Diff between non-working and working hello
04/27/21

In line 5 the non-working is .rocode while the working is .ramcode. Other diff are the 02000000 vs 01000000.

```
File  Edit  View  Format  Merge  Help

                        hello-disasm.txt                                              wkg-hello.txt
 1                                                                    1
 2  hello:    file format elf32-zip                                   2  /home/devel/testbuilds/catzip/sw/board/hello:    file format elf32-zip
 3                                                                    3
 4                                                                    4
 5  Disassembly of section .rocode:                                   5  Disassembly of section .ramcode:
 6                                                                    6
 7  02000000 <_boot_address>:                                         7  01000000 <_boot_address>:
 8   2000000:      6a 00 00 c0     LDI    0x03000000,SP // 3000000 <_top_of_st   8   1000000:      6a 00 00 40     LDI    0x02000000,SP // 2000000 <_top_of_st
 9   2000004:      6a 40 00 00                                        9   1000004:      6a 40 00 00
10   2000008:      7b 47 c0 09     MOV    $36+PC,uPC               10   1000008:      7b 47 c0 09     MOV    $36+PC,uPC
11   200000c:      0e 00 00 00     CLR    R1                       11   100000c:      0e 00 00 00     CLR    R1
12   2000010:      13 43 c0 09     MOV    0x02000038,R2 // 2000038 <_argv>  12   1000010:      13 43 c0 09     MOV    0x01000038,R2 // 1000038 <_argv>
13   2000014:      1a 02 00 40     LDI    0x020048e4,R3 // 20048e4 <__env>  13   1000014:      1a 02 00 80     LDI    0x010048e4,R3 // 10048e4 <__env>
14   2000018:      1a 40 48 e4                                     14   1000018:      1a 40 48 e4
15   200001c:      87 fa fc f8     JSR    0x02000044   // 2000044 <main>   15   100001c:      87 fa fc f8     JSR    0x01000044   // 1000044 <main>
16   2000020:      02 00 00 44                                     16   1000020:      01 00 00 44
17                                                                 17
18  02000024 <_graceful_kernel_exit>:                              18  01000024 <_graceful_kernel_exit>:
19   2000024:      87 fa fc f8     JSR    0x02003ddc   // 2003ddc <exit>   19   1000024:      87 fa fc f8     JSR    0x01003ddc   // 1003ddc <exit>
20   2000028:      02 00 3d dc                                     20   1000028:      01 00 3d dc
21                                                                 21
22  0200002c <_hw_shutdown>:                                       22  0100002c <_hw_shutdown>:
23   200002c:      7f c0 03 01     NEXIT  R1                       23   100002c:      7f c0 03 01     NEXIT  R1
24                                                                 24
25  02000030 <_kernel_is_dead>:                                    25  01000030 <_kernel_is_dead>:
26   2000030:      70 c0 00 10     HALT                            26   1000030:      70 c0 00 10     HALT
27   2000034:      78 83 ff f8     BRA    @0x02000030  // 2000030 <_kernel_is   27   1000034:      78 83 ff f8     BRA    @0x01000030  // 1000030 <_kernel_is
28                                                                 28
29  02000038 <_argv>:                                              29  01000038 <_argv>:
                                                                   30          ...
                                                                   31
                                                                   32  01000040 <__define_the_top_of_the_stack__>:
                                                                   33   1000040:      7b 40 00 00     RTN
                                                                   34
                                                                   35  01000044 <main>:
                                                                   36   1000044:      e8 04 85 00     SUB    $4,SP      | SW    R0,(SP)

                                              Unix  utf_8                                          Unix  utf_8
Press the enter key or double click to edit.  Press the space bar or use the RMB menu to manually align.
```

