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Expression Syntax

We've already used conditional expressions, among others, in `Condition` and `Publish` tags. We are already aware of logical operators like `NOT`, `AND`, `OR` or comparisons like `<`, `>`, `=`. To have them all described, here they are in order of precedence:

About FireGiant

Now you can install with confidence. FireGiant arms you with accurate support from the creators of WiX.

Because there are no questions we can't answer or problems we can't solve, you can unleash the full functionality of WiX without a doubt.

Logical operators

- NOT Prefix unary operator; inverts state of following term.
- AND Logical AND
- OR logical OR
- XOR exclusive OR
- EQV equivalence
- IMP implication


Comparative operators

- = equal
- <> not equal
- > greater than
- >= greater than or equal
- < less than
- <= less than or equal
- ~= equal, case insensitive
- ~<> not equal, case insensitive
- ~> greater than, case insensitive
- ~>= greater than or equal, case insensitive
- ~< less than, case insensitive
- ~<= less than or equal, case insensitive


Substring operators, only between strings


- >< *left* contains *_right*
- << *left* starts with *_right*


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- `>>` *left* ends with `_right`

Bitwise operators, only between integers

- `><` bitwise AND
- `<<` high 16-bits of *left* equal to `_right`
- `>>` low 16-bits of *left* equal to `_right`


Note that---as usual in XML---you have to be cautious when you use angle brackets that can be mistaken for an opening or closing character of an XML tag. To avoid confusion, you should use XML's [character data mechanism](https://www.w3.org/TR/REC-xml/#sec-cdata-sect) (<https://www.w3.org/TR/REC-xml/#sec-cdata-sect>) to escape these conditions: Wrap conditional expressions with `<![CDATA[` and `]]>`:


```
<![CDATA[IAgree <> "Yes"]]>
```


The safest approach would be to wrap everything (this is what the WiX decompiler, Dark, does) but---at least in my humble opinion---this makes the source far too illegible. Or, you have to take care of which expressions are misleading and which are not (the compiler will give an error message if it doesn't understand something) and only use the wrapper where really necessary. It's your choice.


Properties in expressions


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In these expressions, you can use property names (remember that they are case sensitive). Non-existent property names will be treated as empty strings. The logical value of a property reflects whether it has been set---meaning that you *cannot* check for a logical value by simply using the property:

- **PROPERTY** This will evaluate to *true* if the property has been set and has *any* value, even if this value is false or 0.
- **NOT PROPERTY** This will evaluate to *true* if the property has not been set at all.

Prefixes

Prepending some special characters to the names will give them extra meaning:

- % environment variable (name is case insensitive)
- \$ action state of component
- ? installed state of component
- & action state of feature
- ! installed state of feature

The last four can return the following integer values:

- -1 no action to be taken
- 1 advertised (only for features)
- 2 not present
- 3 on the local computer
- 4 run from the source

[New User on the Block \(/docs/wix/v3/tutorial/com-expression-syntax-miscellanea/new-user-on-the-block/\)](/docs/wix/v3/tutorial/com-expression-syntax-miscellanea/new-user-on-the-block/)

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A few examples to make things clearer:

- `(&FeatureName = 3) AND NOT (!FeatureName = 3)`
Run action only if the product will be installed locally. Do not run action on a reinstallation. The term `&FeatureName = 3` means the action is to install the feature locally. The term `NOT (!FeatureName = 3)` means the feature is not installed locally.
- `(&FeatureName = 2) AND (!FeatureName = 3)` Run action only if the feature will be uninstalled. This condition only checks for a transition of the feature from an installed state of local to the absent state.
- `(?ComponentName = 3) AND ($ComponentName = 2 OR $ComponentName = 4)` Run action only if the component was installed locally, but is transitioning out of state. The term `?ComponentName = 3` means the component is installed locally. The term `$ComponentName = 2` means that the action state on the component is absent. The term `$ComponentName = 4` means that the action state on the component is run from source. Note that an action state of advertise is not valid for a component.
- `?ComponentName = $ComponentName` Run action only on the reinstallation of a component.

[◀ Components of a Different Color \(/docs/wix/v3/tutorial/com-expression-syntax-miscellanea/components-of-a-different-color/\)](https://www.firegiant.com/docs/wix/v3/tutorial/com-expression-syntax-miscellanea/components-of-a-different-color/)

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