

Overview in General

This file contains a general overview of the data in the graph including node labels and relationships types.

References

- [jqassistant](#)
- [Neo4j Python Driver](#)

Node Labels

Table 1a - Highest node count by label combination

Lists the 30 label combinations with the highest number of nodes. The labels with the lowest node count are listed in table 1b. The total list would sum up to the total number of labels (100%).

The whole table can be found in the CSV report `Node_label_combination_count`.

	nodeLabels	nodesWithThatLabels	nodesWithThatLabelsPercent
0	[Git, Change]	235891	72.796428
1	[Java, ByteCode, Member, Method]	13194	4.071694
2	[Java, ByteCode, Parameter]	12968	4.001950
3	[Git, Commit]	11783	3.636257
4	[File, Git]	10598	3.270564
5	[Java, ByteCode, Bound, ParameterizedType]	7154	2.207739
6	[Java, ByteCode, Bound]	7094	2.189222
7	[Java, ByteCode, Member, Field]	3491	1.077329
8	[Java, ByteCode, Bound, WildcardType]	2902	0.895563
9	[Java, Value, ByteCode, Annotation]	2813	0.868097
10	[Xml, Element]	2144	0.661643
11	[Java, ByteCode, Member, Constructor, Method]	2044	0.630782
12	[Xml, Text]	1436	0.443152
13	[Java, ByteCode, Bound, TypeVariable]	1094	0.337611
14	[Java, ByteCode, Member, Method, Lambda]	931	0.287308
15	[Type, File, Java, ByteCode, ResolvedDuplicate...	899	0.277433
16	[Type, File, Java, Class, ByteCode]	858	0.264780
17	[Type, File, Java, ByteCode, JavaType]	746	0.230217
18	[Java, Value, ByteCode, Primitive]	647	0.199665
19	[Java, ByteCode, Member, Method, GenericDeclar...	567	0.174977
20	[Json, Key]	555	0.171274
21	[Value, Json, Scalar]	539	0.166336
22	[Type, File, Java, ByteCode, ExternalType]	396	0.122206
23	[Author, Git, Person]	289	0.089186
24	[Value, Array]	267	0.082397
25	[Committer, Git, Person]	243	0.074990
26	[Type, File, Java, Class, ByteCode, GenericDec...	236	0.072830
27	[Value, Property]	202	0.062338
28	[Type, File, Java, ByteCode, Interface]	186	0.057400
29	[Java, Value, Class, ByteCode]	170	0.052462

Chart 1a - Highest node count by label combination

Values under 0.5% will be grouped into "others" to get a cleaner plot. The group "others" is then broken down in Chart 1b.

<Figure size 640x480 with 0 Axes>

Nodes per label combination (more than 0.5% overall)