argv.

```
File  Edit  View  Format  Merge  Help

                        hello-disasm.txt                                              wkg-hello.txt
29  02000038 <_argv>:                                              29  01000038 <_argv>:
                                                                   30          ...
                                                                   31
                                                                   32  01000040 <__define_the_top_of_the_stack__>:
                                                                   33   1000040:      7b 40 00 00     RTN
                                                                   34
                                                                   35  01000044 <main>:
                                                                   36   1000044:      e8 04 85 00     SUB    $4,SP      | SW    R0,(SP)
                                                                   37   1000048:      0a 02 00 80     LDI    0x0100403c,R1 // 100403c <__call_exi
                                                                   38   100004c:      0a 40 40 3c
                                                                   39   1000050:      87 fa fc f8     JSR    0x01000108   // 1000108 <puts>
                                                                   40   1000054:      01 00 01 08
                                                                   41   1000058:      8e 00 84 00     CLR    R1         | LW    (SP),R0
                                                                   42   100005c:      ea 04 ff 80     ADD    $4,SP      | RTN
                                                                   43
                                                                   44  01000060 <_puts_r>:
                                                                   45   1000060:      e8 28 85 1c     SUB    $40,SP     | SW    R0,$28(SP
                                                                   46   1000064:      ad 20 b5 24     SW     R5,$32(SP) | SW    R6,$36(SP
                                                                   47   1000068:      b7 88 af 90     MOV    R1,R6      | MOV   R2,R5
                                                                   48   100006c:      0b 40 80 00     MOV    R2,R1
                                                                   49   1000070:      87 fa fc f8     JSR    0x010001b8   // 10001b8 <strlen>
                                                                   50   1000074:      01 00 01 b8
                                                                   51   1000078:      ad 0c 8d 10     SW     R5,$12(SP) | SW    R1,$16(SP
                                                                   52   100007c:      02 02 00 80     LDI    0x0100404c,R0 // 100404c <__call_exi
                                                                   53   1000080:      02 40 40 4c
                                                                   54   1000084:      85 14 86 01     SW     R0,$20(SP) | LDI   $1,R0
                                                                   55   1000088:      85 18 8a 80     SW     R0,$24(SP) | ADD   R0,R1
                                                                   56   100008c:      8d 08 8f e8     SW     R1,$8(SP)  | MOV   SP,R1
                                                                   57   1000090:      8a 0c 8d 00     ADD    $12,R1     | SW    R1,(SP)
                                                                   58   1000094:      86 02 85 04     LDI    $2,R0      | SW    R0,$4(SP)
                                                                   59   1000098:      2c 85 80 08     LW     8(R6),R5
                                                                   60   100009c:      0c 85 80 38     LW     56(R6),R1
                                                                   61   10000a0:      0c 00 00 00     CMP    $0,R1
                                                                   62   10000a4:      78 a8 00 0c     BNZ    @0x010000b4  // 10000b4 <_puts_r+0x
                                                                   63   10000a8:      0b 41 80 00     MOV    R6,R1
                                                                   64   10000ac:      87 fa fc f8     JSR    0x01000614   // 1000614 <__sinit>

                                              Unix  utf_8                                          Unix  utf_8
Press the enter key or double click to edit.  Press the space bar or use the RMB menu to manually align.
```
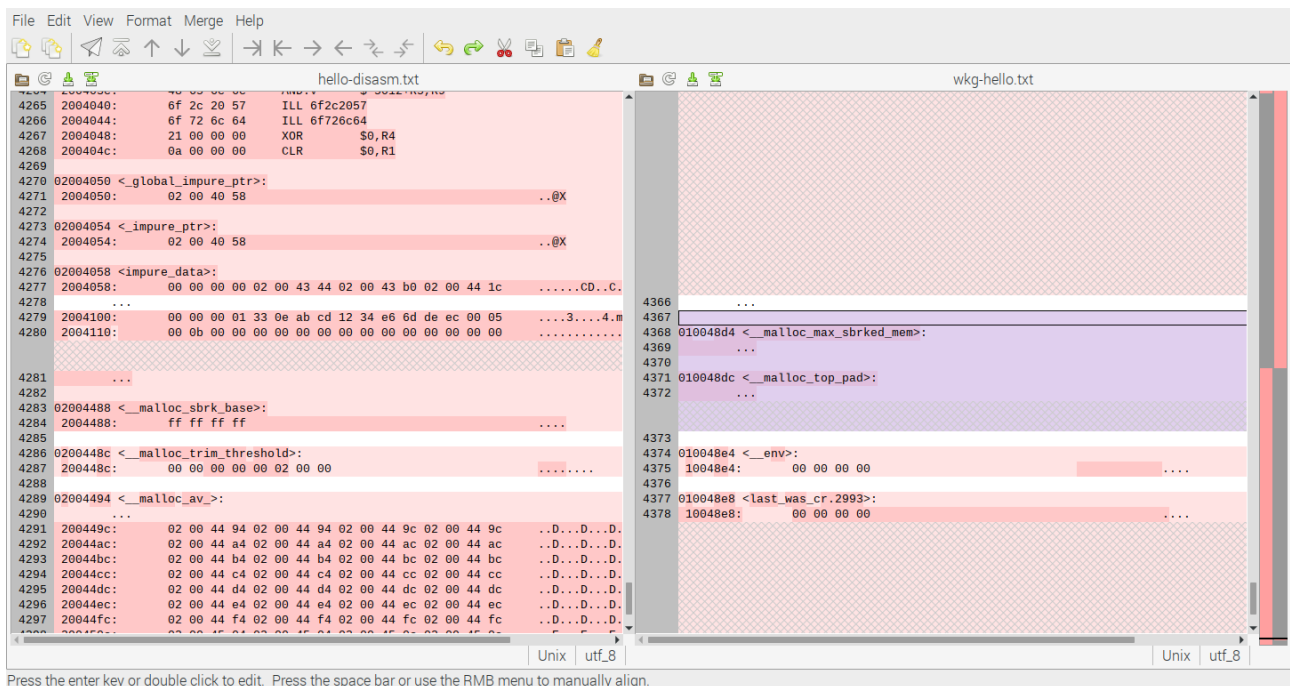
global_impure_ptrs

