

# HOW TO...

## SEARCH USING BOOLEAN OPERATORS

### Boolean Search Tips

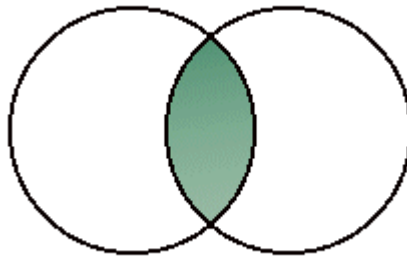
Boolean searching is based on a system of symbolic logic developed by George Boole, a 19th century English mathematician. Most keyword searchable computer databases support Boolean searches. Boolean search techniques may be used to perform accurate searches without producing many irrelevant documents.

When you perform a Boolean search, you search the computer database for the keywords that best describe your topic. The power of Boolean searching is based on combinations of keywords with connecting terms called operators. The three basic operators are the terms **AND**, **OR**, and **NOT**.

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### AND

The operator AND narrows a search by combining terms and retrieves every document that contains both of the words specified. To locate general information on Internet security issues use:



***Internet AND security***

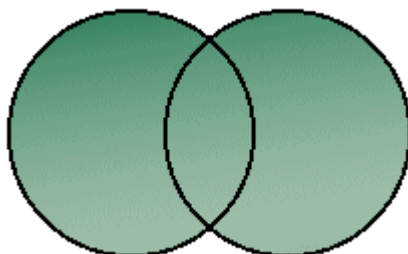
The Venn diagram above illustrates the **AND** search. The left circle includes all records including the *Internet*. The right circle includes all records including the word *security*. When the computer searches its database and retrieves every record containing both of the words *Internet* and *security*, only the records from the intersecting, green shaded area will be retrieved.

Several keywords may be used to narrow searches with the **AND** operator. To find information on Internet security in the banking industry, you might use:

***Internet AND security AND banking***

## OR

The OR operator broadens or widens a search to include documents containing either keyword. The OR search is particularly useful when there are several common synonyms for a concept or variant spellings of a word. To find information on the topic of weightlifting use:



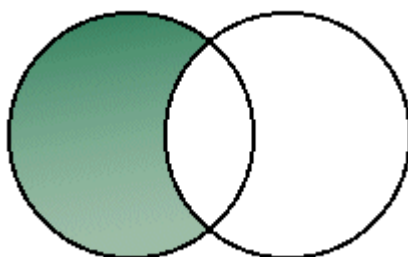
### ***weightlifting OR bodybuilding***

As the diagram shows, the computer searches for all documents containing *weightlifting* (left circle) and all documents containing *bodybuilding* (right circle). All documents represented by both circles will be retrieved. OR searches often produce large numbers of documents.

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## NOT

Combining search terms with the NOT operator narrows a search by excluding unwanted terms. To find information on gambling but not the lottery use:



### ***gambling NOT lottery***

The diagram illustrates the search by retrieving documents including the keyword *gambling* (left circle) and excluding documents with the term *lottery* (right circle). Retrieved documents are shown in the green shaded area.

Boolean search terms may be combined in various ways to carefully refine searches. Examples:

***oceans OR lakes AND pollution***  
***nurses AND malpractice NOT doctors***  
***children NOT infants AND psychology***

Most databases and search engines support complex Boolean searches. If you have a complex search using more than one operator, you can **nest** your search terms. Search terms and operators included in parentheses will be searched for first, then terms and operators outside the parentheses. A search for:

**(ADD OR attention deficit disorder) AND college students**

will search for documents containing either the acronym ADD or the phrase attention deficit disorder, then narrow the search results only to those documents which also contain the words college *students*. Variations on the basic Boolean operators are also supported by many library databases and Internet search engines. Known as **proximity operators**, these include **ADJACENT, WITH, NEAR, and FOLLOWED BY**. ADJACENT and WITH require that the words appear next to each other, NEAR requires that the search terms appear in close proximity and FOLLOWED BY requires that one term follow another.

Pay attention to **phrases** in search strings. If you are looking for information on the *capital gains tax*, you need to enter that part of your search string as a phrase. Otherwise you will retrieve irrelevant documents which contain all of the keywords, in any order, anywhere in the document. Most search engines and databases support phrase searches. Internet search engines usually require quotation marks to indicate phrases: "*capital gains tax*". The FirstSearch databases use the proximity operator **w** (with) to paste phrases together: *capital w gains w tax*.

Another useful search parameter which may be used with some search engines and databases is **truncation**. Truncation allows the searcher to insert a truncation symbol, usually an **\*** or **?** For example, the search term *teen\** will locate the terms *teens, teenagers, and teenaged*. Some search engines automatically truncate your search terms to find plural, -ing, or -ed endings. FirstSearch requires a **+** as a wildcard at the end of a word to find simple plural forms: -s or -es, but does not support truncation in the middle of a word.