

HAL/GNU: Placing Section In ROM/RAM

The HAL/GNU H8/300 C Compiler allows us to use the explicit section commands to place sections in ROM/RAM. The explicit section command syntax is:

```
#define sectname __section__ ("sectname")
```

The following is a sample C code (Rom.c) that uses the explicit section commands:

```
#define INROM __section__ ("rom")
#define INRAM __section__ ("ram")

INROM foo()
{
    bar();
}

INRAM bar()
{
    foo();
}
```

The following is the compiler generated assembly file:

```
.file "rom.c"
.global _bar
.section rom
.align 2
.global _foo
_foo:
    jsr    @_bar
    rts
.section ram
.align 2
.global _bar
_bar:
    jsr    @_foo
    rts
.end
```

We can use the linker command file to explicitly define where in memory we want to place ROM/RAM sections. The following is a sample of linker command file (Rom.cmd):

```
OUTPUT_FORMAT (coff-h8300)
SECTIONS
{
    rom 0x0030 : { *(rom); }
    ram 0xFD80 : { *(ram); }
    bss . : { *(.bss); *(COMMON); }
}
```

We can use the following commands to test our sample program:

```
GCC -c Rom.c  
LD -TRom.cmd -o Rom.x Rom.o  
OBJDUMP -dxs Rom.x
```

where

| | |
|----------------|--|
| GCC | name of the compiler. |
| -c | compiler switch to produce object file, i.e., Rom.o. |
| LD | name of the linker. |
| -T | linker switch that directs the linker to read commands from Rom.cmd file. |
| -o | linker switch that specifies output file name, i.e., Rom.x. By default, the output file name is a.out. |
| OBJDUMP | name of HAL/GNU binary utility to display information from the absolute file. The information will be displayed to the standard output device, i.e., screen. |
| -dxs | object dump switch to display assembler mnemonics, symbol table, and the contents of sections. |

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