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var.txt

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1  //////////////////////////////////////
2  //      var.c program to test memory allocation in C
3  //      M. Mizuno (c) 1995, 2004, 2005
4  //      modified for Learning Tree course 223P
5  //
6  // to compile var.c on Pentium,
7  // 1. execute Visual Studio .NET 2017 x_86 Native Tools Command Prompt
8  // 2. go to the directory which contains var.c
9  // 3. issue cl /Od /Facs var.c
10 //      /Od: disable optimization
11 //      /Facs: generate a listing file with source code and machine code
12 //////////////////////////////////////
13 long test(unsigned int ui, int i, short s, unsigned short us,
14          char c, unsigned char uc, long l, unsigned long ul,
15          int x, short y);
16
17 char ret;
18 int x=100;
19 static int si;
20 static int sj = 23;
21
22 int main(int argc, char **argv, char **envp)
23 {
24     unsigned char uc;
25     static short y = 99;
26     short s;
27     char c;
28     unsigned short us;
29     static int i;
30     unsigned int ui;
31     long l;
32     unsigned long ul;
33
34     if (i < 0) {
35         ui = us + s - c;
36     }
37     else {
38         ul = si - sj * 2;
39     }
40
41     while (sj > 0) {
42         uc = y - 3;
43         sj++;
44     }
45
46     ret = test(ui, i, s, us, c, uc, l, ul, x, y);
47
48     return 0;
49 }
50
51 long test(unsigned int ui, int i, short s, unsigned short us,
52          char c, unsigned char uc, long l, unsigned long ul,
53          int x, short y)
54 {
55     char c1;
56     int i1;
57     char c2;
58
59     ui = 1;
60     i = 2;
61     s = 3;
62     us = 4;
63     c = 5;
64     uc = 6;
65     l = 7;
66     ul = 8;
67     x = 9;
68     y = 10;
69     c1 = 11;
70     c2 = 12;
71     i1 = 13;
72     return ui * 2 + 1;
73 }

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75 ; Listing generated by Microsoft (R) Optimizing Compiler Version 19.12.25834.0
76
77 TITLE c:\K-State\cis450\Programs\MemoryTest\VC_x86\var.c
78 .686P
79 .XMM
80 include listing.inc
81 .model flat
82
83 INCLUDELIB LIBCMT
84 INCLUDELIB OLDNAMES
85
86 PUBLIC _x
87 _DATA SEGMENT
88 COMM _ret:BYTE
89 _DATA ENDS
90 _DATA SEGMENT
91 _x DD 064H
92 _sj DD 017H
93 ?y@?1??main@@9@9 DW 063H ; 'main'::'2'::y
94 _DATA ENDS
95 PUBLIC _test
96 PUBLIC _main
97 _BSS SEGMENT
98 _si DD 01H DUP (?)
99 ?i@?1??main@@9@9 DD 01H DUP (?) ; 'main'::'2'::i
100 _BSS ENDS
101 ; Function compile flags: /Odtp
102 ; File c:\k-state\cis450\programs\memorytest\vc_x86\var.c
103 _TEXT SEGMENT
104 _l$ = -24 ; size = 4
105 _ui$ = -20 ; size = 4
106 _ul$ = -16 ; size = 4
107 _s$ = -12 ; size = 2
108 _us$ = -8 ; size = 2
109 _c$ = -2 ; size = 1
110 _uc$ = -1 ; size = 1
111 _argc$ = 8 ; size = 4
112 _argv$ = 12 ; size = 4
113 _envp$ = 16 ; size = 4
114 _main PROC
115
116 ; 23 : {
117
118 00000 55 push ebp
119 00001 8b ec mov ebp, esp
120 00003 83 ec 18 sub esp, 24 ; 00000018H
121
122 ; 24 : unsigned char uc;
123 ; 25 : static short y = 99;
124 ; 26 : short s;
125 ; 27 : char c;
126 ; 28 : unsigned short us;
127 ; 29 : static int i;
128 ; 30 : unsigned int ui;
129 ; 31 : long l;
130 ; 32 : unsigned long ul;
131 ; 33 :
132 ; 34 : if (i < 0) {
133
134 00006 83 3d 00 00 00 cmp DWORD PTR ?i@?1??main@@9@9, 0
135 00 00 jge SHORT $LN4@main
136 0000d 7d 15 jge SHORT $LN4@main
137
138 ; 35 : ui = us + s - c;
139
140 0000f 0f b7 45 f8 movzx eax, WORD PTR _us$[ebp]
141 00013 0f bf 4d f4 movsx ecx, WORD PTR _s$[ebp]
142 00017 03 c1 add eax, ecx
143 00019 0f be 55 fe movsx edx, BYTE PTR _c$[ebp]
144 0001d 2b c2 sub eax, edx
145 0001f 89 45 ec mov DWORD PTR _ui$[ebp], eax
146
147 ; 36 : }
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148 00022 eb 12 jmp SHORT $LN2@main
149 $LN4@main:
150
151
152 ; 37 : else {
153 ; 38 : ul = si - sj * 2;
154
155 00024 a1 00 00 00 mov eax, DWORD PTR _sj
156 00029 d1 e0 shl eax, 1
157 0002b 8b 0d 00 00 00 mov ecx, DWORD PTR _si
158 00 00 mov ecx, eax
159 00031 2b c8 sub ecx, eax
160 00033 89 4d f0 mov DWORD PTR _ul$[ebp], ecx
161 $LN2@main:
162
163 ; 39 : }
164 ; 40 :
165 ; 41 : while (sj > 0) {
166
167 00036 83 3d 00 00 00 cmp DWORD PTR _sj, 0
168 00 00 jle SHORT $LN3@main
169 0003d 7e 1c jle SHORT $LN3@main
170
171 ; 42 : uc = y - 3;
172
173 0003f 0f bf 15 00 00 movsx edx, WORD PTR ?y@?1??main@@9@9
174 00 00 sub edx, 3
175 00046 83 ea 03 sub BYTE PTR _uc$[ebp], dl
176 00049 88 55 ff mov BYTE PTR _uc$[ebp], dl
177
178 ; 43 : sj++;
179
