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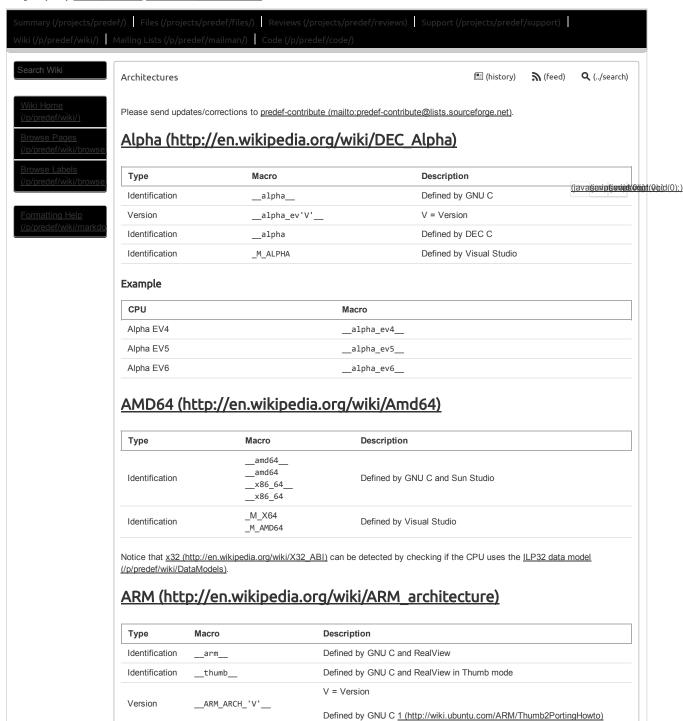
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Pre-defined Compiler Macros (/p/predef/)

Brought to you by: breese (/u/breese/), tahonermann (/u/tahonermann/)

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Alpha (http://en.wikipedia.org/wiki/DEC_Alpha)

Type	Macro	Description
Identification	__alpha__	Defined by GNU C
Version	__alpha_ev'V'__	V = Version
Identification	__alpha	Defined by DEC C
Identification	_M_ALPHA	Defined by Visual Studio

Example

CPU	Macro
Alpha EV4	__alpha_ev4__
Alpha EV5	__alpha_ev5__
Alpha EV6	__alpha_ev6__

AMD64 (http://en.wikipedia.org/wiki/Amd64)

Type	Macro	Description
Identification	__amd64__ __amd64 __x86_64__ __x86_64	Defined by GNU C and Sun Studio
Identification	_M_X64 _M_AMD64	Defined by Visual Studio

Notice that x32 (http://en.wikipedia.org/wiki/X32_ABI) can be detected by checking if the CPU uses the ILP32 data model (/p/predef/wiki/DataModels).

ARM (http://en.wikipedia.org/wiki/ARM_architecture)

Type	Macro	Description
Identification	__arm__	Defined by GNU C and RealView
Identification	__thumb__	Defined by GNU C and RealView in Thumb mode
Version	__ARM_ARCH_'V'__	V = Version Defined by GNU C 1 (http://wiki.ubuntu.com/ARM/Thumb2PortingHowto)

Identification	`__TARGET_ARCH_ARM` `__TARGET_ARCH_THUMB`	Defined by RealView
Version	`__TARGET_ARCH_ARM = V` `__TARGET_ARCH_THUMB = V`	V = Version
Version	`__TARGET_ARCH_'VR'`	VR = Version and Revision
Identification	`_ARM`	Defined by ImageCraft C
Identification	`_M_ARM`	Defined by Visual Studio
Identification	`_M_ARMT`	Defined by Visual Studio in Thumb mode
Version	`_M_ARM = V`	V = Version
Identification	`__arm`	Defined by Diab

Example

CPU	Macro	_M_ARM
ARM 2	`__ARM_ARCH_2__`	
ARM 3	`__ARM_ARCH_3__` `__ARM_ARCH_3M__`	
ARM 4T	`__ARM_ARCH_4T__` `__TARGET_ARM_4T`	
ARM 5	`__ARM_ARCH_5__` `__ARM_ARCH_5E__`	5

ARM 5T	`__ARM_ARCH_5T__`
	`__ARM_ARCH_5TE__`
	`__ARM_ARCH_5TEJ__`	

ARM 6	`__ARM_ARCH_6__`
	`__ARM_ARCH_6J__`
	`__ARM_ARCH_6K__`
	`__ARM_ARCH_6Z__`
	`__ARM_ARCH_6ZK__`
		6

ARM 6T2	`__ARM_ARCH_6T2__`	

ARM 7	`__ARM_ARCH_7__`
	`__ARM_ARCH_7A__`
	`__ARM_ARCH_7R__`
	`__ARM_ARCH_7M__`
	`__ARM_ARCH_7S__`
		7

ARM64 (http://en.wikipedia.org/wiki/ARM64)