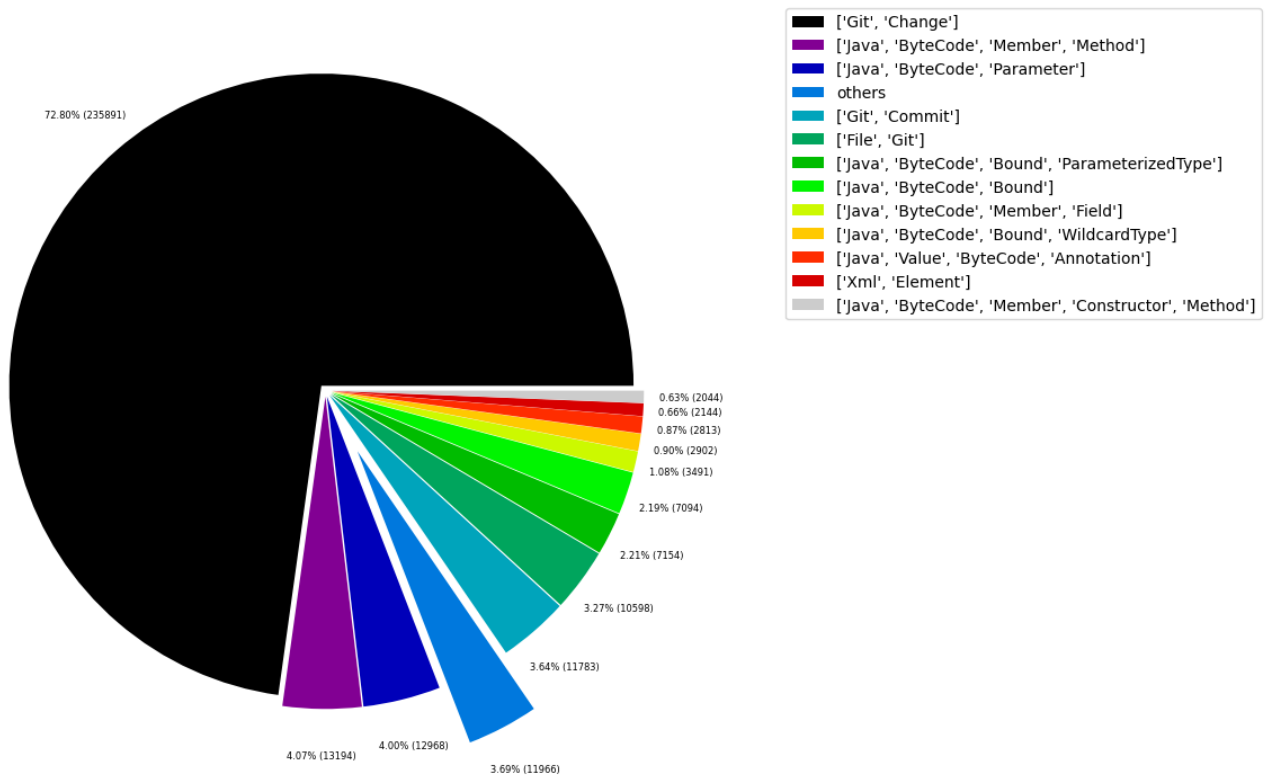


Table 1b - Lowest node count by label combination

Lists the 30 label combinations with the lowest number of nodes until they reach 0.5% of the total node count, which are shown above.

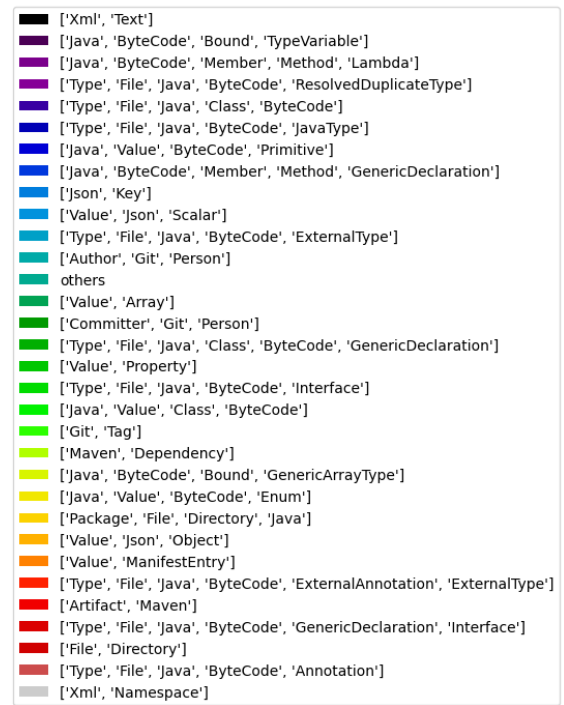
	nodeLabels	nodesWithThatLabels	nodesWithThatLabelsPercent
0	[Analyze, Task, jQAssistant]	1	0.000309
1	[File, TS, Scan]	1	0.000309
2	[File, Json]	2	0.000617
3	[File]	3	0.000926
4	[Java, ByteCode, Member, Constructor, Method, ...]	4	0.001234
5	[Maven, Exclusion]	5	0.001543
6	[Value, Array, Json]	6	0.001852
7	[Type, File, Java, ByteCode, Void]	9	0.002777
8	[File, Maven, Xml, Pom, Document]	9	0.002777
9	[Java, ManifestSection]	9	0.002777
10	[File, Java, Manifest]	9	0.002777
11	[Artifact, File, Jar, Archive, Zip, Java]	9	0.002777
12	[File, Java, ServiceLoader]	10	0.003086
13	[File, Java, Properties]	12	0.003703
14	[Maven, ExecutionGoal]	16	0.004938
15	[Maven, PluginExecution]	16	0.004938
16	[Xml, Attribute]	18	0.005555
17	[jQAssistant, Rule, Concept]	19	0.005863
18	[Maven, Plugin]	21	0.006481
19	[Maven, Configuration]	21	0.006481
20	[Git, Branch]	26	0.008024
21	[Type, File, Java, ByteCode, Enum]	28	0.008641
22	[Type, File, Java, ByteCode, PrimitiveType]	29	0.008949
23	[Xml, Namespace]	36	0.011110
24	[Type, File, Java, ByteCode, Annotation]	43	0.013270
25	[File, Directory]	44	0.013578
26	[Type, File, Java, ByteCode, GenericDeclaratio...	85	0.026231
27	[Artifact, Maven]	92	0.028391
28	[Type, File, Java, ByteCode, ExternalAnnotatio...	93	0.028700
29	[Value, ManifestEntry]	120	0.037032

