Assignment Project Exam Help

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Agenda

- Structured Query Language
  - Multi-table queries
- Reminders
  - Buy iClick

SQL Example

PC

PCModel
- - - - - -
Speed

RAM

HD

CD

Price

Laptop

LaptopModel
- - - - - -
Speed

RAM

HD

Screen

Price

Product

Type

Primary Key
and
Foreign Key

Printer

PrinterModel
- - - - - -
Color

Type

Price

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Joins - Queries From Multiple Tables

- Some queries require combining information from two or more tables.
- Example: I want the Model #, Manufacturer and   Speed of all PCs. 'maker is in the 'product' table, but 'speed' is in the 'pc' table.
- Example:
  SELECT product.model,
          product.maker, pc
  FROM   product, pc
  WHERE   product.model=pc.pcmodel;

Cartesian Product

- This helps to understand what a query from two tables does. Assignment Project Exam Help

- Set theory con duct of 2 sets: R and S is a set o https://eduassistpro.github.io/ sing the an element from R and another Add WeChat edu_assist_pro

- Example: R={a,b,c}, S={b,e}
  - R X S ={ a.b, a.e, b.b, b.e, c.b, c.e }

Cartesian Product Example

UCI_Students

SSN	L Name	F Name
000-00-0001	Doe	John
000-00-0002	Doe	Jason
000-00-0003	Smit	

Football_Players

SSN	Team
000-00-0001	Chargers
11-11-1112	AntEaters
03	49ers

- SELECT * FROM UCI_Students, Foot
- SELECT UCI_Students.SSN, Football_players.SSN
  FROM UCI_Students, Football_Players;
- How can we get names of UCI students who also play football?

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PRODUCT(maker, **model**, type)
PC(**PCmodel**, speed,ram, hd, cd, price)
LAPTOP(**Laptopmodel**,speed,ram,hd,screen,price)
PRINTER(**Printermodel**,color,type,price)

- List the model #, price of laptops made by maker 'Dell'.

- List the model, type and price of from maker 'HP'

- List model, speed and price for PCs and Laptops that have the same price. (Do not JOIN on *model*)

Online help for learning SQL

- Online Practice :
  - http://www.w3schools.com/sql/trysql.asp?filename=trysql_select_all
- Orders(OrderID, CustomerID, EmployeeID, OrderDate, ShipperID)
- Employees(Empl... ...ame, BirthDate, Photo, Notes)
- Customers(CustomerID, Custom... ...ntactName, Address, City, PostalCode, Country)
- List orderID, CustomerID and Employee first and last name where an employee placed an order for a customer.
- For above query also list customer name.

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Sample Databases in MS Access

- For those of you who have Microsoft Access:
  - Posted 2 databases to Canvas:
  - Access dat   r store database
    example co
    product2.mdb (Links to an   )
  - Access database built by a   taining (Book,
    Publisher) example and (Faculty, Course, Registration
    Student) example covered in class:
    Book Publisher and Faculty Course Registration Studen
    t DB.accdb

  -

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Practice

Book(<u>ISBN</u>, Title, PublisherID, Author, Cost, price)
Publisher(<u>PublisherID</u>, Name, Location)

1. List all books by the publisher with name "Wiley and Sons"
2. List all book titles a
3. List the ISBN and t ~~e of the book~~ e of the book is the same as the location of the publisher.

Grouping

- SELECT attribute list 1 FROM tables WHERE Assignment Project Exam Help

  GROUP BY https://eduassistpro.github.io/

  ➢ SELECT av

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  From Product, PC

  Where ram>256 and product.model=pc.pcmodel

  Group By maker;

Group By .. Having

- SELECT attribute list1 FROM tables

  WHERE condition1

  GROUP BY attribute list2

  HAVING c

- SELECT ty finter

  GROUP BY type

  HAVING min(price)>200;

- Condition2 applies to the group while condition1 applies to individual records.

Practice 2: Posted to Canvas

Student(<u>StudentID</u>, LastName, FirstName, Phone, Street, City, Zip)

Registration(**Studen** _____ **Term**, Reg_date, Score)

Course(<u>Number, Te</u> ___ om_Number, Bldg_Name, **FacultyID**)

Faculty(<u>FacultyID</u>, Last_Name, Firs ne, Office_Room, Office_Bldg)

Foreign Keys in **Bold**

SQL Practice Set 2

- What was the average score for each course?
- What was the average score for each course with at least 50 st   nts with a score greate
- List the names of all stude   being taught by Prof. Jack Smith.

