

Harris Library Boolean Logic Tutorial

Search techniques for Research Databases and Web Search Tools

This tutorial offers examples and explanations of Boolean Logic (AND, OR, NOT), Proximity Searching (ADJ, NEAR, WITH) and additional search techniques to help you get the most out of your online searching time.

Some of these techniques discussed here will not work in all situations. Each database and web search tool is different. Remember to read the help files of the product you are using or ask a librarian if you have questions. Information on the differences among search engines can be found in chart form at [Infopeople.org](http://www.infopeople.org) (<http://www.infopeople.org/search/chart.html>).

Boolean Logic

Boolean Logic is derived from a system of logic designed to produce better search results by formulating more precise queries. We use the Boolean logic operators: AND, OR, and NOT, to link words and phrases for more precise queries.

The AND operator

Using **AND** between multiple search terms means that results must contain both terms in the document found for the search engine or database to retrieve it. **AND** is considered a limiter because it limits the number of responses by requiring that both terms are present in the document retrieved.

Search Examples:

adolescent AND behavior

Retrieves:

Adolescent behavior problems

Assessment of adolescent and child behavior

Will Not Retrieve:

Understanding behaviour in adolescents

Risky sexual behavior in teens

residential AND treatment

Treatment in residential care facilities

substance abuse treatment

The OR operator

Using **OR** between multiple terms means that any term can be present in the document. OR expands the number of search results by returning documents in which either or both keywords are present. Think of it as “either-or.”

Search Example:

elder OR geriatric

Retrieves:

elder care programs
geriatric nursing association
American association for geriatric education
James Elder- attorney
Interpreting dreams of geriatric populations

assessment OR measure

Assessment of diseases
Measure of childhood satisfaction
Dept of transportation assessment

Helpful Hints: Use the OR operator for keywords that are similar or synonyms.

OR is the default operator for many search engines, such as *Alta Vista* and *Excite*. This is part of the reason why you retrieve numerous false hits when searching on the web.

The NOT operator

Using **NOT** between keyword search terms limits your search results to records that have the first keyword but not the second keyword, even if the first word appears in that document, too. NOT limits the number of responses you retrieve and helps eliminate a lot of false or bad results from web search tool results.

Search Example:

violence NOT domestic

Retrieves:

Family violence

Violence on TV

International violence to women

Will Not Retrieve:

Effects of domestic violence on families
Portrayal of violence in domestic situations on television
Domestic disturbances in England

Proximity Searching

The ADJ operator

Using **ADJ** finds records that contain both search words adjacent to each other, in the *exact* order they were entered in the search box.

Search Example:

welfare ADJ reform

Retrieves:

welfare reform in America
The state of welfare reform

Will Not Retrieve:

The reform of welfare in Canada

Helpful Hint: Adjacency is the default search operator for the *OhioLINK Dataware* databases (i.e. *PsychINFO*, *Contemporary Women's Issues*, and *Sociological Abstracts*). ADJ is the same as the menu choice "SEARCH FOR THIS EXACT PHRASE"

Sometimes it is useful to allow a given amount of space between search terms for prepositions or articles. **ADJx** finds records that contain both words, in the same sentence, in the order given, where "x" specifies the maximum number of words allowed between the two search terms. The following example is looking for the keywords "right" and "work" adjacent to each other with the maximum of two words between the keywords.

Search Example:

Right ADJ2 work

Retrieves:

Right to work
Right of work

The NEAR operator

NEAR finds records that contain both keywords right next to each other, in the same sentence, in either order.

Search Example:

smith NEAR sally

Retrieves:

Sally Smith
Smith, Sally

Will Not Retrieve:

adult NEAR depression

influences on the risk of adult depression

Major depression in elderly adults.

employment NEAR education

education, employment safety, and other concerns for working adults

employment opportunities and adult education

Helpful Hint: Not all web search tools accept proximity operators, but a few accept NEAR in their advanced search option. Using NEAR, when possible, in place of the Boolean AND usually returns more relevant results.

