Advanced Searches

Using Boolean Operators

Understanding Boolean Logic

The Internet is a vast computer database.

As such, its contents must be searched according to the rules of computer database searching.

Understanding Boolean Logic

Boolean Logic was developed by 19th century mathematician George Boole.

Boolean logic refers to the logical relationship among search terms.

Understanding Boolean Logic

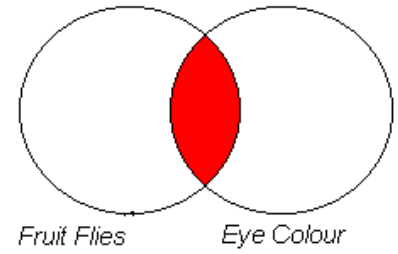
Boolean logic consists of three logical operators:

* OR
* AND
* NOT

Understanding Boolean Logic

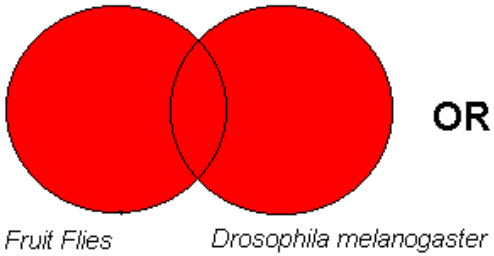
Each operator can be visually described by using Venn diagrams, as shown on the next slide.

Using Boolean Operators



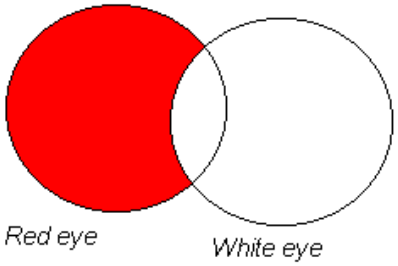
AND

Articles will contain both fruit flies and eye colour



OR

Articles will contain either fruit flies or Drosophila melanogaster



NOT

Articles will contain red eye but not white eye

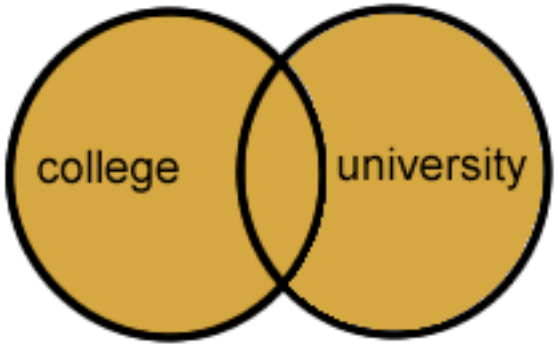
LET’S LOOK AT THEM ONE AT A TIME.

USING BOOLEAN OPERATORS

- "OR" LOGIC

Question: I would like information about college.

In this search, we will retrieve records in which AT LEAST ONE of the search terms is present. We are searching on the terms "college" and also "university" since documents containing either of these words might be relevant.



SEARCH USING BOOLEAN OPERATOR "OR"

Results are illustrated by the shaded areas.

The shaded circle with the word "college" represents all the records that contain the word "college."

The shaded circle with the word "university" represents all the records that contain the word "university."

The shaded overlap area represents all the records that contain both "college" and "university."

RESULTS USING "OR" WILL BE GREATER BECAUSE WE ARE WIDENING OUR SEARCH:

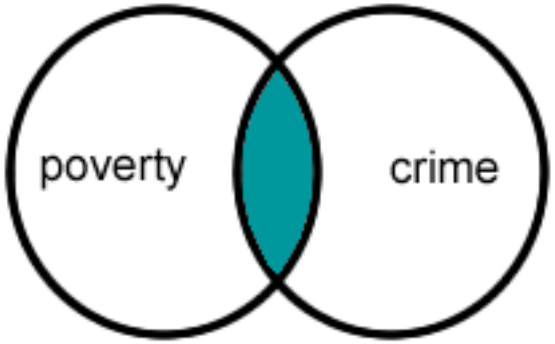
COLLEGE	396, 482
UNIVERSITY	590,791
COLLEGE OR UNIVERSITY	819, 214

USING BOOLEAN OPERATORS

"AND" LOGIC

Question: I'm interested in the relationship between poverty and crime.