hello-disasm.txt | wkg-hello.txt

```
4264  2004030:      40 05 0c 0c    MMD.T     $ 5012 N5,N5
4265  2004040:      6f 2c 20 57    ILL 6f2c2057
4266  2004044:      6f 72 6c 64    ILL 6f726c64
4267  2004048:      21 00 00 00    XOR       $0,R4
4268  200404c:      0a 00 00 00    CLR       $0,R1
4269
4270  02004050 <_global_impure_ptr>:
4271  2004050:      02 00 40 58              ..@X
4272
4273  02004054 <_impure_ptr>:
4274  2004054:      02 00 40 58              ..@X
4275
4276  02004058 <impure_data>:
4277  2004058:      00 00 00 00 02 00 43 44 02 00 43 b0 02 00 44 1c    ......CD..C.
4278      ...
4279  2004100:      00 00 00 01 33 0e ab cd 12 34 e6 6d de ec 00 05    ....3....4.m
4280  2004110:      00 0b 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ............

4281      ...
4282
4283  02004488 <__malloc_sbrk_base>:
4284  2004488:      ff ff ff ff              ....
4285
4286  0200448c <__malloc_trim_threshold>:
4287  200448c:      00 00 00 00 00 02 00 00          ........
4288
4289  02004494 <__malloc_av_>:
4290      ...
4291  200449c:      02 00 44 94 02 00 44 94 02 00 44 9c 02 00 44 9c    ..D...D...D.
4292  20044ac:      02 00 44 a4 02 00 44 a4 02 00 44 ac 02 00 44 ac    ..D...D...D.
4293  20044bc:      02 00 44 b4 02 00 44 b4 02 00 44 bc 02 00 44 bc    ..D...D...D.
4294  20044cc:      02 00 44 c4 02 00 44 c4 02 00 44 cc 02 00 44 cc    ..D...D...D.
4295  20044dc:      02 00 44 d4 02 00 44 d4 02 00 44 dc 02 00 44 dc    ..D...D...D.
4296  20044ec:      02 00 44 e4 02 00 44 e4 02 00 44 ec 02 00 44 ec    ..D...D...D.
4297  20044fc:      02 00 44 f4 02 00 44 f4 02 00 44 fc 02 00 44 fc    ..D...D...D.
4298  2004450c:     02 00 45 04 02 00 45 04 02 00 45 0c 02 00 45 0c
```

```
4366          ...
4367
4368  010048d4 <__malloc_max_sbrked_mem>:
4369          ...
4370
4371  010048dc <__malloc_top_pad>:
4372          ...

4373
4374  010048e4 <_env>:
4375  10048e4:          00 00 00 00                        ....
4376
4377  010048e8 <last_was_cr.2993>:
4378  10048e8:          00 00 00 00                        ....
```

