

gputils 0.10.0

Craig Franklin

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Introduction

gputils is a collection of tools for Microchip (TM) PIC microcontrollers. It includes gpasm, gplink, and gplib. Each tool is intended to be an open source for a Microchip (TM) tool.

This manual covers the basics of the tools: for more details on a microcontroller, consult the specific PICmicro product that you are using.
part of gputils.

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Chapter 1

gpasm

1.1.1 Using gpasm with “make”

On most operating systems, you can b

CHAPTER 1. GPASM

base	general syntax	21 decimal written as
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1.3.3 Conditional assembly

The IF, IFNDEF, IFDEF, ELSE and ENDIF directives enable you to assemble certain sections of code only if a condition is met. In themselves, they do not cause gpasm to emit any PIC code. The example in section 1.3.4 demonstrates conditional assembly.

1.3.4 Macros

gpasm supports a simple macro scheme; you can define and use macros like this:

```
any    macro parm
        movlw parm
        endm

...

any    33
```

A more useful example of some macros in use is:

```
; Shift reg left, result (w or f) in 'dst'
slf    macro reg,dst
        clrc
        rlf    reg,f
endm

; Scale W by "factor". Result in "reg", W unchanged.
scale  macro reg, factor
        if (factor == 1)
            movwf reg                ; 1 X is easy
        else
            scale reg, (factor / 2) ; W * (factor / 2)
            slf    reg,f            ; double reg
            if ((factor & 1) == 1)  ; if lo-bit set ..
                addwf reg,f        ; .. add W to reg
            endif
        endif
endm
```

This recursive macro gene,

lo- Tmon

DA

```
<label> DA <expression> [, <expression>]*
```

Stores Strings in program memory. The data is stored as one 14 bit word representing two 7 bit ASCII characters.

See also: DT

DATA

```
DATA <expression> [, <expression>]*
```

Generates the specified data.

See also: DA, DB, DE, DW

DB

```
<label> DB <expression> [, <expression>]*
```

Declare data

PAGE

PAGE

Causes the list file to advance to the next page.

See also: LIST

PROCESSOR

PROCESSOR <symbol>

Selects the target processor. See section ?? for more details.

See also: LIST

RADIX

RADIX <symbol>

Selects the default radix from “oct” for octal, “dec” for decimal or “hex” for hexadecimal. gpasm uses this radix to interpret numbers that don’t have an explicit radix.

See also: LIST

RES

RES <mem_units>

Causes the memory location pointer to be advanced <mem_units>. Can be used to reserve data storage.

See also: FILL, ORG

SET

<label> SET <expression>

Temporarily assigns the value obtained by evaluating <expression> to the symbol <label>.

See also: SET

SPACE

SPACE <expression>

Inserts <expression> number of blank lines into the listing file.

See also: LIST

SUBTITLE

SUBTITLE <string>

This directive establishes a second program header line for use as a subtitle in the listing output. <string> is an ASCII string

14 Bit Devices (PIC16CXX)

Syntax	Description
ADDLW <imm8>	Add immediate to W

Special macros

There are also a number of standard additional macros that gpasm reads from the file “special.inc”. Consult that file for more details. These macros are:

Syntax	Description
ADDCF <f>,<dst>	Add carry to <f>, result in <dst>
B <addr>	Branch
BC <addr>	Branch on carry
BZ <addr>	Branch on zero
BNC <addr>	Branch on no carry
BNZ <addr>	Branch on not zero
CLRC	Clear carry

gpasm encountered a divide by zero.

115 Duplicate Label

Duplicate label or redefining a symbol that can not be redefined.

124 Illegal Argument

gpasm encountered an illegal argument in an expression.

125 Illegal Condition

An illegal condition like a missing endif or endw has been encountered.

126 Argument out of

1.5.2 Warnings

201 Symbol not previously defined.

The symbol being #undefined was not previously defined.

202 Argument out of range

The ID locations value specified is too large.

305 Using default destination of 1 (file).

No destination was specified so the default location was used.

308 Warning level superseded by command line

The warning level was specified on the command line and in the source The command line has precedence.

309 Macro expansion superseded by command line

Macro expansion was specified on the command line and in the source The command line has precedence.

Chapter 3

gplib

3.1 Running gplib

The general syntax for running gpasm is

```
gplib <options> <asm-file>
```



```
gpvo test.obj > test.dump
```

This redirects standard output to the file “test.dump”.

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