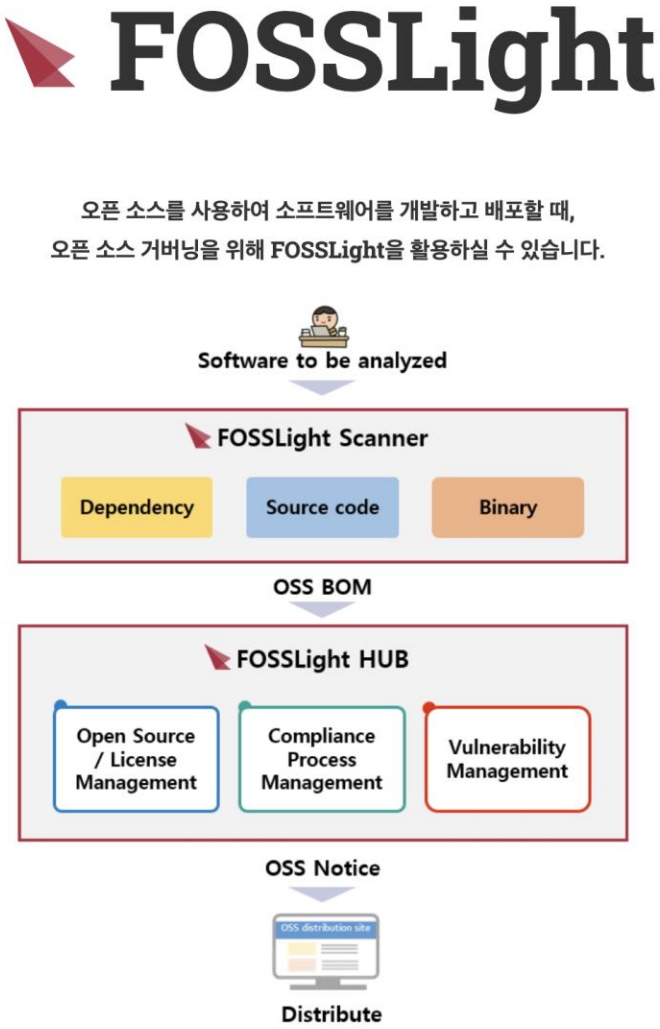
입문자를 위한 FOSSLight 소개

LG전자 방재권

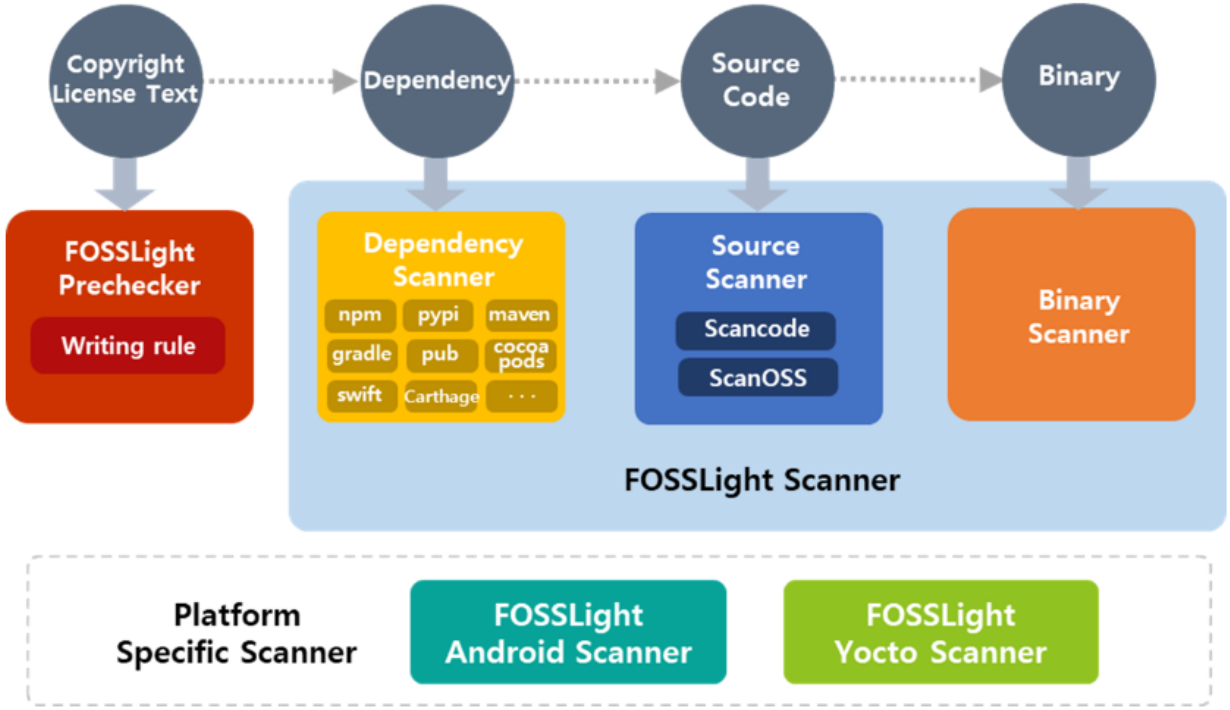
LG Open Source

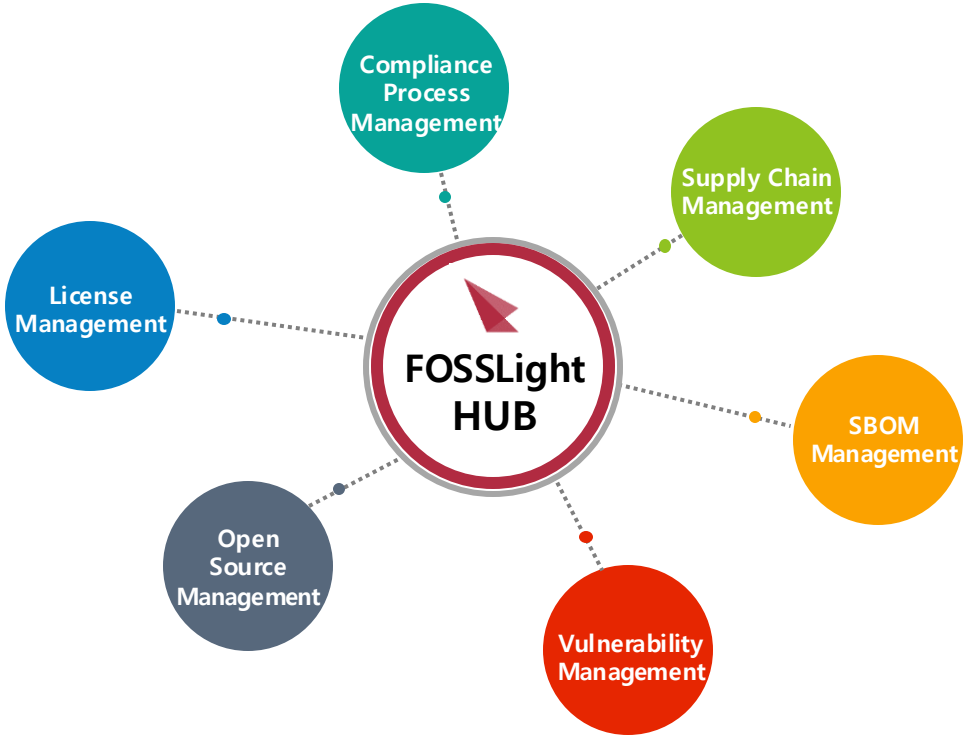
기업의 오픈소스 관리 방안

FOSSLight Open Source Project



FOSSLight





https://fosslight.org/

오픈소스 분석 도구

텍스트 스캐닝 도구

- 소스 코드 내 텍스트를 검색하여 자동으로 라이선스 확인

```
#    Copyright (C) 2014,2015  Anthony Kohan and Daniel M. German
#
#    This program is free software; you can redistribute it and/or
#    modify it under the terms of the GNU General Public License as
#    published by the Free Software Foundation; either version 2 of
#    the License, or (at your option) any later version.
#
#    This program is distributed in the hope that it will be useful,
#    but WITHOUT ANY WARRANTY; without even the implied warranty of
#    MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
#    General Public License for more details.
#
#    You should have received a copy of the GNU General Public License
#    along with this program.  If not, see <http://www.gnu.org/licenses/>.
#

use strict;
use File::Temp;
use File::Find;
use File::Basename;
use Ninka;
use Spreadsheet::WriteExcel;
```

텍스트 스캐닝 도구 약점

- 소스 코드 내 라이선스 문구가 변경 혹은 삭제되었다면?

- 텍스트 검출 도구는 라이선스 문구가 지워진 소스에서는 라이선스 검출을 할 수 없음.

코드 스캐닝 도구

- 오픈소스 데이터베이스 구축
- 사용자의 소스 코드와 데이터베이스의 소스 코드와 비교하여 일치하는 오픈소스 검출

코드 스캐닝 도구의 동작 방식

- 한 개발자가 나눗셈용 계산기 프로그램 작성 : "Calculator for division"
