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[perl #75174] Clone dir handles

On systems that support fchdir, use it to clone dir handles.

On other systems, at least for now, don't give the new thread a copy of the handle. This is not ideal, but better than crashing.

1 parent [6034bce](#) commit 11a11ec

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MANIFEST			
		@@ -4653,6 +4653,7 @@ t/op/symbolcache.t	See if undef/delete works on stashes with functions
4653	4653	t/op/sysio.t	See if sysread and syswrite work
4654	4654	t/op/taint.t	See if tainting works
4655	4655	t/op/threads_create.pl	Ancillary file for t/op/threads.t
	4656	+ t/op/threads-dirh.t	Test interaction of threads and dir handles
4656	4657	t/op/threads.t	Misc. tests for perl features with threads
4657	4658	t/op/tiearray.t	See if tie for arrays works

4658 4659 t/op/tie_fetch_count.t See if FETCH is only called once on tied variables



sv.c



```
@@ -10838,11 +10838,101 @@ Perl_fp_dup(pTHX_ PerlIO *const fp, const
char type, CLONE_PARAMS *const param)
```

```
10838 10838 DIR *
10839 10839 Perl_dirp_dup(pTHX_ DIR *const dp)
10840 10840 {
10841 10841 + #ifdef HAS_FCHDIR
10842 10842 +     DIR *ret;
10843 10843 +     DIR *pwd;
10844 10844 +     register const Dirent_t *dirent;
10845 10845 +     char smallbuf[256];
10846 10846 +     char *name = NULL;
10847 10847 +     STRLEN len = -1;
10848 10848 +     long pos;
10849 10849 + #endif
10850 10850 +
10841 10851     PERL_UNUSED_CONTEXT;
10852 10852 +
10853 10853 + #ifdef HAS_FCHDIR
10842 10854     if (!dp)
10843 10855     return (DIR*)NULL;
10844 10854 - /* XXX TODO */
10845 10855 - return dp;
10856 10856 + /* look for it in the table first */
10857 10857 + ret = (DIR*)ptr_table_fetch(PL_ptr_table, dp);
10858 10858 + if (ret)
10859 10859 + return ret;
10860 10860 +
10861 10861 + /* create anew */
10862 10862 +
10863 10863 + /* open the current directory (so we can switch back) */
10864 10864 + if (!(pwd = PerlDir_open("."))) return (DIR *)NULL;
10865 10865 +
10866 10866 + /* chdir to our dir handle and open the present working directory */
10867 10867 + if (fchdir(my_dirfd(dp)) < 0 || !(ret = PerlDir_open("."))) {
10868 10868 + PerlDir_close(pwd);
```

```
10869 +     return (DIR *)NULL;
10870 + }
10871 + /* Now we should have two dir handles pointing to the same dir. */
10872 +
10873 + /* Be nice to the calling code and chdir back to where we were. */
10874 + fchdir(my_dirfd(pwd)); /* If this fails, then what? */
10875 +
10876 + /* We have no need of the pwd handle any more. */
10877 + PerlDir_close(pwd);
10878 +
10879 + #ifdef DIRNAMLEN
10880 + # define d_namlen(d) (d)->d_namlen
10881 + #else
10882 + # define d_namlen(d) strlen((d)->d_name)
10883 + #endif
10884 + /* Iterate once through dp, to get the file name at the current posi-
10885 +    tion. Then step back. */
10886 + pos = PerlDir_tell(dp);
10887 + if ((dirent = PerlDir_read(dp))) {
10888 +     len = d_namlen(dirent);
10889 +     if (len <= sizeof smallbuf) name = smallbuf;
10890 +     else Newx(name, len, char);
10891 +     Move(dirent->d_name, name, len, char);
10892 + }
10893 + PerlDir_seek(dp, pos);
10894 +
10895 + /* Iterate through the new dir handle, till we find a file with the
10896 +    right name. */
10897 + if (!dirent) /* just before the end */
10898 +     for(;;) {
10899 +         pos = PerlDir_tell(ret);
10900 +         if (PerlDir_read(ret)) continue; /* not there yet */
10901 +         PerlDir_seek(ret, pos); /* step back */
10902 +         break;
10903 +     }
10904 + else {
10905 +     const long pos0 = PerlDir_tell(ret);
10906 +     for(;;) {
10907 +         pos = PerlDir_tell(ret);
10908 +         if ((dirent = PerlDir_read(ret))) {
```

```

10909 +     if (len == d_namlen(dirent)
10910 +         && memEQ(name, dirent->d_name, len)) {
10911 +         /* found it */
10912 +         PerlDir_seek(ret, pos); /* step back */
10913 +         break;
10914 +     }
10915 +     /* else we are not there yet; keep iterating */
10916 + }
10917 + else { /* This is not meant to happen. The best we can do is
10918 +         reset the iterator to the beginning. */
10919 +     PerlDir_seek(ret, pos0);
10920 +     break;
10921 + }
10922 + }
10923 + }
10924 + #undef d_namlen
10925 +
10926 +     if (name && name != smallbuf)
10927 +         Safefree(name);
10928 +
10929 +     /* pop it in the pointer table */
10930 +     ptr_table_store(PL_ptr_table, dp, ret);
10931 +
10932 +     return ret;
10933 + #else
10934 +     return (DIR*)NULL;
10935 + #endif

