Second Running Example

Script on LearnIT: 03-bills-schema/queries.sql

P := People(PID, pName, pGender, pHeight)
A := Accounts (AID, PID, aDate, aBalance, aOver)
R := AccountRecords(RID, AID, rDate, rType,
rAmount, rBalance)
B := Bills(BID, PID, bDueDate, bAmount, bIsPaid)

Let’s Warm Up with a Simple Query

- Show ID and name of all female (‘F’) customers who have an unpaid bill larger than the balance plus overdraft allowance on one of their accounts.
  - DISTINCT?

P := People(PID, pName, pGender, pHeight)
A := Accounts (AID, PID, aDate, aBalance, aOver)
R := AccountRecords(RID, AID, rDate, rType,
 rAmount, rBalance)
B := Bills(BID, PID, bDueDate, bAmount, bIsPaid)

And Another One...

- Show ID and name of all male (‘M’) customers who have an unpaid bill that is larger than their total balance (not including overdraft allowance), along with the ID of the bill.
  - DISTINCT?

P := People(PID, pName, pGender, pHeight)
A := Accounts (AID, PID, aDate, aBalance, aOver)
R := AccountRecords(RID, AID, rDate, rType,
rAmount, rBalance)
B := Bills(BID, PID, bDueDate, bAmount, bIsPaid)

Set Operators Revisited

- Set operators are not always implemented
- Can be rewritten using nested queries
- For example:
  - UNION → OR ... IN ...
  - INTERSECT → AND ... IN ...
  - DIFFERENCE → AND ... NOT IN ...
- Can also use EXISTS, ...

P := People(PID, pName, pGender, pHeight)
A := Accounts (AID, PID, aDate, aBalance, aOver)
R := AccountRecords(RID, AID, rDate, rType,
rAmount, rBalance)
B := Bills(BID, PID, bDueDate, bAmount, bIsPaid)

UNION

- Show ID and name of people that are taller than 1.75 *or* have an account with a negative balance

P := People(PID, pName, pGender, pHeight)
A := Accounts (AID, PID, aDate, aBalance, aOver)
R := AccountRecords(RID, AID, rDate, rType,
rAmount, rBalance)
B := Bills(BID, PID, bDueDate, bAmount, bIsPaid)

UNION

- Show all people that are taller than 1.75 or have an account with a negative balance
  - Using ... OR ... IN ...
  - Why is this ordered?

P := People(PID, pName, pGender, pHeight)
A := Accounts (AID, PID, aDate, aBalance, aOver)
R := AccountRecords(RID, AID, rDate, rType,
rAmount, rBalance)
B := Bills(BID, PID, bDueDate, bAmount, bIsPaid)

INTERSECT

- Show ID and name of people who are female and hold an account record with amount > 10000

P := People(PID, pName, pGender, pHeight)
A := Accounts (AID, PID, aDate, aBalance, aOver)
R := AccountRecords(RID, AID, rDate, rType, rAmount, rBalance)
B := Bills(BID, PID, bDueDate, bAmount, bIsPaid)

INTERSECT

- Show ID and name of people who are female and hold an account record with amount > 10000
  - Using ... AND ... IN ...

P := People(PID, pName, pGender, pHeight)
A := Accounts (AID, PID, aDate, aBalance, aOver)
R := AccountRecords(RID, AID, rDate, rType, rAmount, rBalance)
B := Bills(BID, PID, bDueDate, bAmount, bIsPaid)

EXCEPT

- Show ID and name of people with a name starting with B but who have no unpaid bills

P := People(PID, pName, pGender, pHeight)
A := Accounts (AID, PID, aDate, aBalance, aOver)
R := AccountRecords(RID, AID, rDate, rType,
rAmount, rBalance)
B := Bills(BID, PID, bDueDate, bAmount, bIsPaid)

EXCEPT

- Show ID and name of people with a name starting with B but who have no unpaid bills
  - Using ... AND ... NOT IN ...

P := People(PID, pName, pGender, pHeight)
A := Accounts (AID, PID, aDate, aBalance, aOver)
R := AccountRecords(RID, AID, rDate, rType,
rAmount, rBalance)
B := Bills(BID, PID, bDueDate, bAmount, bIsPaid)

Third Running Example

Script on LearnIT: 03-actors-schema/queries.sql

A := Actors(AID, aName, aGender)
P := Plays(PID, pName, pAuthor)
D := Movies(MID, PID, mYear)
R := Roles(RID, MID, AID, rName, rSalary)

(Additional Conditions in) Division with Counting

- ID and name of actors who have performed in movies based on all plays
- Then add:
  - Of female actors …
  - Plays by Shakespeare
  - Movie produced in 2009

A :=	Actors(AID, aName, aGender)
P :=	Plays(PID, pName, pAuthor)
D :=	Movies(MID, PID, mYear)
R :=	Roles(RID, MID, AID, rName, rSalary)

(Additional Conditions in) Division with TRC

- ID and name of actors who have performed in movies based on all plays
- Then add:
  - Of female actors …
  - Plays by Shakespeare
  - Movie produced in 2009

A :=	Actors(AID, aName, aGender)
P :=	Plays(PID, pName, pAuthor)
D :=	Movies(MID, PID, mYear)
R :=	Roles(RID, MID, AID, rName, rSalary)

Care with Duplicates

- ID and name of all actors who have had a role in two movies
  - Only the name, but with correct duplicates!

A :=	Actors(AID, aName, aGender)
P :=	Plays(PID, pName, pAuthor)
D :=	Movies(MID, PID, mYear)
R :=	Roles(RID, MID, AID, rName, rSalary)

Double Grouping

- ID and name of actors who have had two roles in a movie at least twice

A := Actors(AID, aName, aGender)
P := Plays(PID, pName, pAuthor)
D := Movies(MID, PID, mYear)
R := Roles(RID, MID, AID, rName, rSalary)