- 이를 GitHub에 공개하면서 MIT License 적용함

"**Calculator for division**" 공개


```
 * Copyright(c) 2014 example,
 *
 * License : MIT
 */

#include <stdio.h>
#include <string.h>

#define NUMSIZE 16
#define OPERSIZE 5

int divide(int a, int b)
{
    return a / b;
}
```

코드 스캐닝 도구의 동작 방식

- 코드 스캐닝 도구는 해당 Code를 취득하여 데이터베이스에 저장함

"**Calculator for division**" 공개


```
 * Copyright(c) 2014 example,
 *
 * License : MIT
 */

#include <stdio.h>
#include <string.h>

#define NUMSIZE 16
#define OPERSIZE 5

int divide(int a, int b)
{
    return a / b;
}
```

snippet	OSS name	License

`int divide(int a, int b)`
`{`
`  return a / b;`
`}`
	Calculator for division	MIT License

코드 스캐닝 도구의 동작 방식

- 어떤 개발자가 Project 개발에 "Calculator for division"의 소스 코드를 사용
  - 라이선스 텍스트는 삭제하고 필요한 함수만 복사해왔다고 가정

"**Calculator for division**" 복사

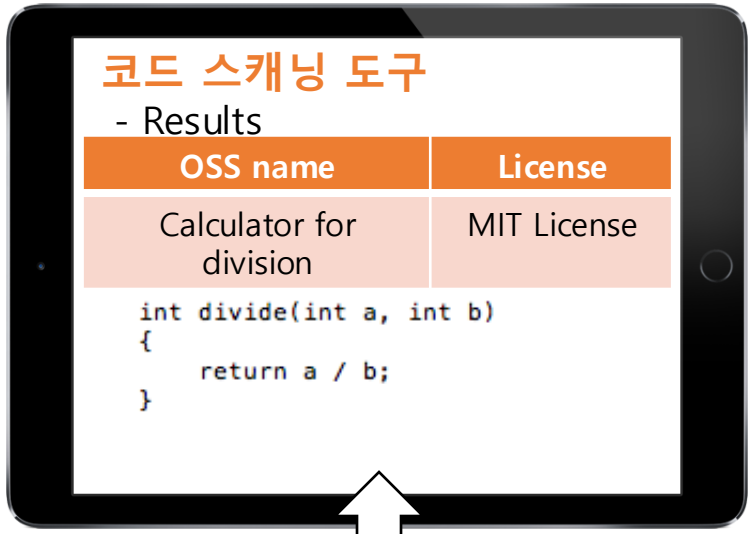

```
 * Copyright(c) 2014 example,
 *
 * License : MIT
 */

#include <stdio.h>
#include <string.h>

#define NUMSIZE 16
#define OPERSIZE 5

int divide(int a, int b)
{
    return a / b;
}
```

```
 * Copyright (c) 2016 by ABC Electronics Inc.
 * This is core algorism of ABC Electronics.
 */
int sumoper(int a, int b)
{
    return a + b;
}


/*
 * This is a function from an open source file.
 */
int divide(int a, int b)
{
    return a / b;
}
```

코드 스캐닝 도구의 동작 방식 예시

- 라이선스 텍스트가 없기 때문에 텍스트 스캐닝 도구로는 검출 불가
- 코드 스캐닝 도구는 데이터베이스와 소스 코드를 비교하여 일치하는 오픈소스를 찾을 수 있음