Chart 1b - Lowest node count by label combination

Shows the lowest (less than 0.5% overall) node count label combinations. Therefore, this plot breaks down the "others" slice of the pie chart above. Values under 0.01% will be grouped into "others" to get a cleaner plot.

<Figure size 640x480 with 0 Axes>

■	['Xml', 'Text']
■	['Java', 'ByteCode', 'Bound', 'TypeVariable']
■	['Java', 'ByteCode', 'Member', 'Method', 'Lambda']
■	['Type', 'File', 'Java', 'ByteCode', 'ResolvedDuplicateType']
■	['Type', 'File', 'Java', 'Class', 'ByteCode']
■	['Type', 'File', 'Java', 'ByteCode', 'JavaType']
■	['Java', 'Value', 'ByteCode', 'Primitive']
■	['Java', 'ByteCode', 'Member', 'Method', 'GenericDeclaration']
■	['Json', 'Key']
■	['Value', 'Json', 'Scalar']
■	['Type', 'File', 'Java', 'ByteCode', 'ExternalType']
■	['Author', 'Git', 'Person']
■	others
■	['Value', 'Array']
■	['Committer', 'Git', 'Person']
■	['Type', 'File', 'Java', 'Class', 'ByteCode', 'GenericDeclaration']
■	['Value', 'Property']
■	['Type', 'File', 'Java', 'ByteCode', 'Interface']
■	['Java', 'Value', 'Class', 'ByteCode']
■	['Git', 'Tag']
■	['Maven', 'Dependency']
■	['Java', 'ByteCode', 'Bound', 'GenericArrayType']
■	['Java', 'Value', 'ByteCode', 'Enum']
■	['Package', 'File', 'Directory', 'Java']
■	['Value', 'Json', 'Object']
■	['Value', 'ManifestEntry']
■	['Type', 'File', 'Java', 'ByteCode', 'ExternalAnnotation', 'ExternalType']
■	['Artifact', 'Maven']
■	['Type', 'File', 'Java', 'ByteCode', 'GenericDeclaration', 'Interface']
■	['File', 'Directory']
■	['Type', 'File', 'Java', 'ByteCode', 'Annotation']
■	['Xml', 'Namespace']



Lists the 40 labels with the highest number of nodes. Doesn't sum up to the total number of nodes or 100% because one node can have multiple labels. Helps to identify commonly used labels.

Lists the 40 labels with the highest number of nodes. Doesn't sum up to the total number of nodes or 100% because one node can have multiple labels. Helps to identify commonly used labels.

