

### HAL/GNU: Generating Linker Map File

The HAL/GNU H8/300 linker allows us to generate the linker map file, which is diagnostic information about where symbols are mapped by the linker and information on global/common storage allocation. This paper will provide two ways to generate the linker map file.

There are two ways to generate the linker map file:

1. Link the object file to produce the linker map file.

For example, we have a C source code, Test.c, and we want to produce a linker map file. First, we need to compile the C source code into an object file, Test.o, by using the following command line:

```
GCC -g -c Test.c
```

where

GCC    name of the compiler.  
-g     compiler switch to generate debugging information.  
-c     compiler switch to produce object file with .o extension

The above command line tells the compiler to compile Test.c into Test.o object file. We can invoke the linker to link the Test.o file into an absolute file and produce the linker map file. By default, the linker prints the map file to the standard output device, i.e., screen. We can redirect the output map file to a user-defined file by using the >filename command. The following command line will generate absolute file and linker map file:

```
LD -o Test.x Test.o ../lib/libc.a -M > Test.map
```

where

LD     name of the linker.  
-o     linker switch to name the output absolute file as Test.x. By default the output absolute file is a.out.  
-M     linker switch to generate the linker map file.  
>      redirect the output map file to a user-defined file, i.e., Test.map.

The above command line tells the linker to produce an absolute file called Test.x as the result of linking Test.o with the library libc.a that will come from the standard search directory.

2. Compile the C source code to produce the linker map file.

For example, we have a C program (Test.c) and a linker command file (Test.cmd). We can compile the C program directly to produce a linker map file. The following command line will generate absolute file (Test.x) and linker command file (Test.map):

```
GCC -o Test.x -Xlinker -M -Ttest.cmd Test.c > Test.map
```

where:

GCC	name of the compiler.
-o	compiler switch to name the output absolute file as Test.x. By default the output absolute file is a.out.
-Xlinker	compiler switch that passes option to the linker.
-M	linker switch to generate the linker map file.
>	redirect the output map file to a user-defined file, i.e., Test.map.
-T	linker switch that directs the linker to read commands from Test.cmd file.

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