Type	Macro	Description
Identification	`__aarch64__`	Defined by GNU C 1 (http://gcc.gnu.org/viewcvs/trunk/gcc/config/aarch64/aarch64.h?view=markup)

Blackfin (http://en.wikipedia.org/wiki/Blackfin)

Type	Macro	Description
Identification	`__bfin` `__BFIN__`	Defined by GNU C

Convex (http://en.wikipedia.org/wiki/Convex_Computer)

Type	Macro	Description
Identification	`__convex__`	Defined by GNU C
Version	`__convex_'V'__`	V = Version

Example

CPU	Macro
Convex C1	`__convex_c1__`
Convex C2	`__convex_c2__`
Convex C32xx series	`__convex_c32__`

Convex C34xx series	__convex_c34__
Convex C38xx series	__convex_c38__

Epiphany (http://en.wikipedia.org/wiki/Adapteva)

Type	Macro
Identification	__epiphany__

HP/PA RISC (http://en.wikipedia.org/wiki/PA-RISC_family)

Type	Macro	Description
Identification	__hppa__	Defined by GNU C
Identification	__HPPA__	Defined by Stratus VOS C
Identification	__hppa	
Version	_PA_RISC'V'_'R'	V = Version R = Revision

See also OpenPA.net (http://www.openpa.net).

Example

CPU	Macro
PA RISC 1.0	_PA_RISC1_0
PA RISC 1.1	_PA_RISC1_1 __HPPA11__ __PA7100__
PA RISC 2.0	_PA_RISC2_0 __RISC2_0__ __HPPA20__ __PA8000__

Intel x86 (http://en.wikipedia.org/wiki/X86)

Type	Macro	Format	Description
Identification	i386 __i386 __i386__		Defined by GNU C
Version	__i386__ __i486__ __i586__ __i686__		Defined by GNU C
Identification	__i386		Defined by Sun Studio
Identification	__i386 __IA32__		Defined by Stratus VOS C
Identification	_M_I86		Only defined for 16-bits architectures Defined by Visual Studio, Digital Mars, and Watcom C/C++ (see note below)
Identification	_M_IX86		Only defined for 32-bits architectures Defined by Visual Studio, Intel C/C++, Digital Mars, and Watcom C/C++
Version	_M_IX86	V00	V = Version
Identification	__X86__		Defined by Watcom C/C++
Identification	_X86_		Defined by MinGW32
Identification	__THW_INTEL__		Defined by XL C/C++
Identification	__I86__		Defined by Digital Mars
Version	__I86__	V	V = Version
Identification	__INTEL__		Defined by CodeWarrior
Identification	__386		Defined by Diab

Notice that Watcom C/C++ defines _M_IX86 for both 16-bits and 32-bits architectures. Use __386__ or _M_I386 to detect 32-bits

architectures in this case.

Notice that the Stratus VOS is big-endian on IA32, so these macros cannot be used to detect endianness if __VOS__ is set.

Example

CPU	_M_IX86	__I86__
80386	300	3
80486	400	4
Pentium	500	5
Pentium Pro/II	600	6

Intel Itanium (IA-64) (http://en.wikipedia.org/wiki/Itanium)

Type	Macro	Format	Description
Identification	__ia64__ _IA64 __IA64__		Defined by GNU C
Identification	__ia64		Defined by HP aCC
Identification	_M_IA64		Defined by Visual Studio
Identification	_M_IA64		Defined by Intel C/C++
Version	_M_IA64	?	
Identification	__itanium__		Defined by Intel C/C++

Example

CPU	_M_IA64 (Intel C/C++)
	64100

Motorola 68k (http://en.wikipedia.org/wiki/M68k)

Type	Macro	Description
Identification	__m68k__	Defined by GNU C
Version	__mc'V'__ __mc'V' mc'V'	V = Version
Identification	M68000	Defined by SAS/C
Identification	__MC68K__	Defined by Stratus VOS C
Version	__MC'V'__	V = Version

Example

CPU	Macro
68000	__mc68000__ __MC68000__
68010	__mc68010__
68020	__mc68020__ __MC68020__
68030	__mc68030__ __MC68030__
68040	__mc68040__
68060	__mc68060__

MIPS (http://en.wikipedia.org/wiki/MIPS_architecture)

Type	Macro	Description
Identification	__mips__ mips	Defined by GNU C
Version	_MIPS_ISA = _MIPS_ISA_MIPS'V'	V = MIPS ISA level

Version	_R3000 _R4000 _R5900	
Identification	__mips	Defined by MIPSpro and GNU C
Version	__mips	The value indicates the MIPS ISA (Instruction Set Architecture) level
Version	__MIPS_ISA'V'__	V = MIPS ISA level
Identification	__MIPS__	Defined by Metrowerks