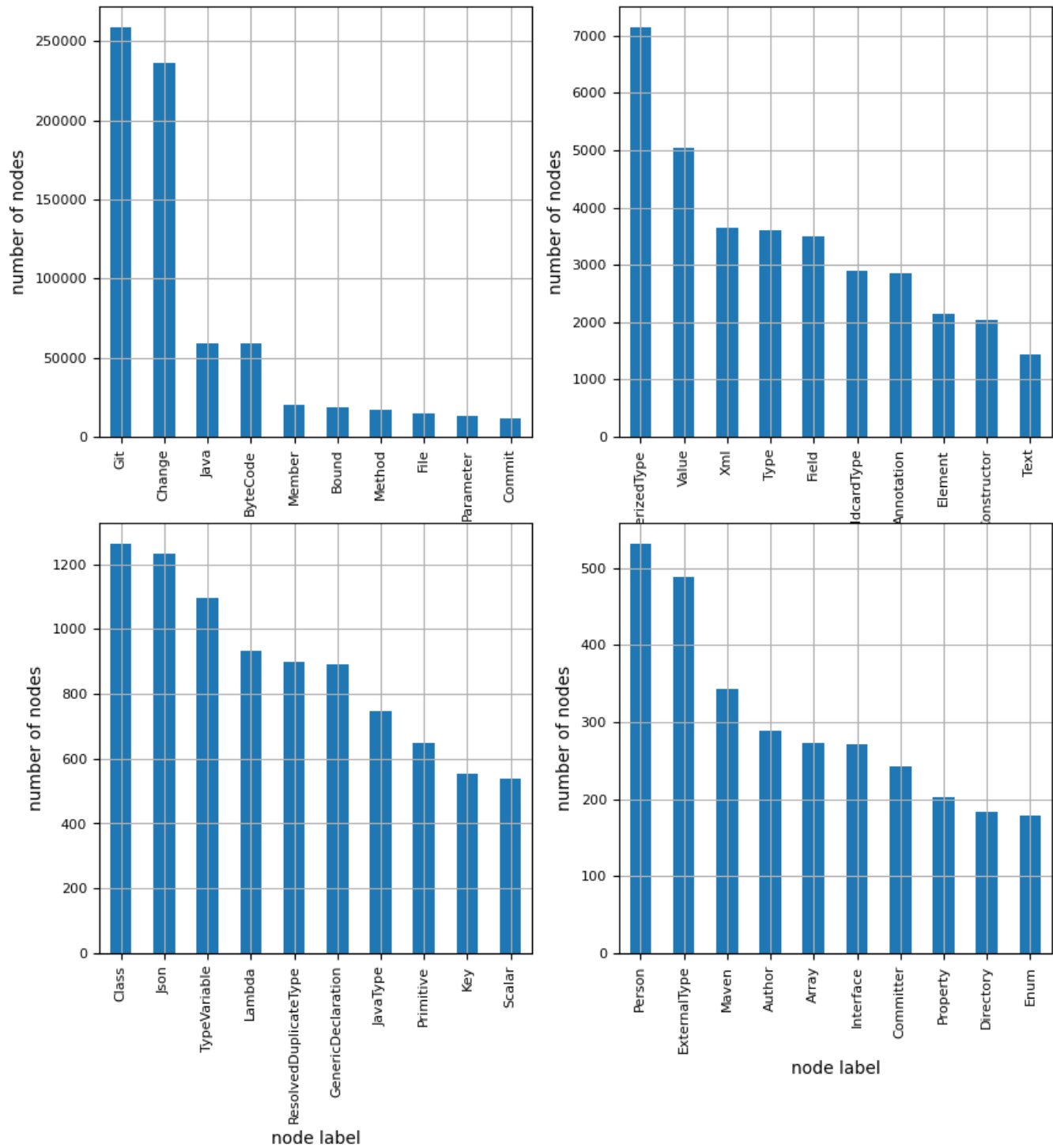
	nodeLabel	nodesWithThatLabel	nodesWithThatLabelPercent
0	Git	258997	79.926985
1	Change	235891	72.796428
2	Java	59177	18.262139
3	ByteCode	58989	18.204122
4	Member	20231	6.243326
5	Bound	18402	5.678893
6	Method	16740	5.165997
7	File	14444	4.457447
8	Parameter	12968	4.001950
9	Commit	11783	3.636257
10	ParameterizedType	7154	2.207739
11	Value	5046	1.557206
12	Xml	3643	1.124237
13	Type	3608	1.113436
14	Field	3491	1.077329
15	WildcardType	2902	0.895563
16	Annotation	2856	0.881367
17	Element	2144	0.661643
18	Constructor	2048	0.632017
19	Text	1436	0.443152
20	Class	1264	0.390073
21	Json	1234	0.380815
22	TypeVariable	1094	0.337611
23	Lambda	931	0.287308
24	ResolvedDuplicateType	899	0.277433
25	GenericDeclaration	892	0.275273
26	JavaType	746	0.230217
27	Primitive	647	0.199665
28	Key	555	0.171274
29	Scalar	539	0.166336
30	Person	532	0.164176
31	ExternalType	489	0.150906
32	Maven	343	0.105850
33	Author	289	0.089186
34	Array	273	0.084248
35	Interface	271	0.083631
36	Committer	243	0.074990
37	Property	202	0.062338
38	Directory	183	0.056474
39	Enum	178	0.054931