Unix | utf_8   Unix | utf_8

Press the enter key or double click to edit. Press the space bar or use the RMB menu to manually align.

malloc_av

hello-disasm.txt | wkg-hello.txt

```
4289  02004494 <__malloc_av_>:
4290      ...
4291  200449c:      02 00 44 94 02 00 44 94 02 00 44 9c 02 00 44 9c    ..D...D...D.
4292  20044ac:      02 00 44 a4 02 00 44 a4 02 00 44 ac 02 00 44 ac    ..D...D...D.
4293  20044bc:      02 00 44 b4 02 00 44 b4 02 00 44 bc 02 00 44 bc    ..D...D...D.
4294  20044cc:      02 00 44 c4 02 00 44 c4 02 00 44 cc 02 00 44 cc    ..D...D...D.
4295  20044dc:      02 00 44 d4 02 00 44 d4 02 00 44 dc 02 00 44 dc    ..D...D...D.
4296  20044ec:      02 00 44 e4 02 00 44 e4 02 00 44 ec 02 00 44 ec    ..D...D...D.
4297  20044fc:      02 00 44 f4 02 00 44 f4 02 00 44 fc 02 00 44 fc    ..D...D...D.
4298  200450c:      02 00 45 04 02 00 45 04 02 00 45 0c 02 00 45 0c    ..E...E...E.
4299  200451c:      02 00 45 14 02 00 45 14 02 00 45 1c 02 00 45 1c    ..E...E...E.
4300  200452c:      02 00 45 24 02 00 45 24 02 00 45 2c 02 00 45 2c    ..E$..E$..E,
4301  200453c:      02 00 45 34 02 00 45 34 02 00 45 3c 02 00 45 3c    ..E4..E4..E<
4302  200454c:      02 00 45 44 02 00 45 44 02 00 45 4c 02 00 45 4c    ..ED..ED..EL
4303  200455c:      02 00 45 54 02 00 45 54 02 00 45 5c 02 00 45 5c    ..ET..ET..E\
4304  200456c:      02 00 45 64 02 00 45 64 02 00 45 6c 02 00 45 6c    ..Ed..Ed..El
4305  200457c:      02 00 45 74 02 00 45 74 02 00 45 7c 02 00 45 7c    ..Et..Et..E|
4306  200458c:      02 00 45 84 02 00 45 84 02 00 45 8c 02 00 45 8c    ..E...E...E.
4307  200459c:      02 00 45 94 02 00 45 94 02 00 45 9c 02 00 45 9c    ..E...E...E.
4308  20045ac:      02 00 45 a4 02 00 45 a4 02 00 45 ac 02 00 45 ac    ..E...E...E.
4309  20045bc:      02 00 45 b4 02 00 45 b4 02 00 45 bc 02 00 45 bc    ..E...E...E.
4310  20045cc:      02 00 45 c4 02 00 45 c4 02 00 45 cc 02 00 45 cc    ..E...E...E.
4311  20045dc:      02 00 45 d4 02 00 45 d4 02 00 45 dc 02 00 45 dc    ..E...E...E.
4312  20045ec:      02 00 45 e4 02 00 45 e4 02 00 45 ec 02 00 45 ec    ..E...E...E.
4313  20045fc:      02 00 45 f4 02 00 45 f4 02 00 45 fc 02 00 45 fc    ..E...E...E.
4314  200460c:      02 00 46 04 02 00 46 04 02 00 46 0c 02 00 46 0c    ..F...F...F.
4315  200461c:      02 00 46 14 02 00 46 14 02 00 46 1c 02 00 46 1c    ..F...F...F.
4316  200462c:      02 00 46 24 02 00 46 24 02 00 46 2c 02 00 46 2c    ..F$..F$..F,
4317  200463c:      02 00 46 34 02 00 46 34 02 00 46 3c 02 00 46 3c    ..F4..F4..F<
4318  200464c:      02 00 46 44 02 00 46 44 02 00 46 4c 02 00 46 4c    ..FD..FD..FL
4319  200465c:      02 00 46 54 02 00 46 54 02 00 46 5c 02 00 46 5c    ..FT..FT..F\
4320  200466c:      02 00 46 64 02 00 46 64 02 00 46 6c 02 00 46 6c    ..Fd..Fd..Fl
4321  200467c:      02 00 46 74 02 00 46 74 02 00 46 7c 02 00 46 7c    ..Ft..Ft..F|
4322  200468c:      02 00 46 84 02 00 46 84 02 00 46 8c 02 00 46 8c    ..F...F...F.
4323  200469c:      02 00 46 94 02 00 46 94 02 00 46 9c 02 00 46 9c    ..F...F...F.
4324  20046ac:      02 00 46 a4 02 00 46 a4 02 00 46 ac 02 00 46 ac    ..F...F...F.
```

```
4377  010048e8 <last_was_cr.2993>:
4378  10048e8:          00 00 00 00                        ....
```

