

Licence arithmetic

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Combining code from different sources in a free or open source software project requires making sure that the licences of each component are compatible. As an example, the GNU General Public Licence version 2 is incompatible with the Apache Licence version 2. However, GPLv3 is compatible with it.

Checking things manually is tedious and error prone. For the most common licences compatibilities are pretty clear, and when each component declares its licences, a program can check the easy cases.

Idea: Write a program that can do “licence arithmetic”, by checking if combinations of licences are OK. The program would be given a “licence expression” giving the licences of its components, and outputs the effective licence, or “error”, or “unknown”.

Use SPDX licence expressions as input and output. See <https://spdx.org/licenses/>¹ for a list of licence identifiers. Assume AND and OR operators, and parentheses.

Examples:

- “GPL-2.0-only AND Apache-2” => “error”
 - the licenses are known to be incompatible, so the result is not free software; using it may be OK, but the combination is not re-distributable
- “GPL-2.0-or-later AND Apache-2” => “GPL-3.0-or-later”
 - version 3 of the GPL is, however, compatible with Apache licence version 2, so using the “or later” of the GPL’d component results in an effective licence of GPL version 3 or later
- “unknown AND BSD-2-Clause” = “error”
 - a component whose licence is unknown cannot be combined with anything; the result may be useable locally, but it’s not distributable
- “other AND BSD-2-Clause” = “unknown”

¹<https://spdx.org/licenses/>

- other means the licence is one that SPDX does not have a symbol for; the result is unknown

The program should probably read a data file that explains the known cases. Something like this:

rules:

- expr: GPL-2.0-only AND BSD-2-Clause
result: GPL-2.0-only
- expr: GPL-3.0-or-later AND (BSD-2-Clause OR Apache-2)
result: GPL-3.0-or-later
- expr: GPL-2.0-or-later AND Apache-2
result: GPL-3.0-or-later
- expr: GPL-2.0-only AND Apache-2
result: error
url: <https://url.to.explanation>
explanation: "explanation of why the result"

The program would extract the SPDX licence expressions of all components, combine them with OR, and simplify the result, then check against it against the rules in its data file.

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Software can't give legal advice. It should only be used in entirely unambiguous cases and even then the result should be checked by a competent human.