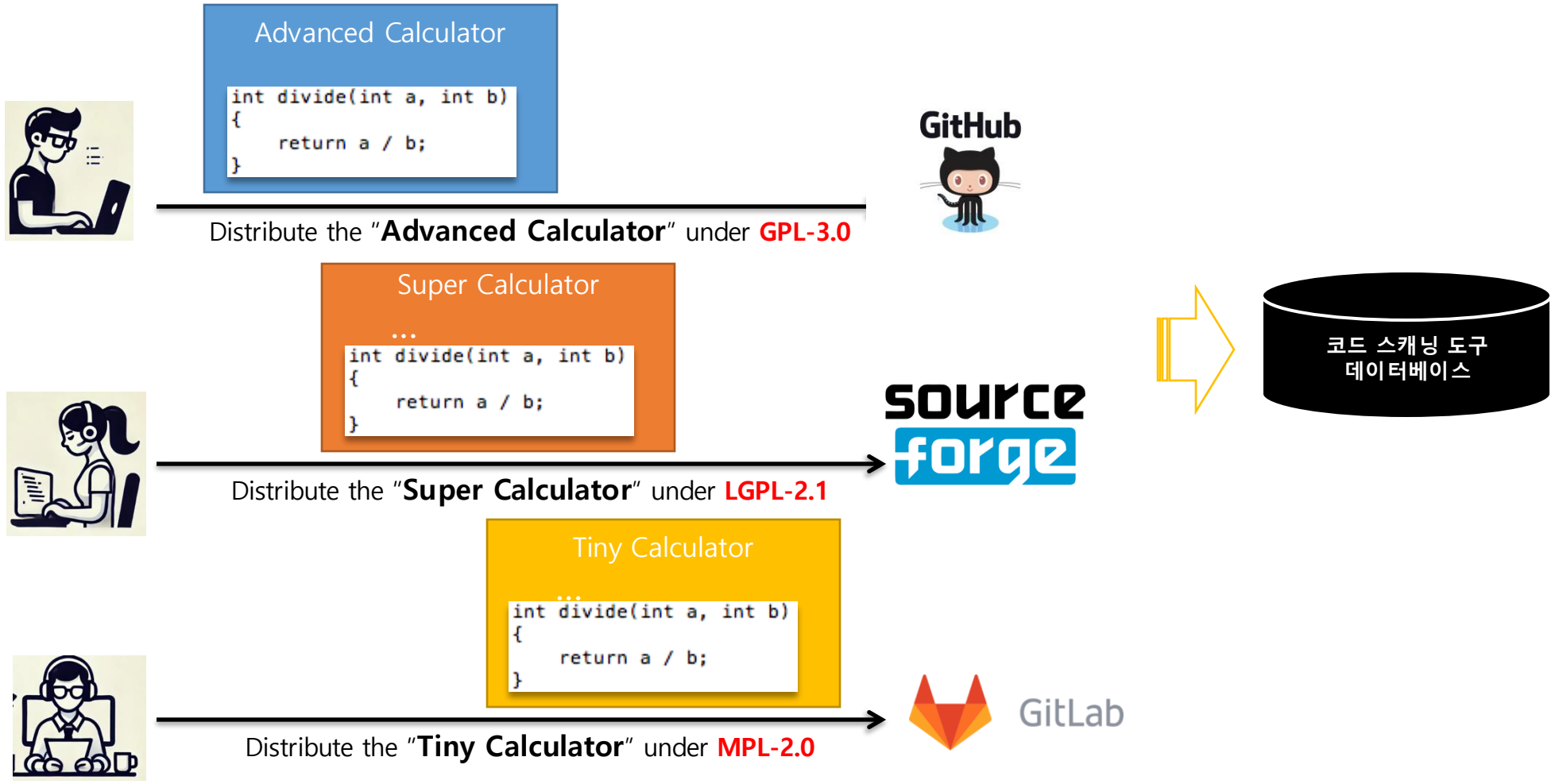
소스 코드 분석




```
 * Copyright (c) 2016 by ABC Electronics Inc.
 * This is core algorism of ABC Electronics.
 */
int sumoper(int a, int b)
{
    return a + b;
}


/*
 * This is a function from an open source file.
 */
int divide(int a, int b)
{
    return a / b;
}
```

코드 스캐닝 도구 약점

- 한 개발자가 MIT 라이선스로 "Calculator for division"을 공개한 후..

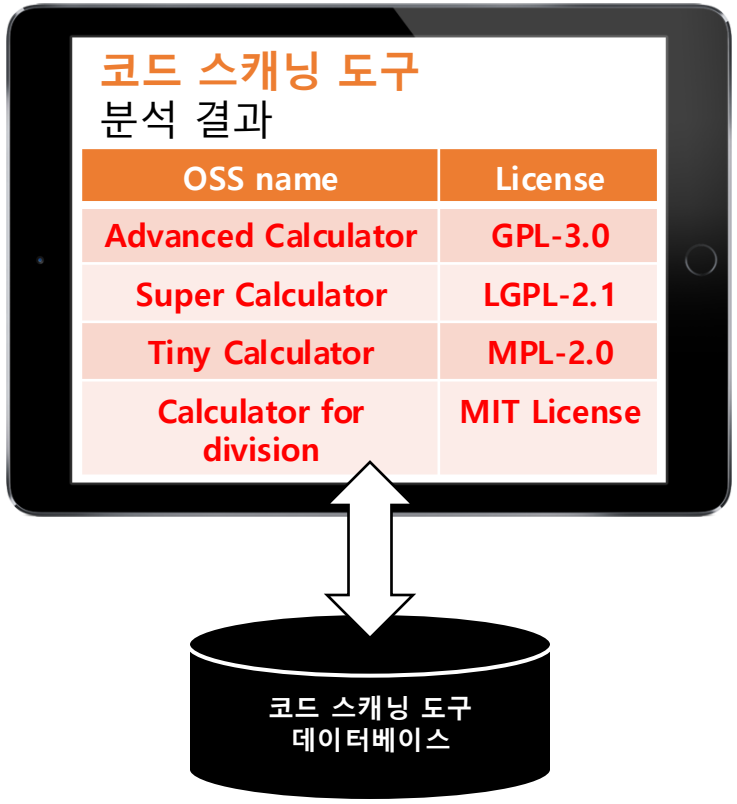


코드 스캐닝 도구 약점

- 사용자가 원 출처를 찾아내야 함

소스 코드 분석

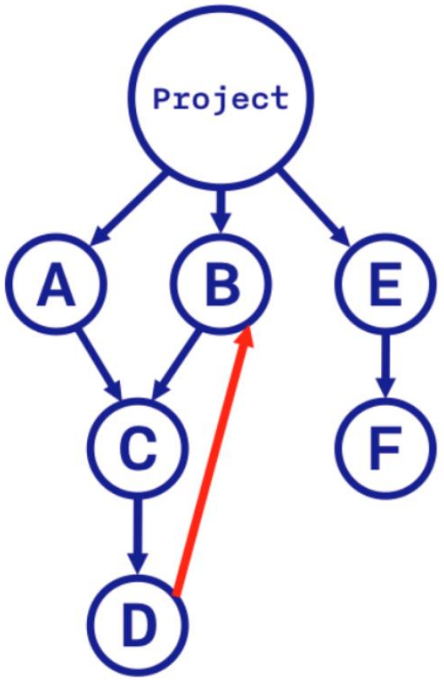
```
 * Copyright (c) 2016 by ABC Electronics Inc.
 * This is core algorism of ABC Electronics.
 */
int sumoper(int a, int b)
{
    return a + b;
}


/*
 * This is a function from an open source file.
 */
int divide(int a, int b)
{
    return a / b;
}
```



디펜던시 분석 (1/2)