Unix | utf_8   Unix | utf_8

Press the enter key or double click to edit. Press the space bar or use the RMB menu to manually align.

functions

hello-disasm.txt

wkg-hello.txt

```
 33  2000040:       7b 40 00 00    RTN
 34
 35 02000044 <main>:
 36  2000044:       e8 04 85 00    SUB     $4,SP        | SW       R0,(SP)
 37  2000048:       0a 02 00 40    LDI     0x0200403c,R1 // 200403c <__call_exi
 38  200004c:       0a 40 40 3c
 39  2000050:       87 fa fc f8    JSR     0x02000108   // 2000108 <puts>
 40  2000054:       02 00 01 08
 41  2000058:       8e 00 84 00    CLR     R1           | LW       (SP),R0
 42  200005c:       ea 04 ff 80    ADD     $4,SP        | RTN
 43
 44 02000060 <_puts_r>:
 45  2000060:       e8 28 85 1c    SUB     $40,SP       | SW       R0,$28(SP
 46  2000064:       ad 20 b5 24    SW      R5,$32(SP)   | SW       R6,$36(SP
 47  2000068:       b7 88 af 90    MOV     R1,R6        | MOV      R2,R5
 48  200006c:       0b 40 80 00    MOV     R2,R1
 49  2000070:       87 fa fc f8    JSR     0x020001b8   // 20001b8 <strlen>
 50  2000074:       02 00 01 b8
 51  2000078:       ad 0c 8d 10    SW      R5,$12(SP)   | SW       R1,$16(SP
 52  200007c:       02 02 00 40    LDI     0x0200404c,R0 // 200404c <__call_exi
 53  2000080:       02 40 40 4c
 54  2000084:       85 14 86 01    SW      R0,$20(SP)   | LDI      $1,R0
 55  2000088:       85 18 8a 80    SW      R0,$24(SP)   | ADD      R0,R1
 56  200008c:       8d 08 8f e8    SW      R1,$8(SP)    | MOV      SP,R1
 57  2000090:       8a 0c 8d 00    ADD     $12,R1       | SW       R1,(SP)
 58  2000094:       86 02 85 04    LDI     $2,R0        | SW       R0,$4(SP)
 59  2000098:       2c 85 80 08    LW      8(R6),R5
 60  200009c:       0c 85 80 38    LW      56(R6),R1
 61  20000a0:       0c 00 00 00    CMP     $0,R1
 62  20000a4:       78 a8 00 0c    BNZ     @0x020000b4  // 20000b4 <_puts_r+0x
 63  20000a8:       0b 41 80 00    MOV     R6,R1
 64  20000ac:       87 fa fc f8    JSR     0x02000614   // 2000614 <__sinit>
 65  20000b0:       02 00 06 14
 66  20000b4:       0d 05 40 0c    LH      12(R5),R1
 67  20000b8:       13 40 40 00    MOV     R1,R2
 68  20000bc:       10 40 20 00    AND     $8192,R2
```
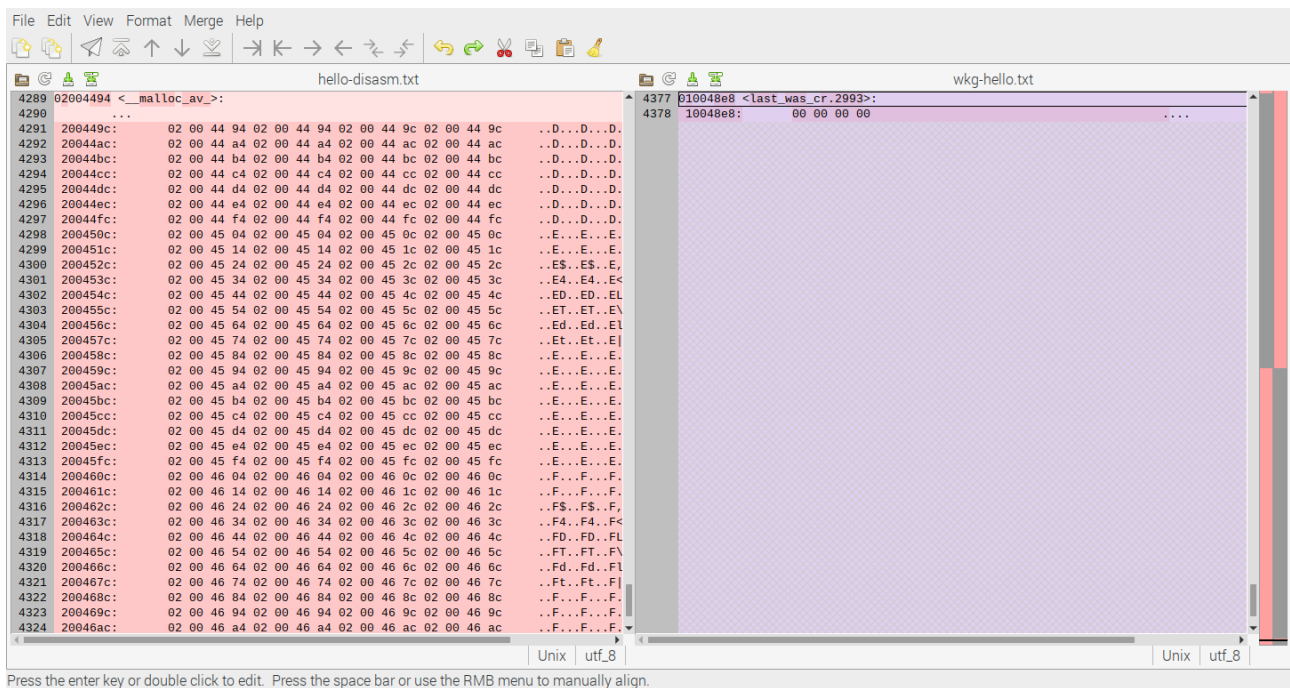
Unix utf_8   Unix utf_8