Chart 1c - Highest node count by label

Shows the 40 labels with the highest number of nodes.

<Figure size 640x480 with 0 Axes>

Node count by label



Relationship Types

Table 2a - Highest relationship count by type

Lists the 30 relationship types with the highest number of occurrences. The whole table can be found in the CSV report `Relationship_type_count`.

Total number of relationships: 982315

	relationshipType	nodesWithThatRelationshipType	nodesWithThatRelationshipTypePercent
0	CONTAINS_CHANGE	235891	24.013784
1	MODIFIES	235891	24.013784
2	UPDATES	151654	15.438429
3	CREATES	58219	5.926714
4	DELETES	35985	3.663285
5	INVOKES	35534	3.617373
6	COMMITTED	23566	2.399027
7	DEPENDS_ON	21820	2.221283
8	OF_TYPE	21292	2.167533
9	DECLARES	20670	2.104213
10	OF_RAW_TYPE	17041	1.734780
11	HAS_PARENT	14321	1.457883
12	HAS	14057	1.431007
13	RETURNS	12524	1.274947
14	RENAMES	9967	1.014644
15	READS	9069	0.923227
16	HAS_ACTUAL_TYPE_ARGUMENT	8261	0.840973
17	HAS_NEW_NAME	6165	0.627599
18	OF_GENERIC_TYPE	5892	0.599808
19	RESOLVES_TO	5241	0.533536
20	SIMILAR	3955	0.402620
21	CONTAINS	3797	0.386536
22	WRITES	3796	0.386434
23	RETURNS_GENERIC	3538	0.360170
24	ANNOTATED_BY	2801	0.285143
25	REQUIRES	2172	0.221110
26	HAS_FIRST_CHILD	2144	0.218260
27	HAS_LAST_CHILD	2144	0.218260
28	HAS_ELEMENT	2126	0.216428
29	HAS_UPPER_BOUND	1519	0.154635

Chart 2a - Highest relationship count by type

Values under 0.5% will be grouped into "others" to get a cleaner plot. The group "others" is then broken down in the second chart.

<Figure size 640x480 with 0 Axes>

Relationship types (more than 0.5% overall)