Example

CPU	_MIPS_ISA	GNU C Macro	__mips	MIPSpro Macro
R2000	_MIPS_ISA_MIPS1		1	
R3000	_MIPS_ISA_MIPS1	_R3000	1	
R6000	_MIPS_ISA_MIPS2		2	__MIPS_ISA2__
R4000		_R4000		
R4400	_MIPS_ISA_MIPS3		3	__MIPS_ISA3__
R8000	_MIPS_ISA_MIPS4		4	__MIPS_ISA4__
R10000	_MIPS_ISA_MIPS4		4	__MIPS_ISA4__

PowerPC (http://en.wikipedia.org/wiki/PowerPC)

Type	Macro	Description
Identification	__powerpc __powerpc__ __powerpc64__ __POWERPC__ __ppc__ __ppc64__ __PPC__ __PPC64__ _ARCH_PPC _ARCH_PPC64	Defined by GNU C
Version	__ppc'V'__	V = Version
Identification	_M_PPC	Defined by Visual Studio
Version	_M_PPC	?
Identification	_ARCH_PPC _ARCH_PPC64	Defined by XL C/C++
Version	_ARCH_'V'	V = Version
Version	__PPCGECKO__	Gekko (http://en.wikipedia.org/wiki/Gekko_%28microprocessor%29) Defined by CodeWarrior
Version	__PPCBROADWAY__	Broadway (http://en.wikipedia.org/wiki/Broadway_%28microprocessor%29) Defined by CodeWarrior
Version	_XENON	Xenon (http://en.wikipedia.org/wiki/Xenon_%28processor%29)
Identification	__ppc	Defined by Diab

Example

CPU	_M_PPC	Macro	XL Macro
PowerPC 440			_ARCH_440
PowerPC 450			_ARCH_450
PowerPC 601	601	__ppc601__	_ARCH_601
PowerPC 603	603	__ppc603__	_ARCH_603
PowerPC 604	604	__ppc604__	_ARCH_604
PowerPC 620	620		

Pyramid 9810

Type	Macro
Identification	pyr

RS/6000 (http://en.wikipedia.org/wiki/RS/6000)

Type	Macro	Description
Identification	__THW_RS6000	Defined by XL C/C++
Identification	_IBMR2	
Identification	_POWER	
Identification	_ARCH_PWR _ARCH_PWR2 _ARCH_PWR3 _ARCH_PWR4	

SPARC (http://en.wikipedia.org/wiki/SPARC)

Type	Macro	Description
Identification	__sparc__	Defined by GNU C
Identification	__sparc	Defined by Sun Studio
Version	__sparc_v8__ __sparc_v9__	Defined by GNU C
Version	__sparcv8 __sparcv9	Defined by Sun Studio

Example

CPU	Sun Studio Macro	GNU C Macro
SPARC v8 (SuperSPARC)	__sparcv8	__sparc_v8__
SPARC v9 (UltraSPARC)	__sparcv9	__sparc_v9__

SuperH (http://en.wikipedia.org/wiki/SuperH)

Type	Macro	Description
Identification	__sh__	Defined by GNU C
Version	__sh1__ __sh2__ __sh3__ __SH3__ __SH4__ __SH5__	

SystemZ (http://en.wikipedia.org/wiki/IBM_System_z)

Type	Macro	Description
Identification	__370__ __THW_370__	Identifies System/370 (http://en.wikipedia.org/wiki/System/370) Defined by XL C/C++
Identification	__s390__	Identifies System/390 (http://en.wikipedia.org/wiki/System/390) Defined by GNU C
Identification	__s390x__	Identifies z/Architecture (http://en.wikipedia.org/wiki/Z/Architecture) Defined by GNU C
Identification	__zarch__	Identifies z/Architecture (http://en.wikipedia.org/wiki/Z/Architecture) Defined by clang
Identification	__SYSC_ZARCH__	Identifies z/Architecture (http://en.wikipedia.org/wiki/Z/Architecture) Defined by Systems/C

TMS320 (http://en.wikipedia.org/wiki/Texas_Instruments_TMS320)

Type	Macro	Description
Identification	_TMS320C2XX __TMS320C2000__	C2000 series
Identification	_TMS320C5X __TMS320C55X__	C5000 series
Identification	_TMS320C6X __TMS320C6X__	C6000 series

Example

DSP	Macro
C28xx	_TMS320C28X
C54x	_TMS320C5XX
C55x	__TMS320C55X__
C6200	_TMS320C6200
C6400	_TMS320C6400
C6400+	_TMS320C6400_PLUS
C6600	_TMS320C6600
C6700	_TMS320C6700
C6700+	_TMS320C6700_PLUS
C6740	_TMS320C6740

TMS470

Type	Macro
Identification	__TMS470__

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