NEARx can also be used with a number to indicate how many words away the first term can be from the second term in any order. This is similar to NEAR, except you are permitting some number of intervening words between search terms.

The WITH Operator

WITH helps locate records that contain both words in the same sentence. This is another tool to limit search results.

Search Example:
Age WITH Discrimination

Retrieves:
Age discrimination in America
Discrimination Act against age

Will not retrieve:
The age of enlightenment in colleges. Professors file a class action discrimination suit.

Additional Search Techniques

Combining Search Operators

You can combine different Boolean operators to create more focused results.

Search Examples:

(domestic AND abuse) NOT child*

ohio AND (college* OR universit*)

Retrieves:

Domestic violence and abuse in American society

Ohio college grades

Colleges and universities in Ohio

Will Not Retrieve:

Dangers of child abuse in a domestic abuse situation

College and university libraries

Truncation and Word Stemming

Word Stemming expands your search, but in a focused, useful way. Use an asterisk (*) or a dollar sign (\$) at the end or in the middle of a full or partial word to retrieve all variants of that word in a document.

Search Examples:

woman*
wom*
wom*n
wom* NOT womb*

Retrieves:

woman, womanhood, woman's, womanizers
woman, women, womb, wombats
woman, women
woman, women's, womanizers

Helpful Hint: It is important to check the help file on the databases to see which character is used for truncation. Generally it is the asterisk (*). However, in the *OhioLINK Dataware* databases it is the dollar sign (\$). One or two databases have even been known to use the question mark (?) for truncation and word stemming.

Nesting

Nesting terms will allow you to search for specific word variations with one search. Nesting expands the number of responses you will retrieve, but focuses the records retrieved at the same time. The second example can be done with either quotation marks or parentheses. You can, but probably should not, mix quotation marks with parentheses.

Search Examples:

adolescent AND (behavior OR behaviour)

(japanese OR chinese) AND families

(ohio AND "abuse hotline") AND
((cuyahoga OR summit) AND county)

Retrieves:

Adolescent behaviour in Great Britain
Behavior problems in adolescent sub-cultures

The role of families in Chinese culture
Immigration to the USA: how Japanese families
adapt

Cuyahoga County, Ohio-abuse hotline
Summit County, Ohio- child abuse hotline

Case Sensitivity

It is important to know that some web search tools are case sensitive. This means that when you search using upper case letters in your query, the search engine will only find results that are displayed in upper case letters. If you capitalize the first letter in your search, (i.e. Miller) this is the only version of the spelling that will be searched. However, if you use all lower case letters, even in acronym and proper noun searches, the search tool will find and display all case variations. Upper and lower case mixes can be used to limit searches.

Search Example:

african american women

Retrieves:

African American women and children
Employment opportunities for African American women

Will Not Retrieve:

Adult Education

Adult Education tips

Beginning adult education
Academic Adult education

Most of our research databases are not case sensitive. However, it is good to get in the habit of using lower case letters to search. Punctuation can also be ignored as a rule. Search for “st james” instead of “St. James”.

Phrase Searching

Phrase searching retrieves a series of words (and only those words) in the exact order you type them. If any words are missing, not in the order typed, or have various spellings, the search will not retrieve them. Phrase searching greatly limits searches, but it is sometimes too strict of a search that misses many other valuable resources. Phrase searches must be enclosed in quotes for most search tools.

Search Examples:

“beck depression inventory”

Retrieves:

Using the Beck Depression Inventory

beck depression inventory - screening for patients with Parkinson's disease

Will Not Retrieve:

Estate inventory of Captain John Beck during the Great Depression.

Inventory: Beck Depression

“stephen king”

Stephen King

King, Stephan
Stephen L. King

Helpful Hints: You **must** use quotes when you want to perform a search that uses stop words such as – AND, NOT, OR, NEAR, SAME. An example would be searching for the phrase “Black And White.” Some search tools may even require you to type the search in as “black “and” white.” Remember to read the help file if you are unsure.