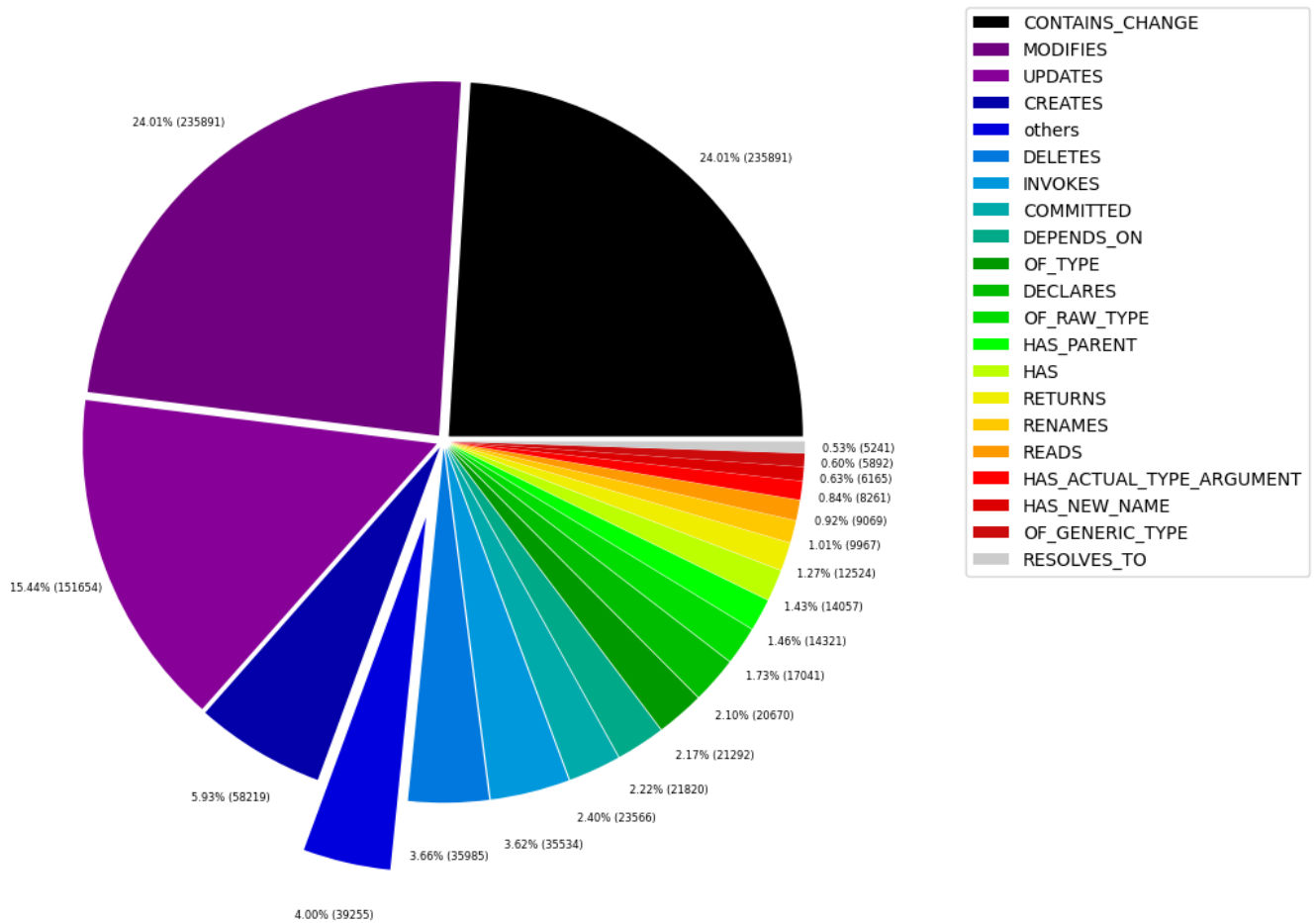


Table 2b - Lowest relationship count by type

Lists the 30 relationships type with the lowest number of occurrences up to 0.5% of the total node count. This is essentially breaking down the "others" slice from the chart above.

