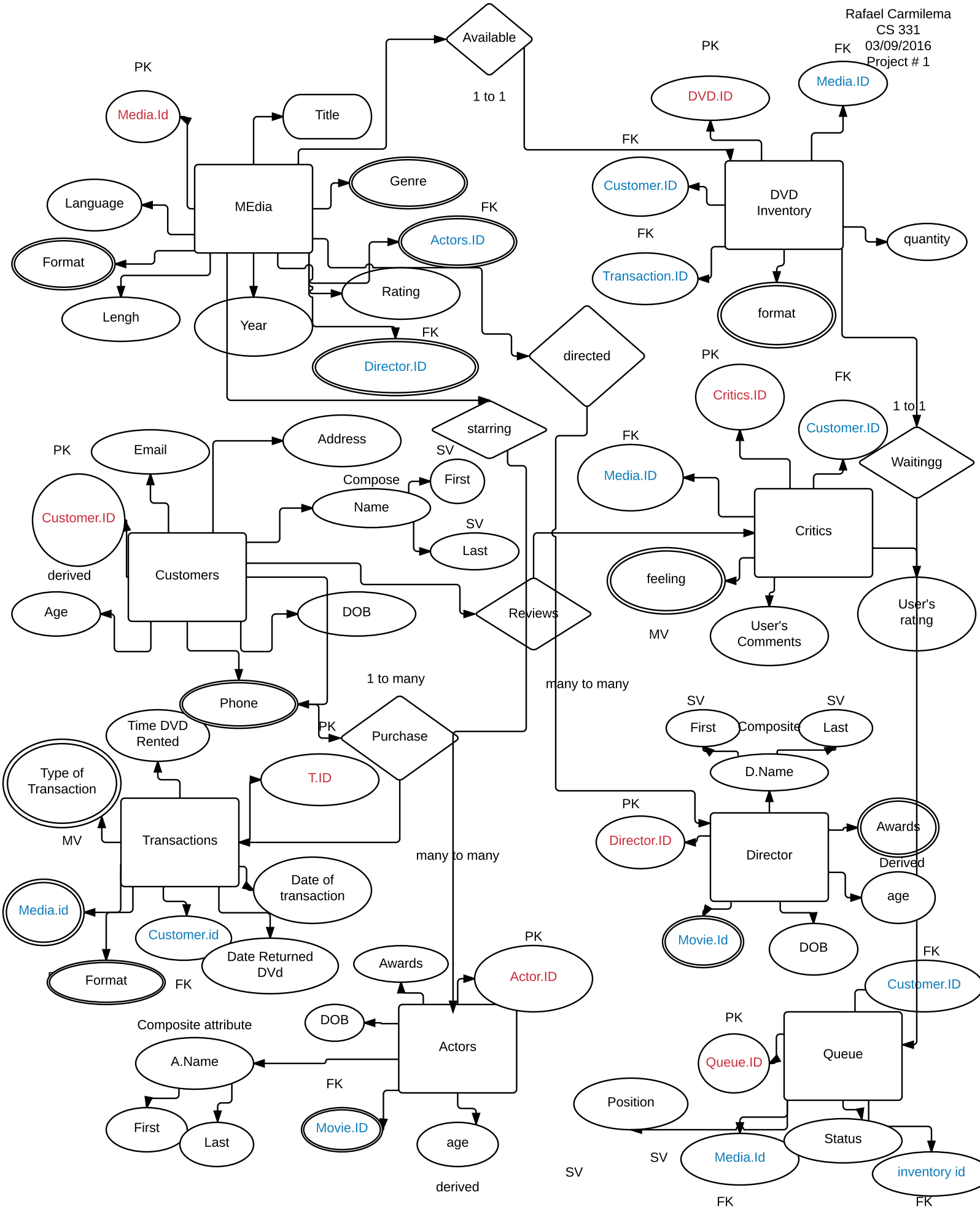
CSC 331

Project # 1

NAME: Rafael Carmilema

ID: 14100609

DATE: March-09-2016


Rafael Carmilema
CS 331
03/09/2016
Project # 1
Available
1 to 1
PK
Media.Id
Title
MEdia
Genre
Language
Format
Lengh
Year
Rating
FK
Actors.ID
Director.ID
directed
starring
PK
DVD.ID
FK
Media.ID
Customer.ID
DVD Inventory
quantity
Transaction.ID
format
PK
Critics.ID
FK
Customer.ID
1 to 1
Waitingg
Critics
Media.ID
feeling
MV
User's Comments
User's rating
PK
Email
Address
SV
First
Compose
Name
Last
Customer.ID
derived
Customers
Age
DOB
Reviews
1 to many
Phone
Time DVD Rented
PK
Purchase
many to many
Type of Transaction
T.ID
MV
Transactions
Media.id
Customer.id
Date of transaction
Date Returned DVd
Format
FK
many to many
SV
First
Composite
Last
SV
D.Name
PK
Director.ID
Director
Awards
Derived
age
Movie.Id
DOB
PK
Actor.ID
Awards
DOB
Actors
Composite attribute
A.Name
First
Last
FK
Movie.ID
age
derived
FK
Customer.ID
PK
Queue.ID
Queue
Position
Status
SV
Media.Id
FK
SV
inventory id
FK

FK FK

Rafael Carmilema
CS 331
03/09/2016
Project # 1

Relations:

Media (Media Id, Title , length , year, language, rating, format , genre, actor.ID , Director.ID)

Degree: 9

Domain: Media.Id(0-9), **Title** (0-9 a-z A-Z), **length** (0-9), **Language** (a-z A-Z), **rating** (G, PG, PG-13, R, NR) .**format** (DVD, Blue-ray, streaming), **genre** (Comedy, Action, love, suspense,TV Shows, rock & pop, tecno, electro, Sci-Fi, Courtroom Drama, adventure), **actor.ID** (0-9), **Director.id** (0-9)

Customers (Customer.Id, CFirst, Clast, Address, DOB, Age)

Degree: 6

Domain: Customer.ID (0-9), CFirst (a-z A-z), CLast (a-z A-Z), Address (0-9 a-z A-Z), DOB(1-12/1-30/(19xx or 20xx), age(todays date- DOB)

Transactions (T.Id, Customer.ID, Media.id, Type of transaction, Date of transaction, time DVD Rented)