180 0004c a1 00 00 00 00 mov eax, DWORD PTR _sj
181 00051 83 c0 01 add eax, 1
182 00054 a3 00 00 00 00 mov DWORD PTR _sj, eax
183
184 ; 44 : }
185
186 00059 eb db jmp SHORT $LN2@main
187 $LN3@main:
188
189 ; 45 :
190 ; 46 : ret = test(ui, i, s, us, c, uc, l, ul, x, y);
191
192 0005b 0f b7 0d 00 00 movzx ecx, WORD PTR ?y@?1??main@@9@9
193 00 00 push ecx
194 00062 51 push edx
195 00063 8b 15 00 00 00 mov edx, DWORD PTR _x
196 00 00 push edx
197 00069 52 push eax
198 0006a 8b 45 f0 mov eax, DWORD PTR _ul$[ebp]
199 0006d 50 push ecx
200 0006e 8b 4d e8 mov ecx, DWORD PTR _l$[ebp]
201 00071 51 push ecx
202 00072 0f b6 55 ff movzx edx, BYTE PTR _uc$[ebp]
203 00076 52 push edx
204 00077 0f b6 45 fe movzx eax, BYTE PTR _c$[ebp]
205 0007b 50 push eax
206 0007c 0f b7 4d f8 movzx ecx, WORD PTR _us$[ebp]
207 00080 51 push ecx
208 00081 0f b7 55 f4 movzx edx, WORD PTR _s$[ebp]
209 00085 52 push edx
210 00086 a1 00 00 00 00 mov eax, DWORD PTR ?i@?1??main@@9@9
211 0008b 50 push eax
212 0008c 8b 4d ec mov ecx, DWORD PTR _ui$[ebp]
213 0008f 51 push ecx
214 00090 e8 00 00 00 00 call _test
215 00095 83 c4 28 add esp, 40 ; 00000028H
216 00098 a2 00 00 00 00 mov BYTE PTR _ret, al
217
218 ; 47 :
219 ; 48 : return 0;
220
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|------------------|---|-----------------------------|
| 221              | 0009d 33 c0   | xor eax, eax                |
| 222              |   |                             |
| 223              | ; 49 : }  |                             |
| 224              |   |                             |
| 225              | 0009f 8b e5   | mov esp, ebp                |
| 226              | 000a1 5d  | pop ebp                     |
| 227              | 000a2 c3  | ret 0                       |
| 228              | _main ENDP  |                             |
| 229              | _TEXT ENDS  |                             |
| 230              | ; Function compile flags: /Odtp                           |                             |
| 231              | ; File c:\k-state\cis450\programs\memorytest\vc_x86\var.c |                             |
| 232              | _TEXT SEGMENT   |                             |
| 233              | _il\$ = -8  | ; size = 4                  |
| 234              | _c2\$ = -2  | ; size = 1                  |
| 235              | _c1\$ = -1  | ; size = 1                  |
| 236              | _ui\$ = 8   | ; size = 4                  |
| 237              | _i\$ = 12   | ; size = 4                  |
| 238              | _s\$ = 16   | ; size = 2                  |
| 239              | _us\$ = 20  | ; size = 2                  |
| 240              | _c\$ = 24   | ; size = 1                  |
| 241              | _uc\$ = 28  | ; size = 1                  |
| 242              | _l\$ = 32   | ; size = 4                  |
| 243              | _ul\$ = 36  | ; size = 4                  |
| 244              | _x\$ = 40   | ; size = 4                  |
| 245              | _y\$ = 44   | ; size = 2                  |
| 246              | _test PROC  |                             |
| 247              |   |                             |
| 248              | ; 54 : {  |                             |
| 249              |   |                             |
| 250              | 00000 55  | push ebp                    |
| 251              | 00001 8b ec   | mov ebp, esp                |
| 252              | 00003 83 ec 08  | sub esp, 8                  |
| 253              |   |                             |
| 254              | ; 55 : char c1;   |                             |
| 255              | ; 56 : int i1;  |                             |
| 256              | ; 57 : char c2;   |                             |
| 257              | ; 58 :  |                             |
| 258              | ; 59 : ui = 1;  |                             |
| 259              |   |                             |
| 260              | 00006 c7 45 08 01 00                                      |                             |
| 261              | 00 00   | mov DWORD PTR _ui\$[ebp], 1 |
| 262              |   |                             |
| 263              | ; 60 : i = 2;   |                             |
| 264              |   |                             |
| 265              | 0000d c7 45 0c 02 00                                      |                             |
| 266              | 00 00   | mov DWORD PTR _i\$[ebp], 2  |
| 267              |   |                             |