In this search, we retrieve records in which BOTH of the search terms are present.



SEARCH USING BOOLEAN OPERATOR "AND"

RESULTS are illustrated by the shaded area overlapping the two circles representing all the records that contain both the word "poverty" and the word "crime."

Notice how we do not retrieve any records with only "poverty" or only "crime."

RESULTS USING "AND" WILL BE FEWER BECAUSE WE ARE NARROWING SEARCH:

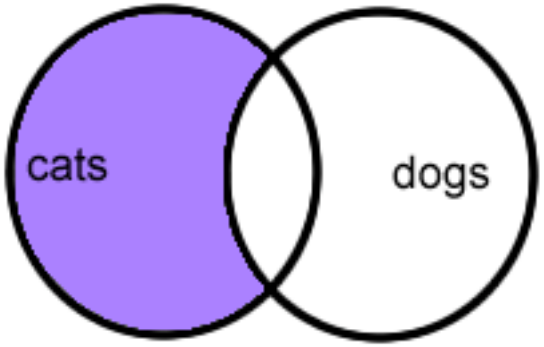
POVERTY	76,342
CRIME	348, 252
POVERTY AND CRIME	12,998

USING BOOLEAN OPERATORS

"NOT" LOGIC

Question: I want information about cats, but I don't want to see anything about dogs.

In this search, we retrieve records in which ONLY ONE of the terms is present, the one we have selected by our search.



SEARCH USING BOOLEAN OPERATOR "NOT"

Results are illustrated by the shaded area with the word cats representing all the records containing the word "cats"

No records are retrieved in the area overlapping the two circles where the word "dogs" appears, even if the word "cats" appears there too.

RESULTS USING "NOT" WILL BE FEWER BECAUSE WE ARE NARROWING SEARCH:

CATS	86,747
DOGS	130,424
CATS NOT DOGS	65,223

USING BOOLEAN OPERATORS

Combined AND and OR logic

Question: I want information about the behavior of cats.

You can combine both AND and OR logic in a single search, as shown on the next slide.

Search: behavior AND (cats OR felines)

The use of parentheses in this search is known as nesting (or “forcing the order of processing”).

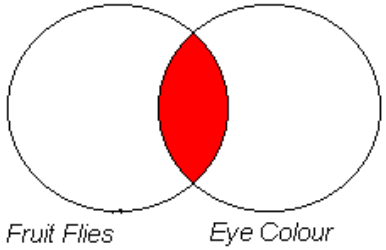
behavior AND (cats OR felines)

In this example, we surround the OR words with parentheses so that the search engine will process the two related terms as a unit.

The search engine will use AND logic to combine this result with the second concept.

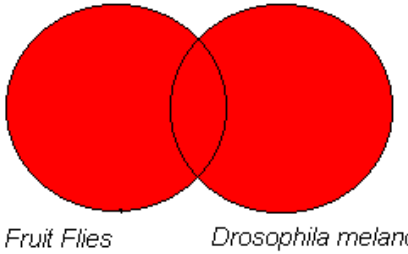
Using this method, we are assured that the semantically-related OR terms are kept together as a logical unit.

TO REVIEW



AND

Articles will contain both fruit flies and eye colour



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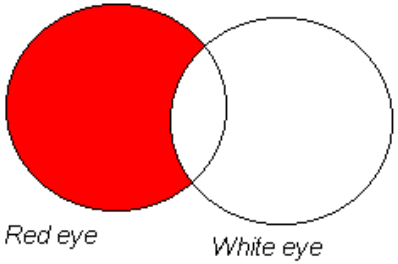

NOT

Articles will contain red eye but not white eye

ACKNOWLEDGMENTS

The information in this presentation is a condensed version of an Internet tutorial prepared by Laura B. Cohen (Internet Tutorials: Your Basic Guide to the Internet).

For more detailed information on Boolean Logic visit Internet Tutorials
http://www.internettutorials.net/boolean.asp#boolean

END SHOW

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