```
/*
  File test.c
  Compile with
  mips-gcc -g -O0 -c -fverbose-asm -Wa,-adhln test.c -mrnames > test.lst
*/

int fun1 (int), * fun2 (int), * malloc (int);

int main ()
{
        int a, b, *c;
        int (*pfun)();
        a = fun1(4);
        b = a + 2;
        c = fun2(8);
        *c = 0;
        pfun = fun1;
        a = (*pfun)(6);
        return(a+b);
}

int fun1 (x)
int x;
{
        int y;
        y = x + 2;
        return(y);
}

int * fun2 (x)
int x;
{
        int *p;
        p = (int *) malloc(x);
        return(p);
}
```

```
 1                          .file   1 "test.c"
22
25                          .text
26                      $Ltext0:
50                          .align  2
51                          .globl  main
52                      $LM1:
 1:test.c           **** int fun1 (int), * fun2 (int), * malloc (int);
 2:test.c           ****
 3:test.c           **** int main ()
 4:test.c           **** {
54                          .ent    main
55                      main:
57                          .mask   0xc0000000,-4
58                          .fmask  0x00000000,0
59 ???? D8FFBD27            subu    $sp,$sp,40
60 ???? 2400BFAF            sw      $ra,36($sp)
61 ???? 2000BEAF            sw      $fp,32($sp)
62 ???? 21F0A003            move    $fp,$sp
63 ???? 0000000C            jal     __main
63      00000000
64                      $LBB2:
65                      $LM2:
 5:test.c           ****                int a, b, *c;
 6:test.c           ****                int (*pfun)();
 7:test.c           ****                a = fun1(4);
67                          li      $a0,4                   # 0x4
68 ???? 0000000C            jal     fun1
68      00000000
69                          sw      $v0,16($fp)     #  a
70                      $LM3:
 8:test.c           ****                b = a + 2;
72                          lw      $v0,16($fp)     #  a
73                          addu    $v0,$v0,2
74                          sw      $v0,20($fp)     #  b
75                      $LM4:
 9:test.c           ****                c = fun2(8);
77                          li      $a0,8                   # 0x8
78 ???? 0000000C            jal     fun2
78      00000000
79                          sw      $v0,24($fp)     #  c
80                      $LM5:
10:test.c           ****                *c = 0;
82                          lw      $v0,24($fp)     #  c
83                          sw      $zero,0($v0)
84                      $LM6:
11:test.c           ****                pfun = fun1;
86                          la      $v0,fun1
87                          sw      $v0,28($fp)     #  pfun
88                      $LM7:
12:test.c           ****                a = (*pfun)(6);
90                          lw      $v0,28($fp)     #  pfun
91                          li      $a0,6                   # 0x6
92                          jal     $ra,$v0
93                          sw      $v0,16($fp)     #  a
94                      $LM8:
13:test.c           ****                return(a+b);
96                          lw      $v1,16($fp)     #  a
97                          lw      $v0,20($fp)     #  b
98                          addu    $v0,$v1,$v0
99                      $LBE2:
100                     $LM9:
14:test.c           **** }
102 ???? 21E8C003           move    $sp,$fp
103 ???? 2400BF8F           lw      $ra,36($sp)
104 ???? 2000BE8F           lw      $fp,32($sp)
105 ???? 2800BD27           addu    $sp,$sp,40
106 ???? 0800E003           j       $ra
106     00000000
107                         .end    main
115                         .align  2
```

```
116                             .globl  fun1
117                         $LM10:
 15:test.c              ****
 16:test.c              **** int fun1 (x)
 17:test.c              **** int x;
 18:test.c              **** {
119                             .ent    fun1
120                         fun1:
122                             .mask   0x40000000,-8
123                             .fmask  0x00000000,0
124 ???? F0FFBD27               subu    $sp,$sp,16
125 ???? 0800BEAF               sw      $fp,8($sp)
126 ???? 21F0A003               move    $fp,$sp
127                             sw      $a0,16($fp)     #  x
128                         $LBB3:
129                         $LM11:
 19:test.c              ****         int y;
 20:test.c              ****                 y = x + 2;
131                             lw      $v0,16($fp)     #  x
132                             addu    $v0,$v0,2
133                             sw      $v0,0($fp)      #  y
134                         $LM12:
 21:test.c              ****                 return(y);
136                             lw      $v0,0($fp)      #  y
137                         $LBE3:
138                         $LM13:
 22:test.c              **** }
140 ???? 21E8C003               move    $sp,$fp
141 ???? 0800BE8F               lw      $fp,8($sp)
142 ???? 1000BD27               addu    $sp,$sp,16
143 ???? 0800E003               j       $ra
143      00000000
144                             .end    fun1
150                             .align  2
151                             .globl  fun2
152                         $LM14:
 23:test.c              ****
 24:test.c              **** int * fun2 (x)
 25:test.c              **** int x;
 26:test.c              **** {
154                             .ent    fun2
155                         fun2:
157                             .mask   0xc0000000,-4
158                             .fmask  0x00000000,0
159 ???? E0FFBD27               subu    $sp,$sp,32
160 ???? 1C00BFAF               sw      $ra,28($sp)
161 ???? 1800BEAF               sw      $fp,24($sp)
162 ???? 21F0A003               move    $fp,$sp
163                             sw      $a0,32($fp)     #  x
164                         $LBB4:
165                         $LM15:
 27:test.c              ****        int *p;
 28:test.c              ****        p = (int *) malloc(x);
167                             lw      $a0,32($fp)     #  x
168 ???? 0000000C               jal     malloc
168      00000000
169                             sw      $v0,16($fp)     #  p
170                         $LM16:
 29:test.c              ****        return(p);
172                             lw      $v0,16($fp)     #  p
173                         $LBE4:
174                         $LM17:
 30:test.c              **** }
176 ???? 21E8C003               move    $sp,$fp
177 ???? 1C00BF8F               lw      $ra,28($sp)
178 ???? 1800BE8F               lw      $fp,24($sp)
179 ???? 2000BD27               addu    $sp,$sp,32
180 ???? 0800E003               j       $ra
180      00000000
181                             .end    fun2
```