```

```

10846 10936 }
10847 10937
10848 10938 /* duplicate a typeglob */

```



▼ t/op/threads-dirh.t



```

... @@ -0,0 +1,131 @@
1 + #!perl
2 +
3 + # Test interaction of threads and directory handles.
4 +
5 + BEGIN {
6 +     chdir 't' if -d 't';

```

```
7 + @INC = '../lib';
8 + require './test.pl';
9 + $| = 1;
10 +
11 + require Config;
12 + if (!$Config::Config{useithreads}) {
13 +     print "1..0 # Skip: no ithreads\n";
14 +     exit 0;
15 + }
16 + if ($ENV{PERL_CORE_MINITEST}) {
17 +     print "1..0 # Skip: no dynamic loading on miniperl, no threads\n";
18 +     exit 0;
19 + }
20 +
21 + plan(6);
22 + }
23 +
24 + use strict;
25 + use warnings;
26 + use threads;
27 + use threads::shared;
28 + use File::Path;
29 + use File::Spec::Functions qw 'updir catdir';
30 + use Cwd 'getcwd';
31 +
32 + # Basic sanity check: make sure this does not crash
33 + fresh_perl_is <<'# this is no comment', 'ok', {}, 'crash when duping dirh';
34 +     use threads;
35 +     opendir dir, 'op';
36 +     async{}->join for 1..2;
37 +     print "ok";
38 + # this is no comment
39 +
40 + my $dir;
41 + SKIP: {
42 +     my $skip = sub {
43 +         chdir($dir);
44 +         chdir updir;
45 +         skip $_[0], 5
46 +     };
```

```

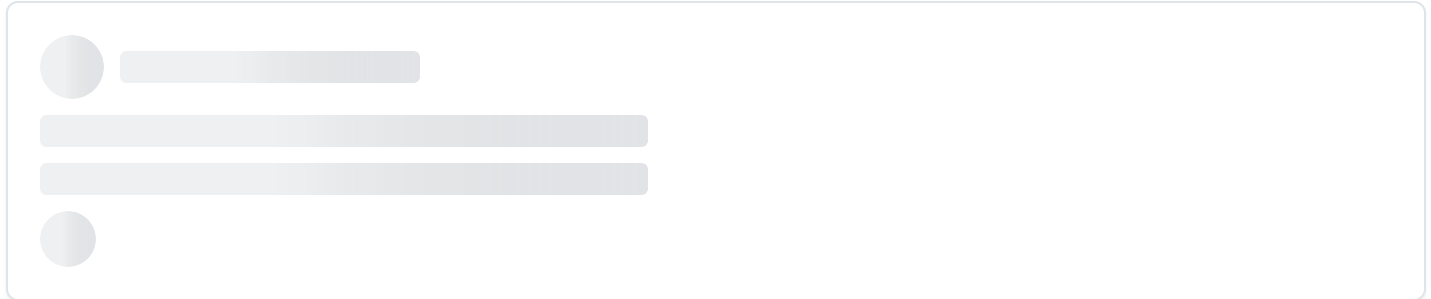
47 +
48 + if(!$Config::Config{d_fchdir}) {
49 +   $::TODO = 'dir handle cloning currently requires fchdir';
50 + }
51 +
52 + my @w :shared; # warnings accumulator
53 + local $SIG{__WARN__} = sub { push @w, $_[0] };
54 +
55 + $dir = catdir getcwd(), "thrext$$" . int rand() * 100000;
56 +
57 + rmtree($dir);
58 + mkdir($dir);
59 +
60 + # Create a dir structure like this:
61 + #   $dir
62 + #   |
63 + #   `-- toberead
64 + #       |
65 + #       +---- thrit
66 + #       |
67 + #       +---- rile
68 + #       |
69 + #       `---- zor
70 +
71 + chdir($dir);
72 + mkdir 'toberead';
73 + chdir 'toberead';
74 + {open my $fh, ">thrit" or &$skip("Cannot create file thrit")}
75 + {open my $fh, ">rile" or &$skip("Cannot create file rile")}
76 + {open my $fh, ">zor" or &$skip("Cannot create file zor")}
77 + chdir updir;
78 +
79 + # Then test that dir iterators are cloned correctly.
80 +
81 + opendir my $toberead, 'toberead';
82 + my $start_pos = telldir $toberead;
83 + my @first_2 = (scalar readdir $toberead, scalar readdir $toberead);
84 + my @from_thread = @{}; async { [readdir $toberead ] } ->join };
85 + my @from_main = readdir $toberead;
86 + is join('-', sort @from_thread), join('-', sort @from_main),

