

## Using "OR" and "AND" operators together in advanced Alma searches

- **Product:** Alma

### Description

Below is an explanation of the Boolean mathematics used in Alma's advanced searching, specifically when it comes to using the OR operator in conjunction with the AND operator.

### Resolution

In Boolean mathematics:

"AND" is Multiplication (\*)

"OR" is Plus (+)

Each condition (row) in the advanced search returns '0' or '1' depending on non-match / match.

Boolean mathematics rules:

1 = true

0 = false

1 AND 1 = 1 \* 1 = 1

1 AND 0 = 1 \* 0 = 0

0 AND 0 = 0 \* 0 = 0

1 OR 1 = 1 + 1 = 1

1 OR 0 = 1 + 0 = 1

0 OR 0 = 0 + 0 = 0

So, currently all consecutive ANDs are grouped together similar to the multiplication rule which is calculated before addition (plus sign) – example:

If we would do the following in the advanced search:

**A AND B AND C OR D OR E OR F AND G AND H**

This is equivalent to:

$$A * B * C + D + E + F * G * H$$

And this will be calculated as:

$$(A * B * C) + (D) + (E) + (F * G * H)$$

This is how Alma advanced search logic works currently.

If for example you wanted:

$$A * B * (C + D + E + F + \dots)$$

This can be simplified to:

$$(A * B * C) + (A * B * D) + (A * B * E) + (A * B * F) + \dots$$

As follows:

The screenshot shows the Alma advanced search interface. At the top, there are radio buttons for 'Zone' with options: Institution (selected), Network, and Community. Below this is a table of search criteria:

AND/OR	Field	Operator	Value	Actions
	Library (Holdings)	Equals	Resource Sharing Library	🔍 🗑️
AND	Item policy	Equals	GENERAL	🔍 🗑️
AND	Temporary item policy	Equals	EQUIPMENT	🔍 🗑️
OR	Library (Holdings)	Equals	Resource Sharing Library	🔍 🗑️
AND	Item policy	Equals	GENERAL	🔍 🗑️
AND	Names	Contains Keywords	New York geological survey	🔍 🗑️
OR	Library (Holdings)	Equals	Resource Sharing Library	🔍 🗑️
AND	Item policy	Equals	GENERAL	🔍 🗑️
AND	Publisher	Contains Keywords	New York geological survey	🔍 🗑️
OR	Library (Holdings)	Equals	Resource Sharing Library	🔍 🗑️
AND	Item policy	Equals	GENERAL	🔍 🗑️
AND	Title	Contains Keywords	New York geological survey	🔍 🗑️

At the bottom of the search form, there are buttons for 'Clear form' and 'Search'. Below the search form, there is a 'Save Query' button and a small text block containing the generated search logic.

Physical Items  
where (Library (Holdings) equals (Resource Sharing Library) AND Item policy equals 'GENERAL' AND Temporary item policy equals 'EQUIPMENT') OR (Library (Holdings) equals (Resource Sharing Library) AND Item policy equals 'GENERAL' AND Names contains keywords 'New York geological survey') OR ((Library (Holdings) equals (Resource Sharing Library) AND Item policy equals 'GENERAL' AND Publisher contains keywords 'New York geological survey') OR (Library (Holdings) equals (Resource Sharing Library) AND Item policy equals 'GENERAL' AND Title contains keywords 'New York geological survey'))

- **Article last edited:** 01-June-2018