Degree: 6

Domain: T.id (0-9) ,Customer.ID (0-9 foreign key), Media.id(0-9 foreign key), Type of transaction (cash, debit credit), Date of Transaction(1-12/1-30/20xx) ,time DVD Rented (days only or null if streaming)

Actors: (Actor.ID, A.First, A.Last, movie.ID, DOB, Age, Awards)

Degree:7

Domain: Actor.ID (0-9), A.first(a-z A-Z), A.last (a-z A-Z), movie.ID (foreign key 0-9), DOB (1-12/1-30/(19xx or 20xx), Age (today's date - DOB), Awards (0-9)

Director: (Director.ID, D.First, D.Last, Movie.ID, DOB, Age, Awards.)

Degree: 7

Domain: Director.ID (0-9), D.First(a-z A-Z), D.Last (a-z A-Z), Movie.ID (foreign key 0-9), DOB (1-12/1-30/(19xx or 20xx), Age (today's date - DOB), Awards (0-9)

DVD Inventory (DVD.ID, media.id, Customer.ID, Transaction.id, format, quantity)

Degree: 6

Domain: DVD.ID (0-9), media.id (foreign key 0-9), Customer.ID (foreign Key 0-9), Transaction.id (foreign key 0-9), format (DVD, Blue ray), quantity(0-9)

Rafael Carmilema
CS 331
03/09/2016
Project # 1

Crtitics: (Critics.ID, Customer.ID, Media.id, feeling, User's Comments, User's Rating)

Cardinality: 6

Domain: Critics.ID (0-9), Media.id (foreign Key), User's Comments(a-z A-Z), User's Rating (1, 2 ,3 ,4 ,5)

Queue: (Queue.ID , Customer.ID, Media.ID, Inventory.ID, Position, Status)

Cardinality: 6

Domain: Queue.ID (0-9), Customer.ID (foreign Key), Media.id (foreign Key 0-9), Inventory.ID (foreign Key 0-9), Position (0-9 (FIFO)), Status (waiting DVD, Available DVD)

Relational Algebra Generate relational algebra to answer the queries below. Use standard notation and relational algebra terminology. You may need to modify you E-R design to answer the questions below. Replace [customer], [genre], [cast], [customer name], [location] or other items in brackets with your own values.

