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Commit d851f8e



miss-islington and serhiy-storchaka authored on Jun 13, 2025 · 100 / 104 · Verified

```
[3.14] gh-135462: Fix quadratic complexity in processing special input in
HTMLParser (GH-135464) (GH-135481)

End-of-file errors are now handled according to the HTML5 specs --
comments and declarations are automatically closed, tags are ignored.
(cherry picked from commit 6eb6c5d)

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```

3.14 (#135481) · v3.14.5rc1 ... v3.14.0b3

1 parent b573a85 commit d851f8e

3 files changed +111 -31

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```
Lib/html/parser.py
@@ -27,6 +27,7 @@
```

```

27 27 attr_charref = re.compile(r'&#[0-9]+#[xX][0-9a-fA-F]+|[a-zA-Z][a-zA-Z0-9]*
    [;=?]')

28 28
29 29 starttagopen = re.compile('<[a-zA-Z]')
30 + endtagopen = re.compile('</[a-zA-Z]')
30 31 piclose = re.compile('>')
31 32 commentclose = re.compile(r'--\s*>')
32 33 # Note:
    @@ -195,25 +196,43 @@ def goahead(self, end):
195 196         k = self.parse_pi(i)
196 197         elif startswith("<", i):
197 198         k = self.parse_html_declaration(i)
198 -         elif (i + 1) < n:
199 +         elif (i + 1) < n or end:
199 200             self.handle_data("<")
200 201             k = i + 1
201 202         else:
202 203             break
203 204         if k < 0:
204 205             if not end:
205 206                 break
206 -         k = rawdata.find('>', i + 1)
207 -         if k < 0:
208 -             k = rawdata.find('<', i + 1)
209 -             if k < 0:
210 -                 k = i + 1
211 -         else:
212 -             k += 1
213 -         if self.convert_charrefs and not self.cdata_elem:
214 -             self.handle_data(unescape(rawdata[i:k]))
207 +         if starttagopen.match(rawdata, i): # < + letter
208 +             pass
209 +         elif startswith("</", i):
210 +             if i + 2 == n:
211 +                 self.handle_data("</")
212 +             elif endtagopen.match(rawdata, i): # </ + letter
213 +                 pass
214 +             else:
215 +                 # bogus comment

```

```

216 +         self.handle_comment(rawdata[i+2:])
217 +     elif startswith("<!--", i):
218 +         j = n
219 +         for suffix in ("--!", "--", "-"):
220 +             if rawdata.endswith(suffix, i+4):
221 +                 j -= len(suffix)
222 +                 break
223 +         self.handle_comment(rawdata[i+4:j])
224 +     elif startswith("<![CDATA[", i):
225 +         self.unknown_decl(rawdata[i+3:])
226 +     elif rawdata[i:i+9].lower() == '<!doctype':
227 +         self.handle_decl(rawdata[i+2:])
228 +     elif startswith("<!", i):
229 +         # bogus comment
230 +         self.handle_comment(rawdata[i+2:])
231 +     elif startswith("<?", i):
232 +         self.handle_pi(rawdata[i+2:])
215 233         else:
216 -         self.handle_data(rawdata[i:k])
234 +         raise AssertionError("we should not get here!")
235 +         k = n
217 236         i = self.updatepos(i, k)
218 237     elif startswith("&#", i):
219 238         match = charref.match(rawdata, i)

```

Lib/test/test_htmlparser.py

```

@@ -5,6 +5,7 @@
5 5     import unittest
6 6
7 7     from unittest.mock import patch
8 + from test import support
8 9
9 10
10 11     class EventCollector(html.parser.HTMLParser):
@@ -430,28 +431,34 @@ def test_tolerant_parsing(self):
430 431         ('data', '<'),
431 432         ('starttag', 'bc<', [('a', None)]),
432 433         ('endtag', 'html'),