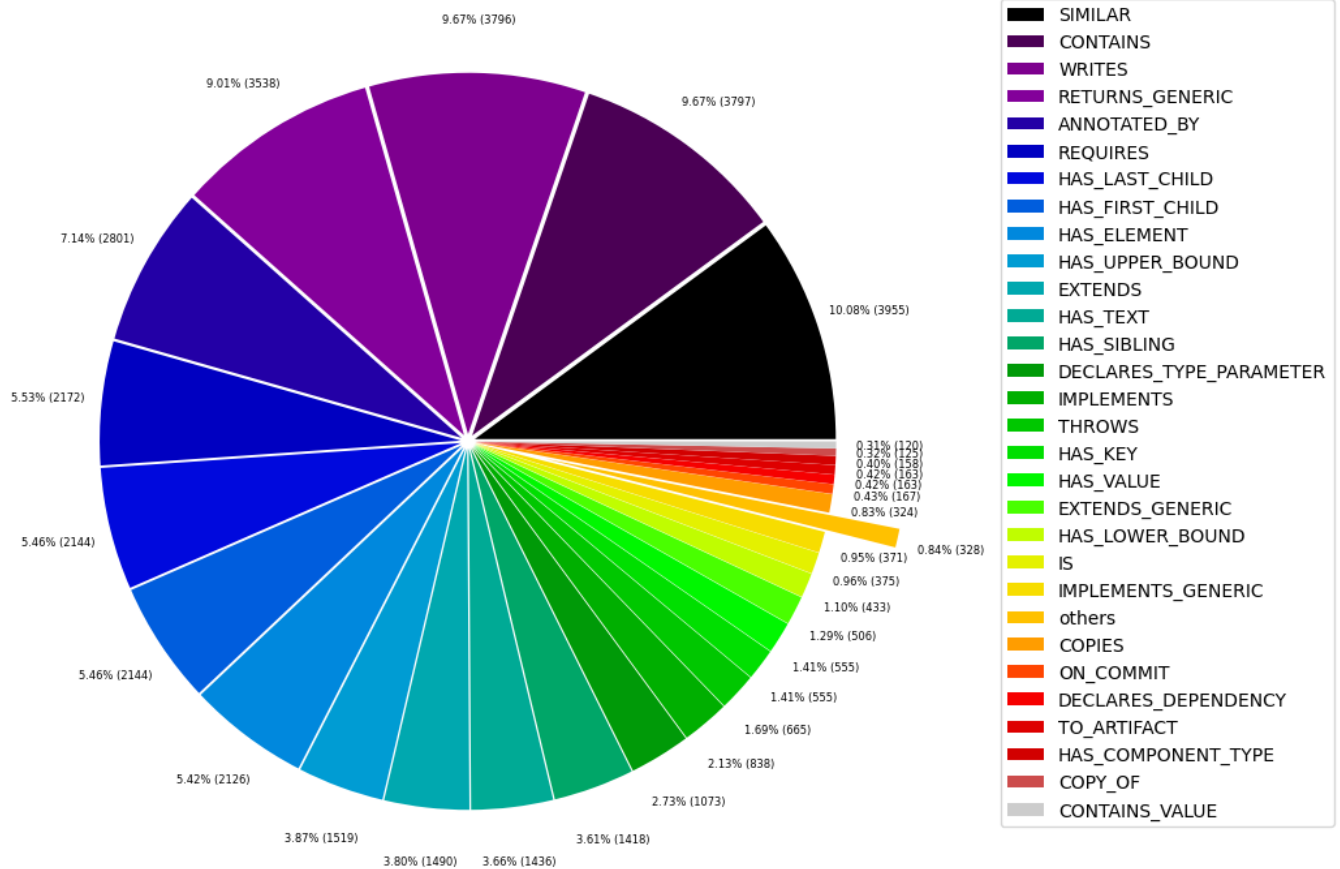
	relationshipType	nodesWithThatRelationshipType	nodesWithThatRelationshipTypePercent
0	HAS_PROPERTY	1	0.000102
1	THROWS_GENERIC	5	0.000509
2	EXCLUDES	5	0.000509
3	DESCRIBES	9	0.000916
4	HAS_ROOT_ELEMENT	11	0.001120
5	HAS_GOAL	16	0.001629
6	HAS_EXECUTION	16	0.001629
7	OF_NAMESPACE	18	0.001832
8	HAS_ATTRIBUTE	18	0.001832
9	INCLUDES_CONCEPT	19	0.001934
10	USES_PLUGIN	21	0.002138
11	REQUIRES_TYPE_PARAMETER	21	0.002138
12	IS_ARTIFACT	21	0.002138
13	HAS_CONFIGURATION	21	0.002138
14	HAS_HEAD	26	0.002647
15	REQUIRES_CONCEPT	28	0.002850
16	DECLARES_NAMESPACE	36	0.003665
17	HAS_DEFAULT	36	0.003665
18	CONTAINS_VALUE	120	0.012216
19	COPY_OF	125	0.012725
20	HAS_COMPONENT_TYPE	158	0.016084
21	TO_ARTIFACT	163	0.016593
22	DECLARES_DEPENDENCY	163	0.016593
23	ON_COMMIT	167	0.017001
24	COPIES	324	0.032983
25	IMPLEMENTS_GENERIC	371	0.037768
26	IS	375	0.038175
27	HAS_LOWER_BOUND	433	0.044080
28	EXTENDS_GENERIC	506	0.051511
29	HAS_VALUE	555	0.056499

Chart 2b - Lowest relationship count by type

Shows the lowest (less than 0.5% overall) relationship types. This plot breaks down the "others" slice of the pie chart above. Values under 0.01% will be grouped into "others" to get a cleaner plot.

