

## HAL/GNU: Storing Variable Address into Register

Using the HAL/GNU H8/300 C Compiler, we can store variable addresses into registers. This paper will provide a sample program in storing the variable addresses into registers.

The basic format list is:

|     |                                       |
|-----|---------------------------------------|
|     | nothing print naturally               |
| 'w' | print the low byte of 32bit value     |
| 'x' | print the 2nd byte of 32bit value     |
| 'y' | print the 3rd byte of 32bit value     |
| 'z' | print the 4th byte of 32bit value     |
| 'f' | print the low word of a 32 bit value  |
| 'e' | print the high word of a 32 bit value |

The basic constraint list is:

|     |                                      |
|-----|--------------------------------------|
| 'r' | use as a register                    |
| 'i' | use as an immediate value            |
| 'o' | use as an offsetable memory location |

The following is the sample C source code called AddToReg.c (AddressIntoRegister):

```
int a[10];
int *foo;
m()
{
    register long tmp0 asm("r0");

    asm("mov.w    %1,%0" : "=r" (tmp0) : "i" (&a[4]));
    tmp0 += 9;

    asm("mov.b    %w1,%0" : "=o" (foo[1]) : "r" (tmp0));
    asm("mov.b    %x1,%0" : "=o" (foo[2]) : "r" (tmp0));
    asm("mov.b    %y1,%0" : "=o" (foo[3]) : "r" (tmp0));
    asm("mov.b    %z1,%0" : "=o" (foo[4]) : "r" (tmp0));
}

.global _m
_m:
; #APP
    mov.w    #_a+8,r0
; #NO_APP
    add     #9,r1l
    addx    #0,r1h
    addx    #0,r0l
    addx    #0,r0h
    mov.w    @_foo,r4
; #APP
    mov.b    r1l,@(2,r4)
    mov.b    r1h,@(4,r4)
```

```
    mov.b    r0l,@(6,r4)
    mov.b    r0h,@(8,r4)

; #NO_APP
    rts
    .comm   _a,20
    .comm   _foo,2
    .end
```

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