Print the average price of PCs of each manufacturer that have more than 512 GB of RAM

A: SELECT AVG(price), FROM product, pc WHERE pc.ram>512;

B: SELECT AVG(price), FROM product, pc WHERE pc.ram>512 G

C: SELECT product.maker, A   FROM product, pc WHERE product.model=pc.p   ND pc.ram>512 GROUP BY product.maker;

D: None of the above

E: All of the above

SQL Practice Set 3

- Frequent_flier(Name, <u>ffID</u>, City, Street, zip, miles)

- Reservation(<u>ResI</u>_____, class, price, seatID)

- Flight(<u>FlightID</u>, Origin, Dest, _____ArrTime, equipID)

- Equipment(<u>EquipID</u>, Desc, numFClass, numEClass)

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Online help for learning SQL

- Online Practice :
  - http://www.w3schools.com/sql/trysql.asp?filename=trysql_select_all

- In OrderDet   ductID, what is the average

- OrderDetails(OrderDetail   D, ProductID, Quantity)

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Probability of an Event
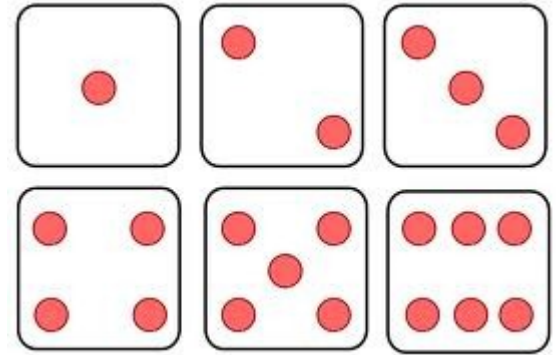
- Denotes the likelihood of an event
    - Probability = 1 if the event is sure to happen
    - Probability = 0 if the event is sure not to happen

- Probability of ~~Assignment Project Exam Help~~ fair coin is tossed
    - P(H) = ½

- Probability of getting an even ~~Add WeChat edu_assist_pro~~ n rolling a die
    - P(E) = ½

- Probability of getting a number less than 3 (1 or 2) when rolling a die
    - P(L) = 1/3

Interpretation of Probability

- **Frequentist**
  - The relative frequency is the probability

- You toss a c 0

- You get 509

- Pr(H) = $N(H)/N = 509/10$

Combining Events

- Complement of the event A
  - Happens whenever A does not happen

- Union of ev
  - Happens w   oth events happen

- Intersection of A and B
  - Happens whenever both A and B happen

- Conditional Probability of A Given B
  - The updated probability of A, possibly changed to reflect the fact that B has happened