- Package Manager에 대한 디펜던시 분석을 지원하는 도구
- Package Manager의 Manifest 파일 자동 감지하여 오픈 소스 정보 분석

- Direct / Transitive Dependency 모두에 대한 오픈 소스 분석이 필요함



디펜던시 분석 (2/2)

twilio-node package.json

```
"dependencies": {
  "@types/express": "^4.11.1",
  "deprecate": "1.0.0",
  "jsonwebtoken": "^8.1.0",
  "lodash": "^4.17.10",
  "moment": "2.19.3",
  "q": "2.0.x",
  "request": "^2.87.0",
  "rootpath": "0.1.2",
  "scmp": "2.0.0",
  "xmlbuilder": "9.0.1"
},
```

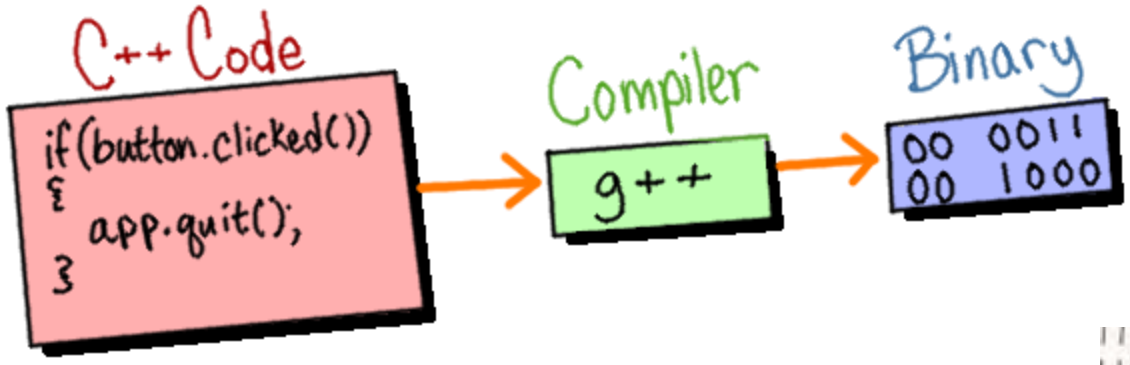
@types/express

```
"dependencies": {
  "@types/body-parser": "*",
  "@types/express-serve-static-core": "*",
  "@types/serve-static": "*"
},
```

@types/body-parser package.json

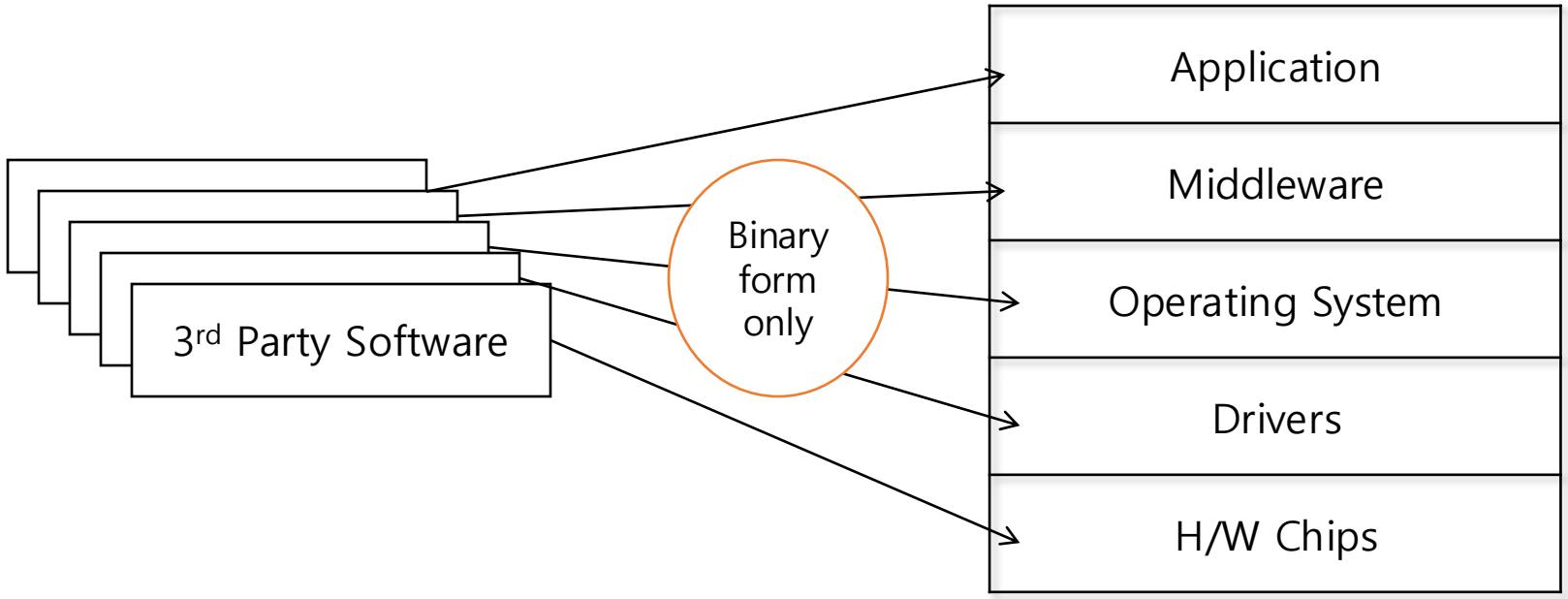
```
"dependencies": {
  "@types/connect": "*",
  "@types/node": "*"
},
```

