

FAQ 269

Determining the Size of a Real-Time Application

Question

How can I determine the size of a real-time application?

Solution

Determining the Required Memory Space

To determine the size of a real-time application, you can use the i686-elf-size.exe program.

i686-elf-size is part of the DS1006 compiler package. It can also be used for PowerPC-based boards (DS1005, DS1103, DS1104, MicroAutoBox/DS1401).

Download the stand-alone application from www.dspace.com/go/i686-elf-size.

Extract i686-elf-size.exe from the ZIP archive and copy it to the directory containing the real-time application.

Open a Command Prompt (e.g. from the Windows Run box: press Windows+R, type *cmd* and click OK).

Change the directory in Command Prompt to the directory containing the real-time application and run the following syntax:

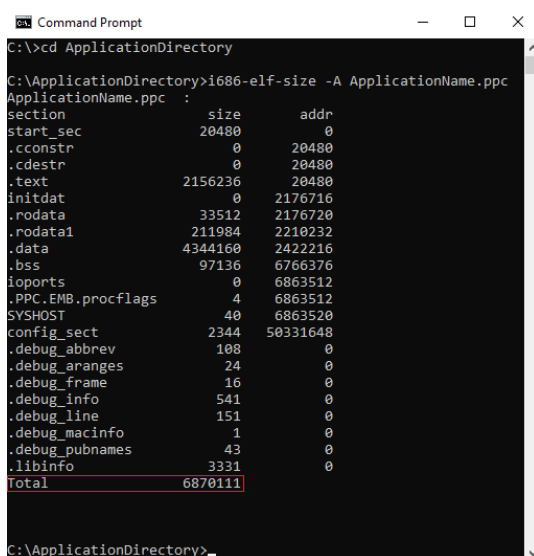
i686-elf-size -A <application-name>.ppc

For help information, enter the following command:

i686-elf-size -h

The **Total** entry shows the total size of the selected application in bytes.

The following screenshot shows an example of the output:



```

C:\>cd ApplicationDirectory
C:\ApplicationDirectory>i686-elf-size -A ApplicationName.ppc
ApplicationName.ppc :
section      size      addr
start_sec    20480     0
.cconstr      0         20480
.cdestr       0         20480
.text        2156236   20480
initdat       0        2176716
.rodata       33512    2176720
.rodata1     211984    2210232
.data        4344160  2422216
.bss         97136    6766376
.ioports      0        6863512
.PPC_EMB.procflags 4        6863512
.SYSHOST      40        6863520
config_sect   2344     50331648
.debug_abbrev 108        0
.debug_aranges 24        0
.debug_frame  16        0
.debug_info   541        0
.debug_line   151        0
.debug_macro  1         0
.debug_pubnames 43        0
.libinfo     3331        0
Total      6870111
C:\ApplicationDirectory>
  
```

Alternatively, you can use the Command Prompt for dSPACE RCP and HIL <Release>:

Start Menu - Programs - dSPACE RCP and HIL <Release> - Command Prompt for dSPACE RCP and HIL <Release>

The names and the related size of the sections are displayed:

- .text:** All program code
- .rodata:** Data generated by the compiler and explicitly as **const** initialized variables
- .rodata1:** Content of string literals
- .data:** Variables that are **not** initialized as **const**
- .bss:** Uninitialized variables (e.g. empty arrays). This section does not occupy any physical space in the executable file. When the program is loaded into the memory or when it is executed, the variables are initialized to zero and therefore placed in the .data section.
- ioports:** Variables for simulated I/O ports.

The table below shows the contents of a C code and the sections of the resulting executable.

example.c	Section name	Content
int d = 1;	.text	main
int b;	.rodata	r
const r = 2;	.rodata1	"hello"
void main()		
{		
printf("hello");	.data	d
return 0;		
}	.bss	b

For more details please refer to the **Microtec® C/C++ Compiler User's Guide and Reference Manual for the PowerPC Family**.

Available Memory per Board Type

Board	RAM	Flash
DS1005	128 MB	15 MB
DS1006	256 MB	-
DS1401 (MicroAutoBox)	16 MB	16 MB
DS1103	32 MB	-
DS1104	32 MB	8 MB

The above values refer to physical memory. The usable size for programs is less because stack/heap sizes must be considered.

Related FAQs

- -

FAQ Overview

<http://www.dspace.com/go/faq>

Support

To request support, please use the form at <http://www.dspace.com/go/supportrequest>

Updates and Patches

Software updates and patches are available at <http://www.dspace.com/go/patches>.
dSPACE strongly recommends to use the most recent patches for your dSPACE installation.

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Rathenaustraße 26
33102 Paderborn
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