Complement of an Event

- The event "not A" (A^C— read A complement) happens whenever A does not

- $P(A^C) = 1 - $

N

A A^C
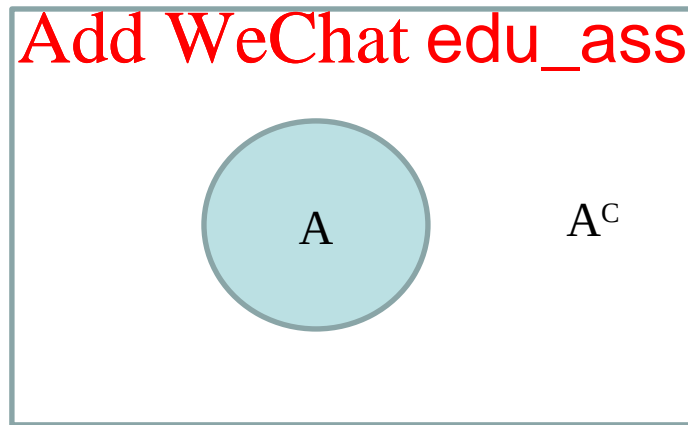
Union and Intersection of Events

- Union happens whenever at least one happens
  - A∪B happens if A happens, B happens, or both happen
- Intersection happens whenever both happen
  - A∩B happen
- P(A∪B) = P(A) +
- P(A∩B) = P(A) + P(B) − P(A∪B)
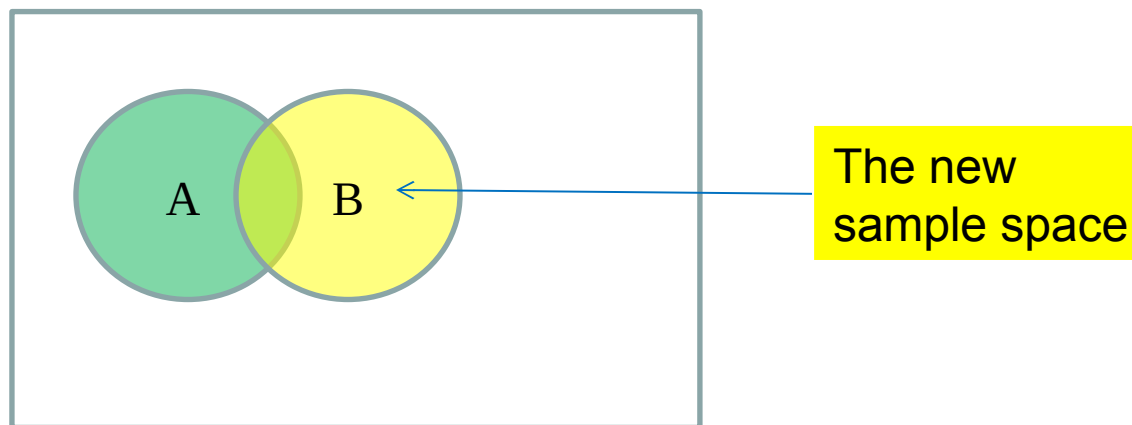
A∪B
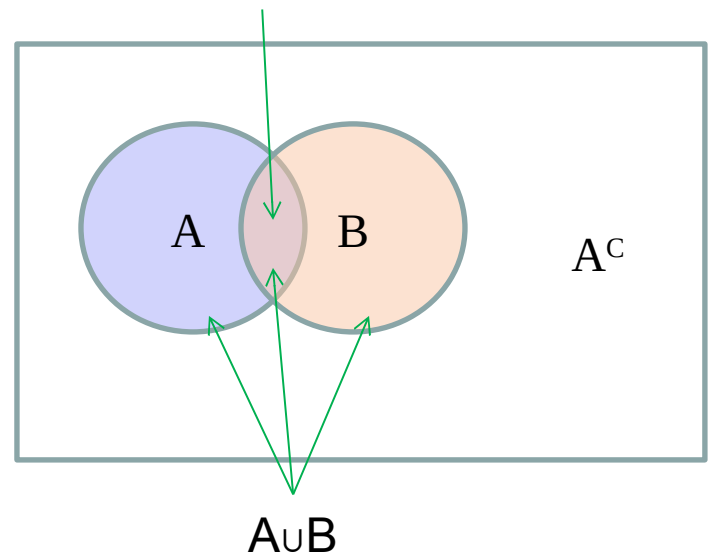
Conditional Probability

- P(A|B)
  - Probability of event A given that event B has happened
  - In short, probability of A given B

- If B has alre   le space
reduces to o   lated with B

- P(A|B) = N(A∩B)/N(B)   (B)

The new
sample space

Independent Event

- Two events A and B are independent if one event has no influence on the other

  - $P(A|B) = P$
  - This is also

    - $P(A \cap B) = P(A) \times P(B)$
    - $P(B|A) = P(B)$

- If two events are not independent, then they are dependent

Example

Consider a box with 10 balls

If a ball is picked randomly

- Pr[Large] = 6/10 = 0.6

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- Pr[Blue] = 5/10 = 0.5

- Pr[Large & Red] https://eduassistpro.github.io/

- Pr[Large OR Red

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    = Pr[Large] + Pr[Red] – Pr[Large &

    = 0.6 + 0.5 – 0.4 = 0.7

- Pr[Large OR Red]

    = 1 – Pr[Small & Blue] = 1 – 0.3 = 0.7

- Pr[Large|Red]

    = N[Large & Red]/N[Red] = 4/5 = 0.8

Bayes' Rule

$$P(A \mid B) = \frac{P(A \cap B)}{P(B)} = \frac{P(B \mid A) \times P(A)}{P(B)}$$

- P(Cancer|Smoker)=   ?
  - C=Cancer,
  - 20% of canhttps://eduassistpro.gith)moker

    - P(Smoker|Cancer) = P(S|C)
  - Only 2% of the overall pop   cancer
    - P(Cancer) = P(C) = 0.02
  - 10% of the overall population smoke
    - P(Smoker) = P(S) = 0.1
- – P(Cancer|Smoker] = 0.2×0.02/0.1 = **0.04**

Loan Application Data

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Loan Application Data

- N[Income=high] = ___
- N[CreditRating=poor] = ___
- N[Income= ___ = ___
- P[Income=h
- P[CreditRating=poor] = _
- P[Income=high, Liability=normal] = ___
- P[Liability=normal | Income=high] = ___

Contingency Table
(Expressing relationship between two attributes)

		Liability		
		normal	high	**Total**
CreditRating	excellent	3	1	**4**
	good	4	2	**6**
	poor	0	4	**4**
	Total	7	7	**14**

- N[CreditRatin
- N[Liability=n
- N[CreditRating=good, Liabilit

- P[CreditRating=excellent] = ___
- P[Liability=normal] = ___
- P[CreditRating=good, Liability=normal] = ___
- P[CreditRating=good | Liability=normal] = ___

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P[CreditRating=excellent | Liability=high] =

A: 1/4

B: 1/7

C: 1/2

D: 1/6

E: 1/3

RFM, Pivot Tables and London Jets Data

- http://www.dbmarketing.com/articles/Art149.htm

- London Jets Data in Excel format posted on Canvas for RFM analysis and Pivot tables.

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  - Do RFM anal

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  - Think about strategies that Lo   uld use to revive their fortunes

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- Go to http://office.microsoft.com/en-us/

  - Search for "Pivot Table" and read up on creating and using them

Next Session

- Information Theory
- Working with datasets

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