Press the enter key or double click to edit. Press the space bar or use the RMB menu to manually align.

functions

hello-disasm.txt

wkg-hello.txt

```
 35 01000044 <main>:
 36  1000044:       e8 04 85 00    SUB     $4,SP        | SW       R0,(SP)
 37  1000048:       0a 02 00 80    LDI     0x0100403c,R1 // 100403c <__call_exi
 38  100004c:       0a 40 40 3c
 39  1000050:       87 fa fc f8    JSR     0x01000108   // 1000108 <puts>
 40  1000054:       01 00 01 08
 41  1000058:       8e 00 84 00    CLR     R1           | LW       (SP),R0
 42  100005c:       ea 04 ff 80    ADD     $4,SP        | RTN
 43
 44 01000060 <_puts_r>:
 45  1000060:       e8 28 85 1c    SUB     $40,SP       | SW       R0,$28(SP
 46  1000064:       ad 20 b5 24    SW      R5,$32(SP)   | SW       R6,$36(SP
 47  1000068:       b7 88 af 90    MOV     R1,R6        | MOV      R2,R5
 48  100006c:       0b 40 80 00    MOV     R2,R1
 49  1000070:       87 fa fc f8    JSR     0x010001b8   // 10001b8 <strlen>
 50  1000074:       01 00 01 b8
 51  1000078:       ad 0c 8d 10    SW      R5,$12(SP)   | SW       R1,$16(SP
 52  100007c:       02 02 00 80    LDI     0x0100404c,R0 // 100404c <__call_exi
 53  1000080:       02 40 40 4c
 54  1000084:       85 14 86 01    SW      R0,$20(SP)   | LDI      $1,R0
 55  1000088:       85 18 8a 80    SW      R0,$24(SP)   | ADD      R0,R1
 56  100008c:       8d 08 8f e8    SW      R1,$8(SP)    | MOV      SP,R1
 57  1000090:       8a 0c 8d 00    ADD     $12,R1       | SW       R1,(SP)
 58  1000094:       86 02 85 04    LDI     $2,R0        | SW       R0,$4(SP)
 59  1000098:       2c 85 80 08    LW      8(R6),R5
 60  100009c:       0c 85 80 38    LW      56(R6),R1
 61  10000a0:       0c 00 00 00    CMP     $0,R1
 62  10000a4:       78 a8 00 0c    BNZ     @0x010000b4  // 10000b4 <_puts_r+0x
 63  10000a8:       0b 41 80 00    MOV     R6,R1
 64  10000ac:       87 fa fc f8    JSR     0x01000614   // 1000614 <__sinit>
 65  10000b0:       01 00 06 14
 66  10000b4:       0d 05 40 0c    LH      12(R5),R1
 67  10000b8:       13 40 40 00    MOV     R1,R2
 68  10000bc:       10 40 20 00    AND     $8192,R2
 69  10000c0:       78 a8 00 18    BNZ     @0x010000dc  // 10000dc <_puts_r+0x
 70  10000c4:       14 85 40 68    LW      104(R5),R2
```