바이너리 분석



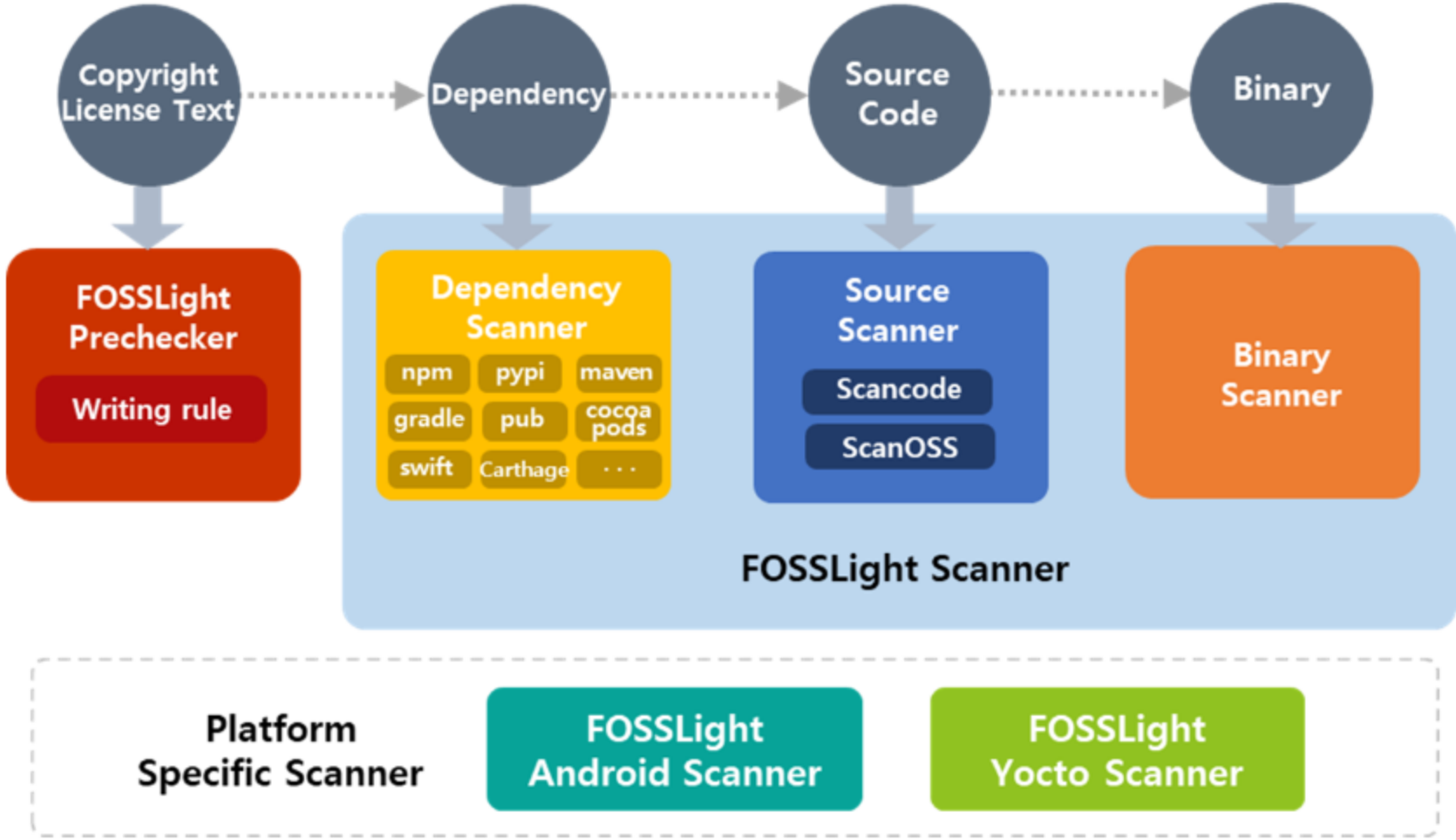
바이너리 분석 필요성

- **3rd Party로부터 바이너리 형태로 소프트웨어를 제공 받을 경우, 라이선스 이슈 확인 어려움**



FOSSLight Scanner

FOSSLight Scanner



https://fosslight.org/ko/scanner/

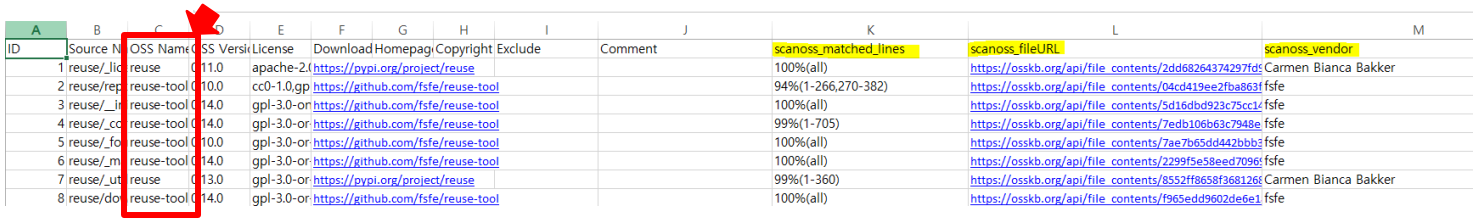
FOSSLight Scanner – Dependency

- Transitive Dependency까지 확인하여 오픈소스 이름 및 버전, 라이선스를 검출함
- 지원 패키지 매니저 : Gradle, Maven, NPM, PIP, Pub, Cocoapods, Swift, Carthage, Go 등

