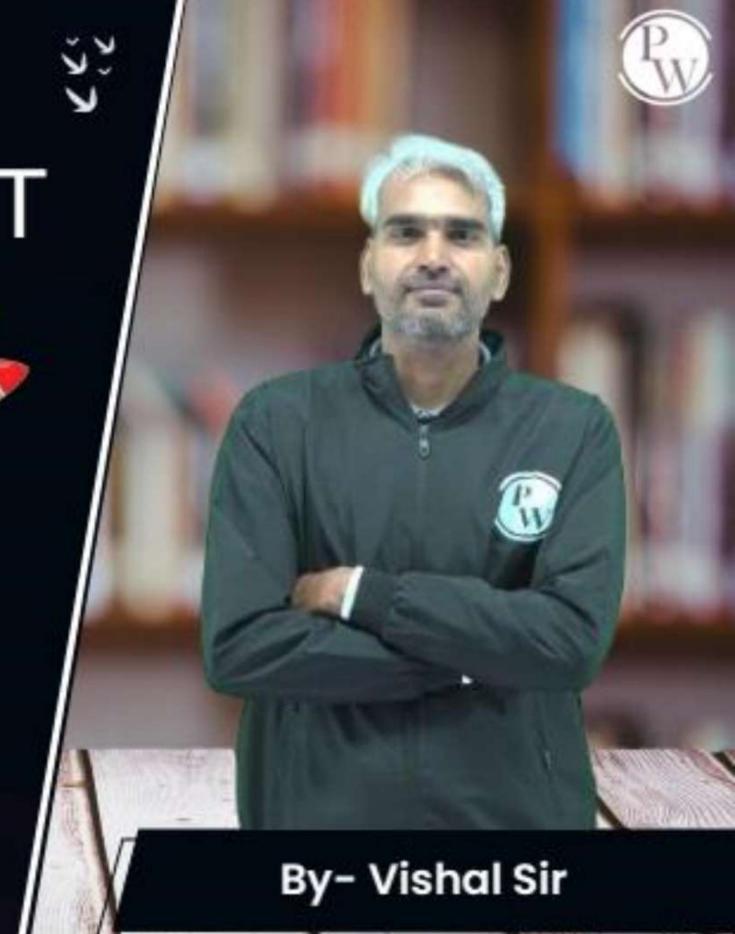
Computer Science & IT

Database Management
System

Query Languages

Lecture No. 12

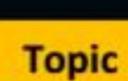








Recap of Previous Lecture



Relational calculus



Tuple relational calculus (TRC)