Unix utf_8   Unix utf_8
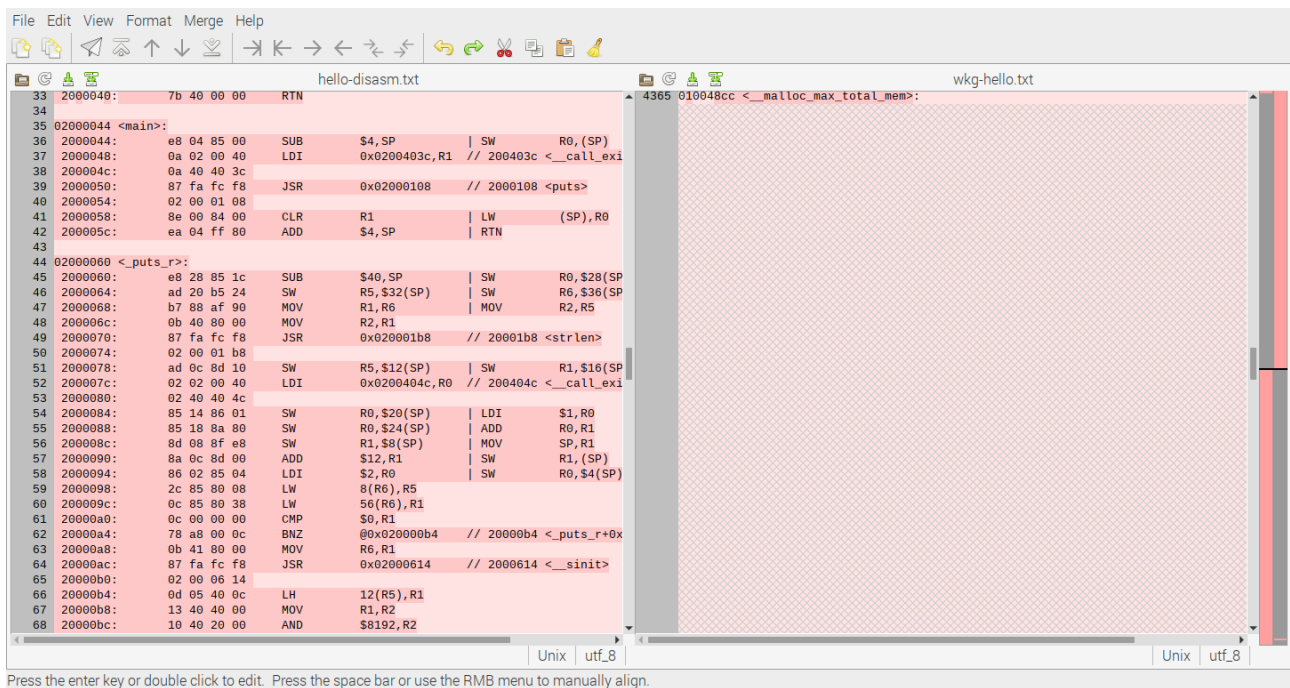
Press the enter key or double click to edit. Press the space bar or use the RMB menu to manually align.

malloc_av

malloc_av