GoFast® for Microsoft/Protected Mode

Features

- Fast
- Reentrant
- ROMable
- Conforms to IEEE 754
- "Link and Go" compiler support
- Includes test programs and make file
- Source code provided

Description

GOFAST® for 80x86 Protected Mode is a floating point emulator and library for 80x86 32-bit protected mode and the Microsoft Visual C++ compiler. The GF-MPROT floating point emulator supports any 80x86 protected mode processor, which does not contain floating point support in the processor. The GF-MPROT library may be used with any processor. GOFAST provides ROMable, reentrant IEEE and ANSI compatible 80x86 floating point support.

Emulator Functionality

The GF-MPROT emulator matches the functionality of the 80387 coprocessor. GFMPROT gets control through interrupt 7 (coprocessor not present). The GOFAST code will then run and process the floating point instruction in software just as the instruction would have been handled in hardware had a floating-point coprocessor been present.

Library Functionality

The GF-MPROT library replaces the library provided with the Microsoft 32-bit compiler. The library provided with the Microsoft 32-bit compiler assumes you are running in an environment with a Microsoft operating system and the application will obtain the code for the floating point routines from a dynamic link library. A dynamic link library is typically not available in an embedded application so the GF-MPROT library is an ideal solution. The GF-MPROT library will use the processor floating point unit if available.

Microsecond timings

Function	Double Precision		Function	Double Precision		
	GOFAST*3	GOFAST*4		GOFAST*1	Microsoft*2	%
add		29.16	add			
subtract		30.69	subtract			
multiply		35.27	multiply			
divide		37.30	divide			
floor		69.76	floor			
cell		69.72	cell			
tabs		38.37	tabs			
sqrt	13.20	84.01	sqrt	0.39	0.61	156%
exp	43.90	169.70	exp	1.10	2.26	205%
log	19.80	86.10	log	1.10	0.99	90%
log10	19.20	85.94	log10	0.93	1.00	108%
sin	15.90	121.96	sin	0.37	0.55	149%
cos	16.00	122.34	cos	0.53	0.61	115%
tan	20.30	49.69	tan	0.73	0.89	122%
asin	33.50	141.13	asin	1.67	1.26	75%
acos	34.10	145.33	acos	1.43	1.27	89%
atan	18.10	82.25	atan	1.10	1.05	95%
atan2	18.10	84.01	atan2	1.10	1.98	180%

Processor:
190Mhz AMD K6 with hardware coprocessor

Note: No single precision timings are shown because the Microsoft library does not support single precision

*1: GOFAST library routines and floating point operations in processor
*2: Microsoft library and floating point operations in processor
*3: GOFAST emulation and library routines
*4: GOFAST emulation and library routines (40Mhz AMD 386)