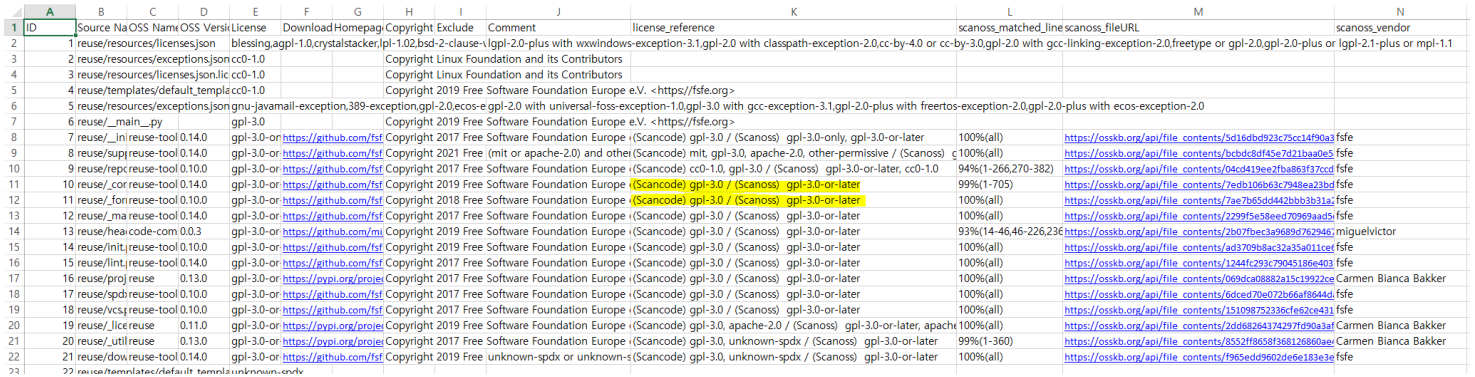
ID	Source Name or	OSS Name	OSS Version	License	Download Location	Homepage
-	[Name of the Sc	[Name of the OSS used i	[Version Number	[License of the C	[Download URL or a specific location within a VCS for the OSS]	[Web site that serves as the OSS's home page]
1	pubspec.yaml	pub:ansicolor	1.0.5	Apache-2.0	https://pub.dev/packages/pub:ansicolor/versions/1.0.5	https://github.com/google/ansicolor-dart
2	pubspec.yaml	pub:async	2.5.0-nullsafety.1	BSD-3-Clause	https://pub.dev/packages/pub:async/versions/2.5.0-nullsafety.1	https://www.github.com/dart-lang/async
3	pubspec.yaml	pub:cached_network_ima	2.3.2+1	MIT	https://pub.dev/packages/pub:cached_network_image/versions/2.3.2+1	https://github.com/Baseflow/flutter_cached_netwo
4	pubspec.yaml	pub:characters	1.1.0-nullsafety.3	BSD-3-Clause	https://pub.dev/packages/pub:characters/versions/1.1.0-nullsafety.3	https://www.github.com/dart-lang/characters
5	pubspec.yaml	pub:charcode	1.2.0-nullsafety.1	BSD-3-Clause	https://pub.dev/packages/pub:charcode/versions/1.2.0-nullsafety.1	https://github.com/dart-lang/charcode
6	pubspec.yaml	pub:clock	1.1.0-nullsafety.1	Apache-2.0	https://pub.dev/packages/pub:clock/versions/1.1.0-nullsafety.1	https://github.com/dart-lang/clock
7	pubspec.yaml	pub:collection	1.15.0-nullsafety.3	BSD-3-Clause	https://pub.dev/packages/pub:collection/versions/1.15.0-nullsafety.3	https://www.github.com/dart-lang/collection
8	pubspec.yaml	pub:console_log_handler	1.1.6	Apache-2.0	https://pub.dev/packages/pub:console_log_handler/versions/1.1.6	https://github.com/MikeMitterer/dart-console_log
9	pubspec.yaml	pub:convert	2.1.1	BSD-3-Clause	https://pub.dev/packages/pub:convert/versions/2.1.1	https://github.com/dart-lang/convert
10	pubspec.yaml	pub:crypto	2.1.5	BSD-3-Clause	https://pub.dev/packages/pub:crypto/versions/2.1.5	https://www.github.com/dart-lang/crypto
11	pubspec.yaml	pub:ffi	0.1.3	BSD-3-Clause	https://pub.dev/packages/pub:ffi/versions/0.1.3	https://github.com/dart-lang/ffi
12	pubspec.yaml	pub:file	5.2.1	BSD-3-Clause	https://pub.dev/packages/pub:file/versions/5.2.1	https://github.com/google/file.dart
13	pubspec.yaml	pub:flutter	1.22.0	BSD-3-Clause	https://pub.dev/packages/pub:flutter/versions/1.22.0	http://flutter.dev
14	pubspec.yaml	pub:flutter_blurhash	0.5.0	MIT	https://pub.dev/packages/pub:flutter_blurhash/versions/0.5.0	https://github.com/fluttercommunity/flutter_blurh
15	pubspec.yaml	pub:flutter_cache_manage	1.4.2	MIT	https://pub.dev/packages/pub:flutter_cache_manager/versions/1.4.2	https://github.com/Baseflow/flutter_cache_manage

FOSSLight Scanner – Source

- 소스 코드를 분석하여 오픈소스 및 버전, 라이선스를 검출
- 여러 스캐너 지원을 통해 String Search뿐만 아니라 Snippet 매칭 지원



ID	Source N	OSS Name	OSS Versi	License	Download	Homepag	Copyright	Exclude	Comment	scanoss_matched_lines	scanoss_fileURL	scanoss_vendor
1	reuse/_lic	reuse	0.11.0	apache-2.(	https://pypi.org/project/reuse					100%(all)	https://osskb.org/api/file_contents/2dd68264374297fd9	Carmen Bianca Bakker
2	reuse/rep	reuse-tool	0.10.0	cc0-1.0,gp	https://github.com/fsfe/reuse-tool					94%(1-266,270-382)	https://osskb.org/api/file_contents/04cd419ee2fba863f	fsfe
3	reuse/__in	reuse-tool	0.14.0	gpl-3.0-or	https://github.com/fsfe/reuse-tool					100%(all)	https://osskb.org/api/file_contents/5d16dbd923c75cc14	fsfe
4	reuse/_co	reuse-tool	0.14.0	gpl-3.0-or	https://github.com/fsfe/reuse-tool					99%(1-705)	https://osskb.org/api/file_contents/7edb106b63c7948e	fsfe
5	reuse/_fo	reuse-tool	0.10.0	gpl-3.0-or	https://github.com/fsfe/reuse-tool					100%(all)	https://osskb.org/api/file_contents/7ae7b65dd442bbb3	fsfe
6	reuse/_ma	reuse-tool	0.14.0	gpl-3.0-or	https://github.com/fsfe/reuse-tool					100%(all)	https://osskb.org/api/file_contents/2299f5e58eed7096	fsfe
7	reuse/_ut	reuse	0.13.0	gpl-3.0-or	https://pypi.org/project/reuse					99%(1-360)	https://osskb.org/api/file_contents/8552ff8658f368126	Carmen Bianca Bakker
8	reuse/do	reuse-tool	0.14.0	gpl-3.0-or	https://github.com/fsfe/reuse-tool					100%(all)	https://osskb.org/api/file_contents/f965edd9602de6e1	fsfe



