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# Developer Notes: C Compiler 400 Series

Updated for cc-412, january 26th

## **NeXT Changes**

### **Runtime libraries**

The compiler runtime library `libgcc` is being updated from time to time while the compiler is still being developed. Therefore the compiler links it in statically from `/lib/arch/libgcc.a`. Once we get closer to

release, the content should be moved to libsys.

## Features in test bed

The following are features which have just been introduced, and are thus not enabled as default:

- **Shlib codegen; -fpic and -fPIC.** (m68k only) Generate code for the new shared library scheme. -fpic generates only indirections, while -fPIC generates indirections and position independent code. We will figure out some better names for these flags later...
- **Floating Point Precision Control; -ffppc, -fno-fppc.** (m68k and i386 only) Generate code which uses the new floating point precision control. This should eliminate the need for -ffloat-store, and be fully iee compliant.

## Defines in C code

The following is an exhaustive list of macros that affect how the compiler itself is compiled. They are defined in various configuration header files:

- **NEXT\_OBJC\_RUNTIME.** The compiler is build to generate code for the NeXT Objective-C runtime, as opposed to the GNU Objective-C runtime.
- **NEXT\_SEMANTICS.** Make the compiler a bit more sloppy on some issues to fit the NeXTSTEP development environment...
- **NEXT\_LIBGCC\_NAMES.** Make the compiler use double underscore in front of libgcc functions. If not defined, the

compiler will generate tripple underscores there.

- **NEXT\_PDO.** The compiler is build to run in a NeXT PDO (non-NeXTSTEP) environment.
- **NEXT\_FAT\_OUTPUT.** Understand and interpret flags -arch and related to produce fat binaries and cross compile.
- **NEXT\_CPP\_PRECOMP.** Make the compiler driver and C preprocessor understand and use NeXT's precompiled headers.
- **OBJC\_HPUX\_PADDING.** Hack in objc-act.c to make protocols structures size aligned on 8 bytes.
- **NEXT\_PIC.** The compiler is build to generate NeXT/mach-o PIC code, when the -pic flag is given to the compiler.

- **NeXT\_ASM.** Used in the backend of the hppa compiler, to generate NeXT specific assembler instructions.