1. Identify all [genre] TV Shows in [format] with [cast] or [cast]. For instance, identify pop & Rock DVD TV Shows with Lady Gaga or Amy Winehouse. Display the show name, rating and feeling.

A <- σ Media.actor.id = Actor.actor.id=Critic.Media.id (Media X Actor X Critic)

B<- σ Actor. First= “Lady” ∧ Actor.Last =”Gaga” ∨ Actor. First= “Amy” ∧ Actor.Last =”Winehouse” (A)

C <- σ genre = “Pop & Rock” ∧ genre = “TV Show” ∧ format= “DVD(B)

D <- π Actor.First Actor.Last Rating feeling (C)

2. Identify all shows saved to [customer name] DVD rental queue. Display the placement in the queue, show name and average user rating

A <-σ Customers.customer.ID=Queue.Customer.id=Critics.CustomerID(Customers X Critics X Queue)

B <- σ C.First =”Rafael” ∧ C.Last = “Carmilema” (A)

C<- π position Title User’s rating (B)

3. Identify all [format] shows borrowed by [customer name] in the last [time] years. Display the show name, borrow date and return date.

A <- σ Customer.Customers.ID = Transactions.CustomerID (Customers X Transactions)

B <- σ A.Media.ID=Media.Media.ID (A x Media)

C <-σ B.Customer.First = “Rafael” ∧ B.Customer.Last = “Carmilema” (B)

D <-σ (B.date of transaction>” 03/09/2014 “∧B.date of transaction<=” 03/09/2016 “) ∧ B.format = “DVD” (C)

E<-π Title date of transaction date of return (D)

Rafael Carmilema
CS 331
03/09/2016
Project # 1

4. Identify highly rated [Action] shows. Display the show name and average user rating

A <- σ Media.Media.Id = Critics.Media.ID (Media X Critics)

B <- σ A.Genre= “Action” ∧ A.User’s Rating>= 4 (A)

C<-π Title User’s Rating (B)

5. Identify the number of DVD’s borrowed by genre. Display two columns: genre and number of rentals. Display one row for each genre.

A <- σ Media.media.id = transactions.media.id (transactions X media)

B <- σ A.Format = “DVD” (A)

C<-π B.Genre COUNT Time DVD Rented(B)

6. Identify popular shows borrowed or streamed near [Flusing] in the last [6 months]. Display the show name and number of times borrowed or streamed. Display one row for each show name

A <- σ Media.Customer.ID = Customer.Customer.Id (Media X Customer)

B <- σ Customer.ID = Transacation.Customer.ID (A X Transaction)

C <-σ Address = “Flushing“ ∧ Date of Transaction >= 09/09/2015) ∧ Date of Transaction <= 03/09/2016 (B

D <-σ Format = “DVD” ∨ Format = “Streaming” (C)

E<-π title (D)

7. Identify the number of shows by Kaley Cuoco. Display two columns: cast name and number of shows they appear. Display one row for each cast name

A <- σ Media.Actor.ID = Actor.Actor.id (Media X Actor)

B <- σ A.First = “Kaley” ∧ A.Last = “Cuoco” (A)

C <-π Actor.First Actor.Last Title (B)

8. Identify shows not streamed or borrowed in the last year. Display two columns: show name and average user rating.

A <- π Media.Media.id (Media) – π(σ Dot >= 03/09/2015 ∧ Dot <= 03/09/2016)

B <- σ Media.Media.ID = A.Media.ID (A X Media)

C <- σ B.Media.ID = Critics.Media.ID (A X Critics)

D <- σ C.Format = “Stream” ∨ C.Format = “DVD” (B)

E <-π title User’s Rating

Rafael Carmilema
CS 331
03/09/2016
Project # 1

9. Identify customers with no activity in the last [6 months] (customers who have not borrowed a DVD or streamed a show). Display two columns: customer name and email address.

A <- π T.ID (Transaction) – π(σ Dot >= 09/09/2015 ∧ Dot <= 03/09/2016)

B <- σ Customer.Customer.ID = A.Customer.ID (Customer X A)

C<-π B.First B.Email (B)

10. Identify shows without user ratings. Display two columns: show name, release date and cast.

A <- π Media.MediaID (Media) – π(σ User's Rating (Critics))

B <- σ A.Media.Id = Actor.Media.ID (A X Actor)

C<-π Title Year , Afirst, ALast