```

```
87 +     'dir iterator is copied from one thread to another';
88 + like
89 +     join('-', "", sort(@first_2, @from_thread), ""),
90 +     qr/(?<!--rile)-rile-thrit-zor-(?!zor-)/i,
91 +     'cloned iterator iterates exactly once over everything not already seen';
92 +
93 +     seekdir $toberead, $start_pos;
94 +     readdir $toberead for 1 .. @first_2+@from_thread;
95 + is
96 +     async { readdir $toberead // 'undef' } ->join, 'undef',
97 +     'cloned dir iterator that points to the end of the directory'
98 + ;
99 +
100 + # Make sure the cloning code can handle file names longer than 255 chars
101 + SKIP: {
102 +     chdir 'toberead';
103 +     open my $fh,
104 +         ">floccipaucinihilopilification-"
105 +         . "pneumonoultramicroscopicsilicovolcanoconiosis-"
106 +         . "lopadotemachoselachogaleokranioleipsanodrimypotrimmatosilphiokarabo"
107 +         . "melitokatakechymenokichlepekossyphophattoperisteralektryonoptokephal"
108 +         . "liokinklopeleiolagoiosiraibaphetraganopterygon"
109 +     or
110 +     chdir updir,
111 +     skip("OS does not support long file names (and I mean *long*)", 1);
112 +     chdir updir;
113 +     opendir my $dirh, "toberead";
114 +     my $test_name
115 +         = "dir iterators can be cloned when the next fn > 255 chars";
116 +     while() {
117 +         my $pos = telldir $dirh;
118 +         my $fn = readdir($dirh);
119 +         if(!defined $fn) { fail($test_name); last SKIP; }
120 +         if($fn =~ 'lagoio') {
121 +             seekdir $dirh, $pos;
122 +             last;
123 +         }
124 +     }
125 +     is length async { scalar readdir $dirh } ->join, 257, $test_name;
126 + }
```

```
127 +  
128 + is scalar @w, 0, 'no warnings during all that' or diag @w;  
129 + chdir updir;  
130 + }  
131 + rmtree($dir);
```

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