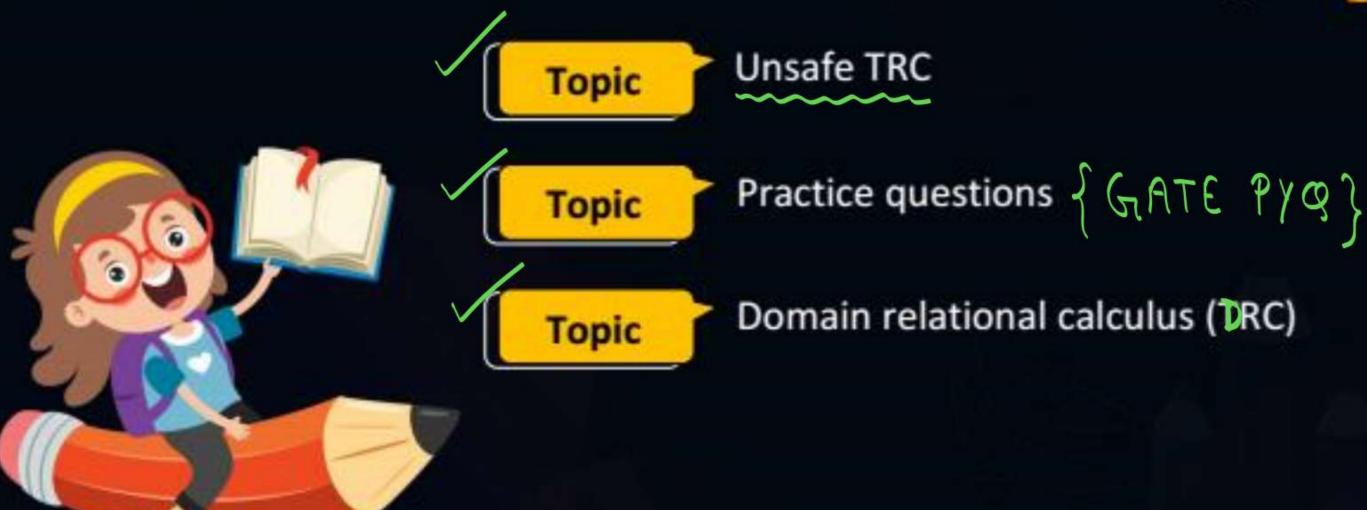


Topics to be Covered











Topic: Unsafe TRC query



```
{ t | t \notin Relation}
or | \{ t | \neg(t \in Relation)}
```

We are trying to select the tuples Which does not belong to the relation + Unsafe TRC query may produce infinite number cel tuples.

We can not write an equivalent Relational Algebra query Corresponding to on Unsafe TRC query.

+ For every safe TRC query
We can write an Equivalent
R.A. query

Power af TRC # Power of Relational Algebra

{ Safe + Unsafe}

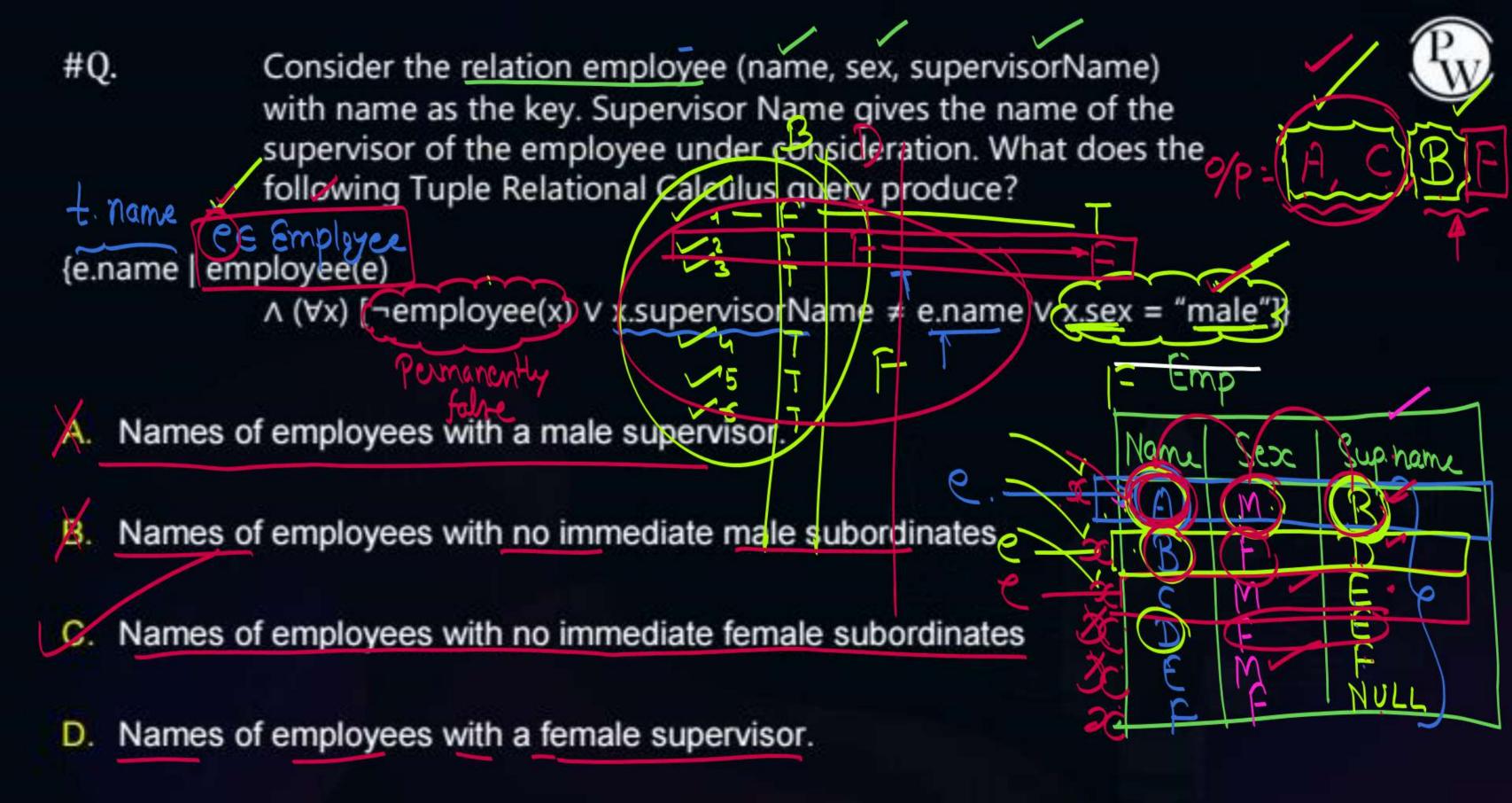
Power of Safe TRC = Power of Relational Algebra