```

| | | | |
|-----|-----|--|---|
| 433 | - | | ('data', '\n'), |
| 434 | - | | ('comment', '/img'), |
| 435 | - | | ('endtag', 'html<')) |
| 434 | + | | ('data', '\n')) |
| 436 | 435 | | |
| 437 | 436 | | def test_starttag_junk_chars(self): |
| 437 | + | | self._run_check("<", [('data', '<')]) |
| 438 | + | | self._run_check("<>", [('data', '<>')]) |
| 439 | + | | self._run_check("< >", [('data', '< >')]) |
| 440 | + | | self._run_check("< ", [('data', '< ')]) |
| 438 | 441 | | self._run_check("</>", []) |
| 442 | + | | self._run_check("<\$>", [('data', '<\$>')]) |
| 439 | 443 | | self._run_check("</\$>", [('comment', '\$')]) |
| 440 | 444 | | self._run_check("</", [('data', '</')]) |
| 441 | - | | self._run_check("</a", [('data', '</a')]) |
| 445 | + | | self._run_check("</a", []) |
| 446 | + | | self._run_check("</ a>", [('endtag', 'a')]) |
| 447 | + | | self._run_check("</ a", [('comment', ' a')]) |
| 442 | 448 | | self._run_check("<a<a>", [('starttag', 'a<a', [])]) |
| 443 | 449 | | self._run_check("</a<a>", [('endtag', 'a<a')]) |
| 444 | - | | self._run_check("<!", [('data', '<!')]) |
| 445 | - | | self._run_check("<a", [('data', '<a')]) |
| 446 | - | | self._run_check("<a foo='bar'", [('data', "<a foo='bar'")]) |
| 447 | - | | self._run_check("<a foo='bar", [('data', "<a foo='bar'")]) |
| 448 | - | | self._run_check("", [('data', "")]) |
| 449 | - | | self._run_check("", [('data', "")]) |
| 450 | + | | self._run_check("<!", [('comment', '!')]) |
| 451 | + | | self._run_check("<a", []) |
| 452 | + | | self._run_check("<a foo='bar'", []) |
| 453 | + | | self._run_check("<a foo='bar", []) |
| 454 | + | | self._run_check("", []) |
| 455 | + | | self._run_check("", []) |
| 450 | 456 | | self._run_check("<a\$>", [('starttag', 'a\$', [])]) |
| 451 | 457 | | self._run_check("<a\$b>", [('starttag', 'a\$b', [])]) |
| 452 | 458 | | self._run_check("<a\$b/>", [('startendtag', 'a\$b', [])]) |
| 453 | 459 | | self._run_check("<a\$b >", [('starttag', 'a\$b', [])]) |
| 454 | 460 | | self._run_check("<a\$b />", [('startendtag', 'a\$b', [])]) |
| 461 | + | | self._run_check("</a\$b>", [('endtag', 'a\$b')]) |
| 455 | 462 | | |
| 456 | 463 | | def test_slashes_in_starttag(self): |

```

457 464         self._run_check('<a foo="var"/>', [('startendtag', 'a', [('foo',
'var')]))])

```



```
@@ -576,21 +583,50 @@ def test_EOF_in_charref(self):
```

```

576 583         for html, expected in data:
577 584             self._run_check(html, expected)

```

```
578 585
```

```
579 -     def test_EOF_in_comments_or_decls(self):
```

```
586 +     def test_eof_in_comments(self):
```

```
580 587         data = [
```

```

581 -             ('<!', [('data', '<!')]),
582 -             ('<!--', [('data', '<!--')]),
583 -             ('<!---', [('data', '<!---')]),
584 -             ('<![', [('data', '<![')]),
585 -             ('<![CDATA[', [('data', '<![CDATA[')]),
586 -             ('<![CDATA[x', [('data', '<![CDATA[x')]),
587 -             ('<!DOCTYPE', [('data', '<!DOCTYPE')]),
588 -             ('<!DOCTYPE HTML', [('data', '<!DOCTYPE HTML')]),

```

```

588 +             ('<!--', [('comment', '')]),
589 +             ('<!---', [('comment', '')]),
590 +             ('<!----', [('comment', '')]),
591 +             ('<!-----', [('comment', '-')]),
592 +             ('<!-----', [('comment', '--')]),
593 +             ('<!-----!', [('comment', '')]),
594 +             ('<!-----!', [('comment', '-!')]),
595 +             ('<!-----!>', [('comment', '-!>')]),
596 +             ('<!--foo', [('comment', 'foo')]),
597 +             ('<!--foo-', [('comment', 'foo')]),
598 +             ('<!--foo--', [('comment', 'foo')]),
599 +             ('<!--foo--!', [('comment', 'foo')]),
600 +             ('<!--<!--', [('comment', '<!')]),
601 +             ('<!--<!--!', [('comment', '<!')]),

