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# Overview

The idnits program inspects Internet-Draft documents for a variety of conditions that should be adjusted to bring the document into line with policies from the IETF, the IETF Trust, and the RFC Editor. Several large upcoming changes in those policies need to be reflected. In particular, the RFC Editor will allow non-ASCII UTF-8 to appear in current text format RFCs, and the current program treats the presence of such characters as an error. As RFCs transition to publication in the xml2rfc v3 format, the XML source for those RFCs (and Internet-Drafts that lead to them) should be inspected directly.

The current program has grown through incremental improvement over several years. Some very complex logic has been necessary at times, such as during the transition to the current Trust Legal Provisions (TLP) policies. It is written as a shell script that invokes several utilities, primarily awk. Rather than continuing to expand this script, the current maintainer recommends a fresh implementation, in Python, with the following high-level goals:

* Modularity, facilitating integration with the datatracker for document metadata, and draft submission
* Simplicity, removing much of the accumulated complexity
* Maintainability, drawing on the skills of the growing set of volunteers working with the datatracker codebase

# Deliverables/Tasks

* Identification of high-level modules and design of the API for those modules
* Identification appropriate existing APIs into document and series metadata (for retrieving current document state and the contents of the downref registry), along with design and development of any additional needed interfaces.
* Design of the command-line arguments
* Development of the application
* Development of an extensible suite of test documents and tests demonstrating correct behavior for each of the below requirements
* Integration of the application into production systems

# Detailed Description

The program will accept either a text document or an XML document that uses the xml2rfc v3 grammar. It will produce diagnostic output on stdout appropriate for direct display, and for inclusion in a web page. It is desirable that the implementation also provides a software API. Applications like the submit tool in the IETF datatracker will use this implementation.

The program will be configurable to operate in several modes, affecting how severely to consider each issue found. The appropriate severity for each issue is detailed later in this document.

* Normal: Apply the full set of checks with the default severity
* Forgive Checklist Issues: Treat checklist issues as less severe
* Submission: Only treat issues that should prevent submission as errors

The program will have options allowing:

* Different levels of output verbosity, including a debug level that will present diagnostics of internal operation (such as displaying text matches)
* Suppression of issues below a given level of severity (e.g., suppress warnings and comments)

The program will be resilient to files created on various operating systems with different conventions for line-endings (e.g., it will treat CR, LF, and CRLF as equivalent).

The program must be usable on modern UNIX-like systems (including Linux and OS X), and modern versions of Microsoft Windows. The program is expected to use the Internet to retrieve information from the datatracker and possibly other systems, but must remain usable when the host has no Internet connection. If information needed for diagnostics (such as the current status of a referenced RFC) is not available, the program will note that in its output and proceed without it.

The program will be used as part of a web service, replacing the service currently available at <http://www.ietf.org/tools/idnits>.

If the program is presented with an RFC and asked to operate in the submission mode, it will produce an error and stop processing.

If the program is presented with a text input document that appears to be a tombstone, it will report so and stop processing.

If the program is presented with an XML input document that is not well formed, it will process as much as possible, and provide diagnostics on where the format becomes invalid.

When producing verbose output, the program will list each occurrence of an issue, along with where the issue occurs. For all input document types, it will note the line number of the line exhibiting the issues. For XML input documents, it should, when possible, also provide an XPath expression that selects the content with the issue as specifically as possible.

To test for many of the conditions described later in this document, the program will need to identify a section or attribute from the input document. If the input document is a text document, the program is expected to extract the needed information in ways informed by the current program (the algorithms there have been tuned over many years). When the input is an XML document, the needed information will often be directly identified. For example, the abstract will be within the <abstract> tag in the XML document. Other section headings can be searched for in a <name> tag with a <section> tag. The document’s date will be in a <date> child of <front>.

Several of the conditions below speak of “sufficiently matching” given text. The program will follow the algorithms in the current implementation to make that determination.

In the below tables, the three modes and the severity levels have been abbreviated to improve the layout of the condition descriptions. The abbreviations are as follows

* norm: normal
* f-c: forgive-checklist
* sub: submission
* warn: warning
* comm: comment

If a row ends with a ‘\*’, the treatment of the condition is either new, or is significantly different from the current idnits policies.