- A. $\{t|\exists u \in R1 \ (t[A] = u[A]) \land \neg \exists s \in R2 \ (t[A] = s[A]\}$
- B. $\{t|\forall u \in R1 (u[A] = "x" \Rightarrow \exists s \in R2 (t[A] = s[A] \land s[A] = u[A]))\}$
- €. {t|¬(t ∈ R1)}
- D. $\{t|\exists u \in R1 (t[A] = u[A]) \land \exists s \in R2 (t[A] = s[A])\}$



 $\frac{1}{2} \left\{ \frac{1}{2} \left(\frac{1}{2} \right) \right\} = \frac{1}{2} \left\{ \frac{1}{2} \left(\frac{1}{2} \right) \right\}$ Consider the relation employee (name, sex, supervisorName)



1 .

with name as the key. Supervisor Name gives the name of the supervisor of the employee under consideration. What does the following Tuple Relational Calculus query produce?

{e.name | employee(e)

 $\Lambda (\forall x) [\neg employee(x) \lor x.supervisorName \neq e.name \lor x.sex = "male"]}$

~ 7x f~ [~employe(x) V x. Superisor Nam + e. name V x. Sex='male']} - Emp

A. Names of employees with a male supervisor.

B. Names of employees with no immediate male subordinates

- Names of employees with no immediate female subordinates
- Names of employees with a female supervisor.

#Q. Which of the following tuple relational calculus expression(s) is/are equivalent to $\forall t \in r(P(t))$?



2. III only

D. III and IV only

```
#Q.
           Consider The Following Relational Scheme
           Student (school-id, sch-roll-no, sname, saddress)
           School (school-id, sch-name, sch-address, sch-phone)
           Enrolment (school-id, sch-roll-no, erollno, examname)
           ExamResult (Erollno, examname, marks)
           Consider the following tuple relational calculus query
  | ∃E ∈ Enrolment t = E.school-id /
  x \mid x \in Enrolment \land x.school-id = t \land (\exists B \in ExamResult B.erollno = x.erollno \land
B.examname = x.examname \land B.marks > 35
  x \mid x \in Enrolment \land x.school-id = t \} * 100 > 35
           If a student needs to score more than 35 marks to
           pass an exam what does the query return?
                                             son the basis of the 0/p
```