```

```
589 602         ]
```

```
590 603         for html, expected in data:
```

```
591 604             self._run_check(html, expected)
```

```

605 +
606 +     def test_eof_in_declarations(self):

```

```

607 +         data = [
608 +             ('<!', [('comment', '')]),
609 +             ('<!--', [('comment', '-')]),

```

```

610 +         ('<![', [( 'comment', '[')]),
611 +         ('<![CDATA[', [( 'unknown decl', 'CDATA[')]),
612 +         ('<![CDATA[x', [( 'unknown decl', 'CDATA[x')]),
613 +         ('<![CDATA[x]', [( 'unknown decl', 'CDATA[x'])]),
614 +         ('<![CDATA[x]]', [( 'unknown decl', 'CDATA[x]]')]),
615 +         ('<!DOCTYPE', [( 'decl', 'DOCTYPE')]),
616 +         ('<!DOCTYPE ', [( 'decl', 'DOCTYPE ')]),
617 +         ('<!DOCTYPE html', [( 'decl', 'DOCTYPE html')]),
618 +         ('<!DOCTYPE html ', [( 'decl', 'DOCTYPE html ')]),
619 +         ('<!DOCTYPE html PUBLIC', [( 'decl', 'DOCTYPE html PUBLIC')]),
620 +         ('<!DOCTYPE html PUBLIC "foo', [( 'decl', 'DOCTYPE html PUBLIC
        "foo')]),
621 +         ('<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01//EN" "foo',
622 +         [( 'decl', 'DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01//EN"
        "foo')]),
623 +     ]
624 +     for html, expected in data:
625 +         self._run_check(html, expected)
626 +
592 627         def test_bogus_comments(self):
593 -         html = ('<! not really a comment >'
628 +         html = ('<!ELEMENT br EMPTY>'
629 +                 '<! not really a comment >'
594 630                 '<! not a comment either -->'
595 631                 '<! -- close enough -->'
596 632                 '<!><!-- this was an empty comment>'
@@ -604,6 +640,7 @@ def test_bogus_comments(self):
604 640                 '<![CDATA]]>' # required '[' after CDATA
605 641             )
606 642             expected = [
643 +                 ('comment', 'ELEMENT br EMPTY'),
607 644                 ('comment', ' not really a comment '),
608 645                 ('comment', ' not a comment either --'),
609 646                 ('comment', ' -- close enough --'),
@@ -684,6 +721,26 @@ def test_convert_charrefs_dropped_text(self):
684 721                 ('endtag', 'a'), ('data', ' bar & baz')]
685 722             )
686 723
724 + @support.requires_resource('cpu')

```

```
725 +     def test_eof_no_quadratic_complexity(self):
726 +         # Each of these examples used to take about an hour.
727 +         # Now they take a fraction of a second.
728 +         def check(source):
729 +             parser = html.parser.HTMLParser()
730 +             parser.feed(source)
731 +             parser.close()
732 +             n = 120_000
733 +             check("<a " * n)
734 +             check("<a a=" * n)
735 +             check("</a " * 14 * n)
736 +             check("</a a=" * 11 * n)
737 +             check("<!--" * 4 * n)
738 +             check("<!" * 60 * n)
739 +             check("<?" * 19 * n)
740 +             check("</ $" * 15 * n)
741 +             check("<![CDATA[" * 9 * n)
742 +             check("<!doctype" * 35 * n)
743 +
```

687 744

```
688 745     class AttributesTestCase(TestCaseBase):
```

689 746



...5-06-13-15-55-22.gh-issue-135462.KBeJpc.rst



... @@ -0,0 +1,4 @@

```
1 + Fix quadratic complexity in processing specially crafted input in
2 + :class:`html.parser.HTMLParser`. End-of-file errors are now handled according
3 + to the HTML5 specs -- comments and declarations are automatically closed,
4 + tags are ignored.
```

Comments 0