| 268              | ; 61 : s = 3;   |                             |
| 269              |   |                             |
| 270              | 00014 b8 03 00 00 00                                      | mov eax, 3                  |
| 271              | 00019 66 89 45 10   | mov WORD PTR _s\$[ebp], ax  |
| 272              |   |                             |
| 273              | ; 62 : us = 4;  |                             |
| 274              |   |                             |
| 275              | 0001d b9 04 00 00 00                                      | mov ecx, 4                  |
| 276              | 00022 66 89 4d 14   | mov WORD PTR _us\$[ebp], cx |
| 277              |   |                             |
| 278              | ; 63 : c = 5;   |                             |
| 279              |   |                             |
| 280              | 00026 c6 45 18 05   | mov BYTE PTR _c\$[ebp], 5   |
| 281              |   |                             |
| 282              | ; 64 : uc = 6;  |                             |
| 283              |   |                             |
| 284              | 0002a c6 45 1c 06   | mov BYTE PTR _uc\$[ebp], 6  |
| 285              |   |                             |
| 286              | ; 65 : l = 7;   |                             |
| 287              |   |                             |
| 288              | 0002e c7 45 20 07 00                                      |                             |
| 289              | 00 00   | mov DWORD PTR _l\$[ebp], 7  |
| 290              |   |                             |
| 291              | ; 66 : ul = 8;  |                             |
| 292              |   |                             |
| 293              | 00035 c7 45 24 08 00                                      |                             |

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|------------------|---------------------------|--|
| 294              | 00 00                     | mov DWORD PTR _ul\$[ebp], 8              |
| 295              |                           |  |
| 296              | ; 67 : x = 9;             |  |
| 297              |                           |  |
| 298              | 0003c c7 45 28 09 00      |  |
| 299              | 00 00                     | mov DWORD PTR _x\$[ebp], 9               |
| 300              |                           |  |
| 301              | ; 68 : y = 10;            |  |
| 302              |                           |  |
| 303              | 00043 ba 0a 00 00 00      | mov edx, 10 ; 0000000aH                  |
| 304              | 00048 66 89 55 2c         | mov WORD PTR _y\$[ebp], dx               |
| 305              |                           |  |
| 306              | ; 69 : c1 = 11;           |  |
| 307              |                           |  |
| 308              | 0004c c6 45 ff 0b         | mov BYTE PTR _c1\$[ebp], 11 ; 0000000bH  |
| 309              |                           |  |
| 310              | ; 70 : c2 = 12;           |  |
| 311              |                           |  |
| 312              | 00050 c6 45 fe 0c         | mov BYTE PTR _c2\$[ebp], 12 ; 0000000cH  |
| 313              |                           |  |
| 314              | ; 71 : i1 = 13;           |  |
| 315              |                           |  |
| 316              | 00054 c7 45 f8 0d 00      |  |
| 317              | 00 00                     | mov DWORD PTR _i1\$[ebp], 13 ; 0000000dH |
| 318              |                           |  |
| 319              | ; 72 : return ui * 2 + 1; |  |
| 320              |                           |  |
| 321              | 0005b 8b 45 08            | mov eax, DWORD PTR _ui\$[ebp]            |
| 322              | 0005e 8b 4d 20            | mov ecx, DWORD PTR _l\$[ebp]             |
| 323              | 00061 8d 04 41            | lea eax, DWORD PTR [ecx+eax*2]           |
| 324              |                           |  |
| 325              | ; 73 : }                  |  |
| 326              |                           |  |
| 327              | 00064 8b e5               | mov esp, ebp                             |
| 328              | 00066 5d                  | pop ebp                                  |
| 329              | 00067 c3                  | ret 0                                    |
| 330              | _test ENDP                |  |
| 331              | _TEXT ENDS                |  |
| 332              | END                       |  |