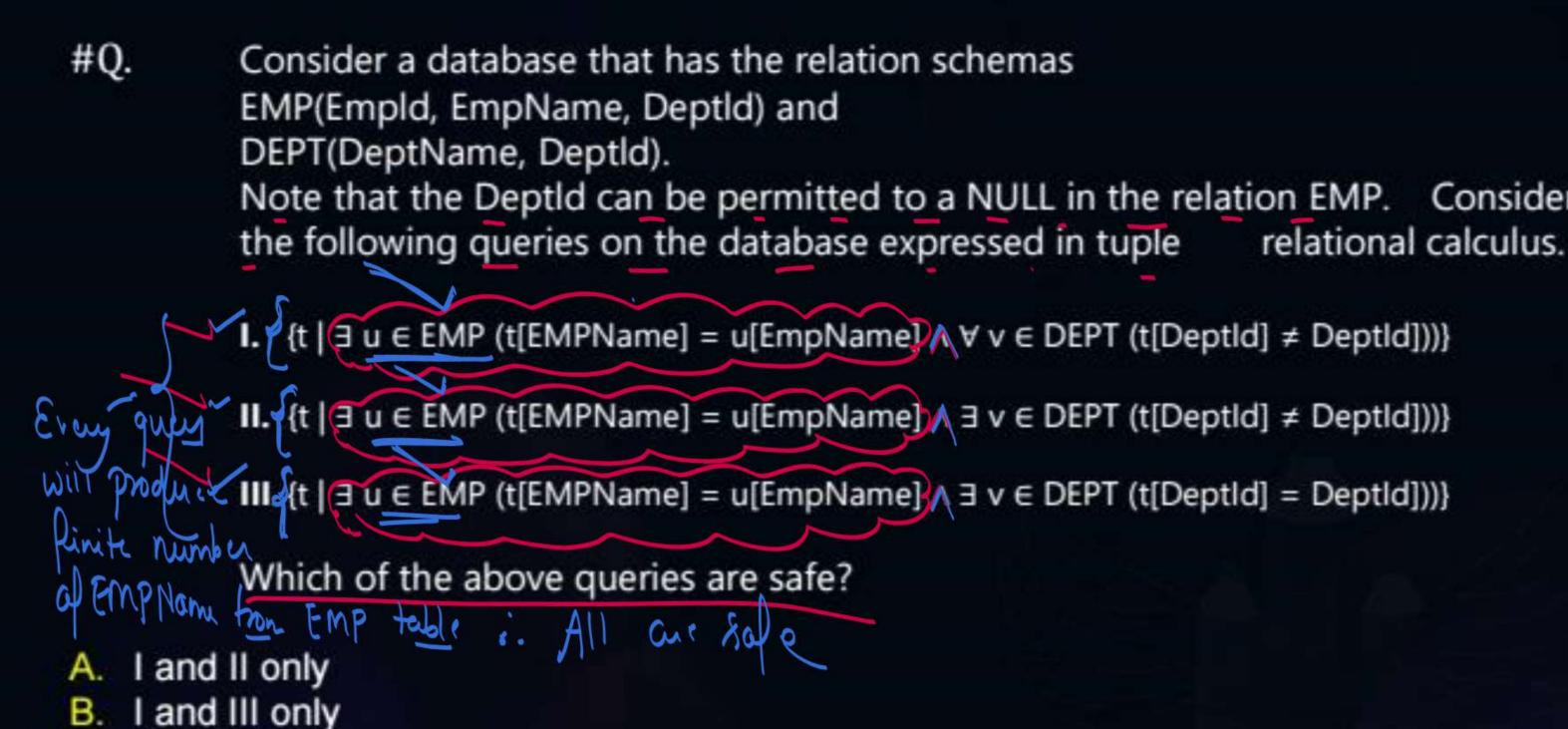


A. The empty set

B. schools with more than 35% of its students enrolled in some exam or the other

c. schools with a pass percentage above 35% over all exams taken together

D. schools with a pass percentage above 35% over each exam-



C. II and III only

II and III



2 mins Summary



Topic Unsafe TRC

Topic Practice questions

Topic Domain relational calculus (TRC)



THANK - YOU