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/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.

<table>
<thead>
<tr>
<th>Search Examples:</th>
<th>Retrieves:</th>
<th>Will Not Retrieve:</th>
</tr>
</thead>
<tbody>
<tr>
<td>adolescent AND behavior</td>
<td>Adolescent behavior problems</td>
<td>Understanding behaviour in adolescents</td>
</tr>
<tr>
<td></td>
<td>Assessment of adolescent and child behavior</td>
<td>Risky sexual behavior in teens</td>
</tr>
<tr>
<td>residential AND treatment</td>
<td>Treatment in residential care facilities</td>
<td>substance abuse treatment</td>
</tr>
</tbody>
</table>
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

**Retrieves:**
- 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:**
violece 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:**
- Influences on the risk of adult depression
- Major depression in elderly adults.
- 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
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*
Retrieves: Domestic violence and abuse in American society
Will Not Retrieve: Dangers of child abuse in a domestic abuse situation

ohio AND (college* OR universit*)
Retrieves: Ohio college grades
Will Not Retrieve: College and university libraries

Colleges and universities in Ohio
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.

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<td>african american women</td>
<td>African American women and children Employment opportunities for African American women</td>
<td></td>
</tr>
<tr>
<td>Adult Education</td>
<td>Adult Education tips</td>
<td>Beginning adult education Academic Adult education</td>
</tr>
</tbody>
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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.

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<td>“beck depression inventory”</td>
<td>Using the Beck Depression Inventory</td>
<td>Estate inventory of Captain John Beck during the Great Depression. Inventory: Beck Depression</td>
</tr>
<tr>
<td>“stephen king”</td>
<td>Stephen King</td>
<td>King, Stephan Stephen L. King</td>
</tr>
</tbody>
</table>

**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.