ID	Source Na	OSS Name	OSS Versi	License	Download	Homepag	Copyright	Exclude	Comment	license_reference	scanoss_matched_lines	scanoss_fileURL	scanoss_vendor
1	reuse/resources/licenses.json			blessing,agpl-1.0,crystalstacker,lpl-1.02,bsd-2-clause-\					lgpl-2.0-plus with wxwindows-exception-3.1,gpl-2.0 with classpath-exception-2.0,cc-by-4.0 or cc-by-3.0,gpl-2.0 with gcc-linking-exception-2.0,freetype or gpl-2.0,gpl-2.0-plus or				lgpl-2.1-plus or mpl-1.1
2	reuse/resources/exceptions.json			cc0-1.0			Copyright Linux Foundation and its Contributors						
3	reuse/resources/licenses.json.lic			cc0-1.0			Copyright Linux Foundation and its Contributors						
4	reuse/templates/default_templa			cc0-1.0			Copyright 2019 Free Software Foundation Europe e.V. <https://fsfe.org>						
5	reuse/resources/exceptions.json			gnu-javamail-exception,389-exception,gpl-2.0,ecos-e			gpl-2.0 with universal-foss-exception-1.0,gpl-3.0 with gcc-exception-3.1,gpl-2.0-plus with freertos-exception-2.0,gpl-2.0-plus with ecos-exception-2.0						
6	reuse/__main__.py			gpl-3.0			Copyright 2019 Free Software Foundation Europe e.V. <https://fsfe.org>						
7	reuse/__in	reuse-tool	0.14.0	gpl-3.0-or	https://github.com/fsf		Copyright 2017 Free Software Foundation Europe		(Scancode) gpl-3.0 / (Scanoss) gpl-3.0-only, gpl-3.0-or-later		100%(all)	https://osskb.org/api/file_contents/5d16dbd923c75cc14f90a3	fsfe
8	reuse/sup	reuse-tool	0.14.0	gpl-3.0-or	https://github.com/fsf		Copyright 2021 Free		(mit or apache-2.0) and othe	(Scancode) mit, gpl-3.0, apache-2.0, other-permissive / (Scanoss) c	100%(all)	https://osskb.org/api/file_contents/bcbdc8df45e7d21baa0e5	fsfe
9	reuse/rep	reuse-tool	0.10.0	gpl-3.0-or	https://github.com/fsf		Copyright 2017 Free Software Foundation Europe		(Scancode) cc0-1.0, gpl-3.0 / (Scanoss) gpl-3.0-or-later, cc0-1.0		94%(1-266,270-382)	https://osskb.org/api/file_contents/04cd419ee2fba863f37ccd	fsfe
10	reuse/_cor	reuse-tool	0.14.0	gpl-3.0-or	https://github.com/fsf		Copyright 2019 Free Software Foundation Europe		(Scancode) gpl-3.0 / (Scanoss) gpl-3.0-or-later		99%(1-705)	https://osskb.org/api/file_contents/7edb106b63c7948ea23bd	fsfe
11	reuse/_for	reuse-tool	0.10.0	gpl-3.0-or	https://github.com/fsf		Copyright 2018 Free Software Foundation Europe		(Scancode) gpl-3.0 / (Scanoss) gpl-3.0-or-later		100%(all)	https://osskb.org/api/file_contents/7ae7b65dd442bbb3b31a2	fsfe
12	reuse/_ma	reuse-tool	0.14.0	gpl-3.0-or	https://github.com/fsf		Copyright 2017 Free Software Foundation Europe		(Scancode) gpl-3.0 / (Scanoss) gpl-3.0-or-later		100%(all)	https://osskb.org/api/file_contents/2299f5e58eed70969aad5	fsfe
13	reuse/hea	code-com	0.0.3	gpl-3.0-or	https://github.com/mi		Copyright 2019 Free Software Foundation Europe		(Scancode) gpl-3.0 / (Scanoss) gpl-3.0-or-later		93%(14-46,46-226,236	https://osskb.org/api/file_contents/2b07fbec3a9689d762946	miguelvictor
14	reuse/init	reuse-tool	0.10.0	gpl-3.0-or	https://github.com/fsf		Copyright 2019 Free Software Foundation Europe		(Scancode) gpl-3.0 / (Scanoss) gpl-3.0-or-later		100%(all)	https://osskb.org/api/file_contents/ad3709b8ac32a35a011ce6	fsfe
15	reuse/lint	reuse-tool	0.14.0	gpl-3.0-or	https://github.com/fsf		Copyright 2017 Free Software Foundation Europe		(Scancode) gpl-3.0 / (Scanoss) gpl-3.0-or-later		100%(all)	https://osskb.org/api/file_contents/1244fc293c79045186e403	fsfe
16	reuse/proj	reuse	0.13.0	gpl-3.0-or	https://pypi.org/projec		Copyright 2017 Free Software Foundation Europe		(Scancode) gpl-3.0 / (Scanoss) gpl-3.0-or-later		100%(all)	https://osskb.org/api/file_contents/069dca08882a15c19922ce	Carmen Bianca Bakker
17	reuse/spdx	reuse-tool	0.10.0	gpl-3.0-or	https://github.com/fsf		Copyright 2017 Free Software Foundation Europe		(Scancode) gpl-3.0 / (Scanoss) gpl-3.0-or-later		100%(all)	https://osskb.org/api/file_contents/6dced70e072b66af8644d	fsfe
18	reuse/vcs	reuse-tool	0.10.0	gpl-3.0-or	https://github.com/fsf		Copyright 2017 Free Software Foundation Europe		(Scancode) gpl-3.0 / (Scanoss) gpl-3.0-or-later		100%(all)	https://osskb.org/api/file_contents/151098752336cfe62ce431	fsfe
19	reuse/_lice	reuse	0.11.0	gpl-3.0-or	https://pypi.org/projec		Copyright 2019 Free Software Foundation Europe		(Scancode) gpl-3.0, apache-2.0 / (Scanoss) gpl-3.0-or-later, apache		100%(all)	https://osskb.org/api/file_contents/2dd68264374297fd90a3af	Carmen Bianca Bakker
20	reuse/_util	reuse	0.13.0	gpl-3.0-or	https://pypi.org/projec		Copyright 2017 Free Software Foundation Europe		(Scancode) gpl-3.0, unknown-spdx / (Scanoss) gpl-3.0-or-later		99%(1-360)	https://osskb.org/api/file_contents/8552ff8658f368126860ae	Carmen Bianca Bakker
21	reuse/dow	reuse-tool	0.14.0	gpl-3.0-or	https://github.com/fsf		Copyright 2019 Free		unknown-spdx or unknown-s	(Scancode) gpl-3.0, unknown-spdx / (Scanoss) gpl-3.0-or-later	100%(all)	https://osskb.org/api/file_contents/f965edd9602de6e183e3e	fsfe
22	reuse/templates/default_templa			unknown-spdx									