## Conditions to check for any input type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Condition** | **norm** | **f-c** | **sub** |  |
| Control characters other than CR, NL, or FF appear *(0x01-0x09,0x0b,0x0e-0x1f)* | error | warn | none |  |
| Byte sequences that are not valid UTF-8 appear | error | warn | none | \* |
| Non-ASCII UTF-8 appear *(comment will point to guidance in draft-iab-rfc-nonascii or its successor)* | comm | comm | none | \* |
| Missing Abstract section | error | error | error |  |
| Missing Introduction section | error | warn | none |  |
| Missing Security Considerations section | error | warn | none |  |
| Missing Author Address section | error | warn | none |  |
| References (if any present) are not categorized as Normative or Informative | error | warn | none |  |
| Abstract contains references | error | warn | none |  |
| FQDN appears (other than www.ietf.org) not meeting RFC2606/RFC6761 recommendations | warn | warn | none |  |
| Private IPv4 address appears that doesn’t meet RFC5735 recommendations | warn | warn | none |  |
| Multicast IPv4 address appears that doesn’t meet RFC5771/RFC6676 recommendations | warn | warn | none |  |
| Other IPv4 address appears that doesn’t meet RFC5735 recommendations | warn | warn | none |  |
| Unique Local IPv6 address appears that doesn’t meet RFC3849/RFC4291 recommendations | warn | warn | none |  |
| Link Local IPv6 address appears that doesn’t meet RFC3849/RFC4291 recommendations | warn | warn | none |  |
| Other IPv6 address appears that doesn’t meet RFC3849/RFC4291 recommendations | warn | warn | none |  |
| A possible code comment is detected outside of a marked code block | warn | warn | warn |  |
| 2119 keywords occur, but neither the matching boilerplate nor a reference to 2119 is missing | error | warn | none |  |
| 2119 keywords occur, a reference to 2119 exists, but matching boilerplate is missing | warn | warn | none |  |
| 2119 boilerplate is present, but document doesn’t use 2119 keywords | warn | warn | none |  |
| badly formed combination of 2119 words occurs *(MUST not, SHALL not, SHOULD not, not RECOMMENDED, MAY NOT, NOT REQUIRED, NOT OPTIONAL)* | comm | comm | none |  |
| text similar to 2119 boilerplate occurs, but doesn’t reference 2119 | error | error | none |  |
| NOT RECOMMENDED appears, but is not included in 2119-like boilerplate | warn | warn | none |  |
| Abstract doesn’t directly state it updates or obsoletes each document so affected *(Additional comment if Abstract mentions the document some other way)* | comm | comm | none |  |
| Abstract states it updates or obsoletes a document not declared in the relevant field previously | comm | comm | none |  |
| Author’s address section title misuses possessive mark or uses a character other than a single quote | warn | warn | none |  |
| a reference is declared, but not used in the document | warn | warn | warn |  |
| a reference appears to be a downref *(noting if reference appears in the downref registry)* | error | warn | none |  |
| a normative reference to an document of unknown status appears *(possible downref)* | comm | comm | none |  |
| a normative or unclassified reference is to an obsolete document | error | warn | none |  |
| an informative reference is to an obsolete document | comm | comm | none |  |
| a reference is to a draft that has already been published as an rfc | warn | warn | none |  |
| A code-block is detected, but the block does not contain a license declaration | warn | warn | none | \* |

### Filename checks

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| filename’s base name contains characters other than digits, lowercase alpha, and dash | error | error | error | \* |
| filename’s extension doesn’t match format type (.txt, .xml) | error | error | error | \* |
| filename’s base name doesn’t match the name declared in the document | error | error | error | \* |
| filename (including extension) is more than 50 characters | error | error | error |  |

### Metadata checks

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Document claims to obsolete an RFC that is already obsolete | warn | warn | none | \* |
| Document claims to update and RFC that is obsolete | warn | warn | none | \* |
| Document’s status or intended status is not found or not recognized | warn | warn | warn |  |
| Document’s date can’t be determined or is too far in the past or the future *(see existing implementation for “too far”)* | warn | warn | warn |  |

### If the document is an RFC

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Missing IANA considerations section | comm | comm | N/A |  |