<Figure size 640x480 with 0 Axes>

Relationship types (less than 0.5% overall)



Node labels with their relationships

Table 3a - Highest relationship count by node labels and relationship type

Lists the 30 node labels and their relationship types with the highest number of occurrences.

	sourceLabels	relationType	targetLabels	numberOfRelationships	numberOfNodesWithSameLabelsAsSource	numberOfNodesWithS
0	[Git, Commit]	CONTAINS_CHANGE	[Git, Change]	235891		11783
1	[Git, Change]	MODIFIES	[File, Git]	235891		235891
2	[Git, Change]	UPDATES	[File, Git]	151654		235891
3	[Git, Change]	CREATES	[File, Git]	58219		235891
4	[Git, Change]	DELETES	[File, Git]	35985		235891
5	[Java, ByteCode, Member, Method]	INVOKES	[Java, ByteCode, Member, Method]	21594		13085
6	[Git, Commit]	HAS_PARENT	[Git, Commit]	14312		11783
7	[Author, Git, Person]	COMMITTED	[Git, Commit]	11783		289
8	[Committer, Git, Person]	COMMITTED	[Git, Commit]	11783		243
9	[Git, Change]	RENAMES	[File, Git]	9967		235891
10	[Java, ByteCode, Member, Method]	HAS	[Java, ByteCode, Parameter]	8298		13085
11	[Java, ByteCode, Member, Method]	READS	[Java, ByteCode, Member, Field]	8146		13085
12	[Java, ByteCode, Parameter]	OF_TYPE	[Type, File, Java, ByteCode, JavaType]	6335		12968
13	[File, Git]	HAS_NEW_NAME	[File, Git]	6165		10598
14	[Java, ByteCode, Bound]	OF_RAW_TYPE	[Type, File, Java, ByteCode, JavaType]	3554		7094
15	[Java, ByteCode, Bound, ParameterizedType]	OF_RAW_TYPE	[Type, File, Java, ByteCode, JavaType]	3034		7154
16	[Java, ByteCode, Bound, ParameterizedType]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound, WildcardType]	2902		7154
17	[Java, ByteCode, Parameter]	OF_GENERIC_TYPE	[Java, ByteCode, Bound, ParameterizedType]	2650		12968
18	[Java, ByteCode, Bound, ParameterizedType]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound, TypeVariable]	2453		7154
19	[Java, ByteCode, Member, Constructor, Method]	WRITES	[Java, ByteCode, Member, Field]	2423		2044
20	[Java, Value, ByteCode, Annotation]	OF_TYPE	[Type, File, Java, ByteCode, ExternalAnnotatio...	2336		2813
21	[Xml, Element]	HAS_ELEMENT	[Xml, Element]	2126		2144
22	[Java, ByteCode, Member, Constructor, Method]	INVOKES	[Java, ByteCode, Member, Constructor, Method]	2109		2044
23	[Java, ByteCode, Member, Method]	RETURNS	[Type, File, Java, ByteCode, JavaType]	2087		13085
24	[Java, ByteCode, Member, Method]	INVOKES	[Java, ByteCode, Member, Constructor, Method]	2033		13085
25	[Java, ByteCode, Member, Constructor, Method]	HAS	[Java, ByteCode, Parameter]	2021		2044
26	[Java, ByteCode, Parameter]	OF_GENERIC_TYPE	[Java, ByteCode, Bound]	2020		12968
27	[Java, ByteCode, Member, Method, Lambda]	INVOKES	[Java, ByteCode, Member, Method]	1866		931
28	[Java, ByteCode, Member, Constructor, Method]	INVOKES	[Java, ByteCode, Member, Method]	1795		2044
29	[Java, ByteCode, Bound, ParameterizedType]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound]	1792		7154

Graph Density

```
total_number_of_nodes (vertices): 324042
total_number_of_relationships (edges): 982315
-> total directed graph density: 9.355123132136951e-06
-> total directed graph density in percent: 0.0009355123132136951
```