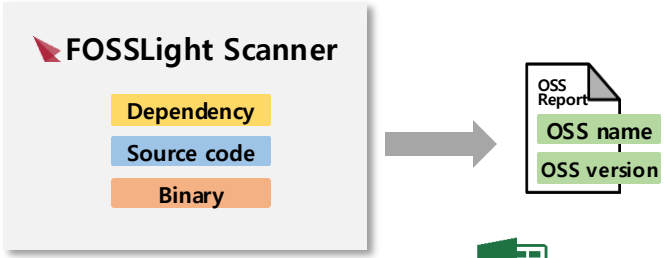
FOSSLight Scanner - Binary

- 바이너리 목록 추출하여 Database에서 오픈소스 정보 확인
- Jar 파일에 대하여 보안 취약점 확인도 가능

	A	B	C	D	E	F	G	H	I	J	K
1	ID	Source Na	OSS Name	OSS Versi	License	Download Location	Homepage	Copyright Text	Exclude	Comment	Vulnerability Link
2	22	lib/aho-cc	hankcs:ah	1.2.3	Apache License Version 2.0	hankcs/AhoCorasickDoubleArrayTrie				OWASP Result.	
3	23	lib/androi	vaadin.ext	0.0.201311	Apache License 2.0	http://developer.android.com/sdk				OWASP Result.	
4	24	lib/annota	jetbrains:a	22.0.0	The Apache Software License V	JetBrains/java-annotations				OWASP Result.	
5	25	lib/ant-1.1	apache.an	1.10.12		https://ant.apache.org/				OWASP Result.	https://nvd.nist.gov/vuln/search/results?form_type=Ad
6	26	lib/checke	checkerfra	3.12.0	The MIT License	https://checkerframework.org				OWASP Result.	
7	27	lib/comm	commons	1.9.4	https://www.apache.org/licenses/	https://commons.apache.org/proper/commons-beanutils/				OWASP Result.	https://nvd.nist.gov/vuln/search/results?form_type=Ad
8	28	lib/comm	commons	1.5.0	https://www.apache.org/licenses/	https://commons.apache.org/proper/commons-cli/				OWASP Result.	
9	29	lib/comm	commons	1.15	https://www.apache.org/licenses/	https://commons.apache.org/proper/commons-codec/				OWASP Result.	
10	30	lib/comm	commons	3.2.2	http://www.apache.org/licenses/	http://commons.apache.org/collections/				OWASP Result.	https://nvd.nist.gov/vuln/search/results?form_type=Ad
11	31	lib/comm	apache.co	1.21	https://www.apache.org/licenses/	https://commons.apache.org/proper/commons-compress/				OWASP Result.	https://nvd.nist.gov/vuln/search/results?form_type=Ad
12	32	lib/comm	apache.co	2.9.0	https://www.apache.org/licenses/	https://commons.apache.org/dbcp/				OWASP Result.	
13	33	lib/comm	commons	2.1	http://www.apache.org/licenses/	http://commons.apache.org/digester/				OWASP Result.	
14	34	lib/comm	commons	2.11.0	https://www.apache.org/licenses/	https://commons.apache.org/proper/commons-io/				OWASP Result.	https://nvd.nist.gov/vuln/search/results?form_type=Ad
15	35	lib/comm	apache.co	2.2.1	https://www.apache.org/licenses/LICENSE-2.0.txt					OWASP Result.	
16	36	lib/comm	apache.co	3.12.0	https://www.apache.org/licenses/	https://commons.apache.org/proper/commons-lang/				OWASP Result.	
17	37	lib/comm	commons	1.2	http://www.apache.org/licenses/	http://commons.apache.org/proper/commons-logging/			Exclude	OWASP Result. Excluded due to Binary DB.	
18	38	lib/comm	commons	1.2	Apache-2.0					Binary DB Result	

FOSSLight Scanner를 통한 SBOM 생성

- FOSSLight Scanner 실행하여 오픈소스 분석 보고서 생성



	Source Name or Path	OSS Name	OSS Version	License	Download Location	Homepage	opyright Tex	Exclude	Comment	ependencie
1	package.json	npm:lge-example	1.0.0	Apache-2.0	https://github.com/LGE-OSS/example	https://www.npmjs.com/package/lge-example			root packa	npm:copy-a
2	package.json	npm:copy-anything	2.0.6	MIT	https://github.com/mesqueeb/copy-anything	https://www.npmjs.com/package/copy-anything			direct	npm:is-wha
3	package.json	npm:is-what	3.14.1	MIT	https://github.com/mesqueeb/is-what	https://www.npmjs.com/package/is-what			transitive	
4	requirements.txt	pypi:CacheControl	0.12.11	Apache Software License	https://pypi.org/project/CacheControl/0.12.11	https://github.com/ionrock/cachecontrol			transitive	pypi:msgpa
5	requirements.txt	pypi:Deprecated	1.2.14	MIT License	https://pypi.org/project/Deprecated/1.2.14	https://github.com/tantale/deprecated			transitive	pypi:wrapt(
6	requirements.txt	pypi:Jinja2	3.1.2	BSD License	https://pypi.org/project/Jinja2/3.1.2	https://palletsprojects.com/p/jinja/			transitive	pypi:Marku
7	requirements.txt	pypi:MarkupSafe	2.1.3	BSD License	https://pypi.org/project/MarkupSafe/2.1.3	https://palletsprojects.com/p/markupsafe/			transitive	
8	requirements.txt	pypi:PyGithub	2.1.1	GNU Library or Lesser Gen	https://pypi.org/project/PyGithub/2.1.1	https://github.com/pygithub/pygithub			transitive	pypi:Depre
9	requirements.txt	pypi:PyJWT	2.8.0	MIT License	https://pypi.org/project/PyJWT/2.8.0	https://github.com/jpadilla/pyjwt			transitive	
10	requirements.txt	pypi:PyNaCl	1.5.0	Apache License 2.0	https://pypi.org/project/PyNaCl/1.5.0	https://github.com/pyca/pynacl/			transitive	pypi:cffi(1.1
11	requirements.txt	pypi:PyYAML	6.0.1	MIT License	https://pypi.org/project/PyYAML/6.0.1	https://pyyaml.org/			transitive	
12	requirements.txt	pypi:XlsxWriter	3.1.8	BSD License	https://pypi.org/project/XlsxWriter/3.1.8	https://github.com/jmcnamara/XlsxWriter			transitive	
13	requirements.txt	pypi:appdirs	1.4.4	MIT License	https://pypi.org/project/appdirs/1.4.4	http://github.com/ActiveState/appdirs			transitive	
14	requirements.txt	pypi:attrs	23.1.0	MIT License	https://pypi.org/project/attrs/23.1.0	https://www.attrs.org/en/stable/changelog.html			transitive	
15	requirements.txt	pypi:beautifulsoup4	4.12.2	MIT License	https://pypi.org/project/beautifulsoup4/4.12.2	https://www.crummy.com/software/BeautifulSoup/bs4/			transitive	pypi:soupsi
16	requirements.txt	pypi:binaryornot	0.4.4	BSD License	https://pypi.org/project/binaryornot/0.4.4	https://github.com/audreyr/binaryornot			transitive	pypi:charde
17	requirements.txt	pypi:boolean.py	4.0	BSD-2-Clause	https://pypi.org/project/boolean.py/4.0	https://github.com/bastikr/boolean.py			transitive	
18	requirements.txt	pypi:certifi	2023.7.22	Mozilla Public License 2.0	https://pypi.org/project/certifi/2023.7.22	https://github.com/certifi/python-certifi			transitive	
19	requirements.txt	pypi:cffi	1.16.0	MIT License	https://pypi.org/project/cffi/1.16.0	http://cffi.readthedocs.org			transitive	pypi:pycpa
20	requirements.txt	pypi:chardet	5.2.0	GNU Lesser General Public	https://pypi.org/project/chardet/5.2.0	https://github.com/chardet/chardet			transitive	

SRC_FL_Source | SRC_FL_Dependency | BIN_FL_Binary

설치 및 사용 방법

- **FOSSLight Scanner 설치 방법**
  - Python 3.10 ~ 3.12
  - Open JDK (Java 11+)

```
$ pip install fosslight_scanner
```

- **FOSSLight Scanner 사용 방법**
  - 명령어 fosslight 를 호출
  - fosslight –h 를 입력시, parameter 확인 가능

```
$ fosslight
```


https://fosslight.org/fosslight-guide/

THANK YOU !