### If the document is an Internet-Draft (that is, not an RFC)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| filename’s base name doesn’t begin with ‘draft’, contains two consecutive hyphens, or doesn’t have enough structure to contain the individual or stream, potentially a wg name, and a distinguishing name. *(draft-example-00 is an error, but draft-example-filename is acceptable)* | error | error | error |  |
| Missing IANA considerations section | error | warn | none |  |

#### Additional metadata check

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| version of document is unexpected (already exists, or leaves a gap) | warn | warn | warn | \* |

## XML Input Specific Conditions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| any deprecated elements or attributes appear | warn | warn | warn | \* |
| metadata and document’s ‘submissionType’ attribute state different streams | error | error | error | \* |
| The text inside a <sourcecode> tag contains the string ‘<CODE BEGINS>’ *(Warn that the string is unnecessary and may duplicate what a presentation format converter will produce.)* | warn | warn | none | \* |
| The text inside any other tag contains the string ‘<CODE BEGINS>’ *(Warn that if the text is a code block, it should appear in a <sourcecode> element)* | warn | warn | none | \* |
| text occurs that looks like a text-document reference (e.g. [1], or [RFC…) *(if the text was really a reference it should be in an <xref> tag)* | warn | warn | none | \* |
| <rfc> ipr attribute is missing or not recognized | error | error | error | \* |
| ipr attribute is not one of "trust200902”, ”noModificationTrust200902”, ”noDerivativesTrust200902”, or ”pre5378Trust200902" | warn | warn | warn | \* |
| document is ietf stream and ipr attribute is one of “noModificationTrust200902” or “noDerivativesTrust200902” | error | error | error | \* |
| <workgroup> content doesn’t end with “Group” | warn | warn | warn | \* |
| The “obsoletes” or “updates” attribute values of the <rfc> element are not comma separated strings of digits | error | warn | error  | \* |
| The rfcs indicated by the “obsoletes” and “updates” attribute values of the <rfc> element are not included in the references section | error | error | error | \* |
| <xref> has no target attribute | error | warn | error | \* |
| <xref> target attribute does not appear as an anchor of another element | error | warn | error | \* |
| <relref> has no target attribute | error | warn | error | \* |
| <relref> target attribute does not appear as an anchor of a <reference> element | error | warn | error | \* |
| A <reference> element pointed to by a <relref> target attribute does not itself have a target attribute | error | warn | error | \* |
| An element (particularly <artwork> or <sourcecode>) contains both a src attribute, and content | warn | warn | warn | \* |
| The src attribute of an element contains a URI scheme other than data:, file:, http:, or https: | error | warn | error | \* |
| <link> exists with DOI or RFC-series ISDN for this document when the document is an Internet-Draft | warn | warn | warn | \* |
| <section> with a numbered attribute of ‘false’ is not a child of <boilerplate>, <middle>, or <back>, or has a subsequent <section> sibling with a numbered attribute of ‘true’ | error | warn | error | \* |
| An <xref> element with no content and a ‘format’ attribute of ‘counter’ has a ‘target’ attribute whose value is not a section, figure, table or ordered list number | error | warn | error | \* |
| A <relref> element whose ‘target’ attribute points to a document in xml2rfcv3 format, and whose ‘relative’ attribute value (or the derived value from a ‘section’ attribute) does not appear as an anchor in that document | error | warn | error | \* |
| An <artwork> element with type ‘svg' has a ‘src’ attribute with URI scheme ‘data:’ and the mediatype of the data: URI is not ‘image/svg+xml’ | error | warn | error | \* |
| A <sourcecode> element has both a ‘src’ attribute and non-empty content | error | error | error | \* |
| An <artwork> element has type ‘binary-art’ and non-empty content | error | error | error | \* |

### If the document is an RFC

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A <note> element has a ‘removeInRFC’ attribute with a value of ‘true’ | error | error | error | \* |
| An <artwork> element has type other than ‘ascii-art’,’call-flow’,’hex-dump’, or ‘svg’ | error | warn | error | \* |

### Boilerplate checks

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| The text inside any tag sufficiently matches any of the boilerplate in the IETF-TLP-4 section 6a-6d *(such text should probably be removed and the ipr attribute of the rfc tag should be verified)* | warn | warn | warn | \* |
| The value of the <boilerplate> element, if non-empty, does not match what the ipr, category, submission, and consensus <rfc> attributes would cause to be generated | warn | warn | error | \* |

### Autogenerated identifier checks

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| The value of any present pn or slugifiedName attributes do not match what would be regenerated | warn | comm | warn | \* |

## Text Input Specific Conditions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| document does not appear to be ragged-right *(more than 50 lines of intra-line extra spacing)* | error | warn | none |  |
| document contains over-long lines *(cut-off is 72 characters. Report longest line, and count of long lines)* | error | warn | warn |  |
| document has hyphenated line-breaks | warn | warn | none |  |
| document has a hyphen followed immediately by a space within a line | warn | warn | none | \* |
| Updates or Obsoletes line on first page has more than just numbers of RFCs *(such as the character sequence ‘RFC’)* | warn | warn | none |  |
| Updates or Obsoletes numbers do not appear in ascending order | warn | warn | none |  |
| document starts with PK or BM | comm | comm | none |  |
| document appears to use numeric references, but contains something that looks like a text-style reference (or vice-versa) | comm | comm | none |  |
| a string that looks like a reference appears but does not occur in any reference section | warn | warn | warn |  |
| Abstract section is numbered | error | error | error |  |
| ‘Status of this memo’ section is numbered | error | error | error |  |
| Copyright Notice section is numbered | error | error | error |  |

### Boilerplate checks

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TLP-4 6.b.i copyright line is not present | error | error | error |  |
| TLP-4 6.b.i copyright date is not this (or command-line specified) year | warn | warn | warn |  |
| TLP-4 6.b.i or b.ii license notice is not present, or doesn’t match stream | error | error | error |  |
| IETF stream document sufficiently matches TLP-4 6.c.i or 6.c.ii text *(restrictions on publication or derivative works)* | error | error | error |  |
| More than one instance of text sufficiently matching the TLP-4 6.b.i copyright line occurs | warn | warn | warn |  |
| More than one instance of text sufficiently matching either the TLP4 6.b.i or 6.b.ii license notice occurs | warn | warn | warn |  |
| Document obsoletes or updates any pre-5378 document, and doesn’t contain the pre-5378 material of TLP4 6.c.iii | warn | warn | warn |  |
| Any prior version of the document might be pre-5378 and the document doesn’t contain the pre-5378 material of TLP4 6.c.iii | warn | warn | warn |  |

### If the document is an Internet-Draft (i.e not an RFC)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| contains over-long pages | warn | warn | none |  |
| report count of pages with more than 58 lines |  |  |  |  |
| doesn’t say INTERNET DRAFT in the upper left of the first page | error | error | error |  |
| doesn’t have expiration date on first and last page | error | error | error |  |
| doesn’t have an acceptable paragraph noting that IDs are working documents | error | error | error |  |
| doesn’t have an acceptable paragraph calling out 6 month validity | error | error | error |  |
| doesn’t have an acceptable paragraph pointing to the list of current ids | error | error | error |  |
| has multiple occurrences of current id text | error | error | error |  |
| document name doesn’t appear on first page | error | error | error |  |
| has no Table of Contents | error | error | warn |  |
| IPR disclosure text (TLP 4.0 6.a) does not appear | error | error | error |  |
| IPR disclosure text (TLP 4.0 6.a) appears after first page | error | error | error |  |
| pages are not separated by formfeeds | warn | warn | none |  |
| ‘FORMFEED’ and ‘[Page’ occur on a line, possibly separated by spaces *(indicates NROFF post-processing wasn’t successful)* | comm | comm | comm |  |
| section title occurs at an unexpected indentation | warn | warn | none |  |

# Functionality from the current implementation that will not be carried forward

The current implementation has several undocumented command-line options that will not be carried forward. In particular, the new implementation will not perform spell checking or grammar checking. When assessing text input, the new implementation will not check for a Shadow-directories line.

# Expected Development Processes and Practices

The contractor will adhere to the requirements at http://trac.tools.ietf.org/tools/ietfdb/wiki/ContractorInstructions?version=23