Warpstock 2024 Presents:

OpenWatcom

Overview

- Current compilers for ArcaOS
- The history of OpenWatcom
- Advantages and need-to-knows
- Installation and Configuration
- Sample program compilation

Compilers used for OS/2

OpenWatcom

The subject of this talk, and recommended for ArcaOS software development by Arca Noae.

IBM VisualAge C/C++

A classical compiler and toolchain. Not recommended for current use as it is sorely outdated.

GCC (OS/2 port)

A best-effort community driven compiler

History of OpenWatcom

- OpenWatcom originally comes from Watcom C/C++, tracing its roots to the Watcom Intl. Corporation in Waterloo, Canada back in 1981.
- In 1994, Watcom was acquired by Powersoft.
- In 1995, Powersoft merged with Sybase.
- Releases continued on for some time until the software was discontinued on a commercial basis around 2009.
- Prior to Sybase's acquisition by SAP in 2010, Watcom was made open source and released at version 1.9.

History of OpenWatcom (cont.)

- Watcom was notable for having had robust support for 32-bit DOS extender technology.
- Many software developers from the likes of id Software, Apogee Software, and Core Design, heavily pursued 32-bit DOS game development for a time.
- The DOS extender used most often for compiled software under Watcom was DOS/4GW.
  - 4G stands for the 4 Gigabyte limit for 32-bit software
  - W stands for Watcom, as this variant of DOS/4G was specifically designed for software compiled in Watcom C.

Getting OpenWatcom...

- There are two versions of OpenWatcom in the wild.
    - Version 1.9 - the release Sybase made in 2010
    - Version 2.0 beta - a community port available since 2015
- When you search for OpenWatcom on Google, one of the first results to show is for 1.9 at openwatcom.org
- You'll want to avoid this version and instead download version 2.0 from the project-run github instance under "current-build".
- https://github.com/open-watcom/open-watcom-v2/releases

Getting OpenWatcom...

Current-build Pre-release

Last updated 2024-09-24 03:09:28 UTC

▼ Assets 17

open-watcom-2_0-c-dos.exe	121 MB	12 hours ago
open-watcom-2_0-c-linux-x64	122 MB	12 hours ago
open-watcom-2_0-c-linux-x86	121 MB	12 hours ago
open-watcom-2_0-c-os2.exe	121 MB	12 hours ago
open-watcom-2_0-c-win-x64.exe	122 MB	12 hours ago
open-watcom-2_0-c-win-x86.exe	121 MB	12 hours ago
open-watcom-2_0-c-win16.exe	121 MB	12 hours ago

12 hours ago

github-actions

Current-build

ff62389

Compare ▾

Improvements with 2.0 over 1.9...

- DOS tools support LFNs or long file names
- OpenWatcom supports 64-bit hosts natively. This is especially noteworthy for Linux hosts as there is no need for multilib.
- The OpenWatcom text editor is available as a standalone application.
- A new two-phase build system: OpenWatcom can be built by the host's native C/C++ compiler or by itself.
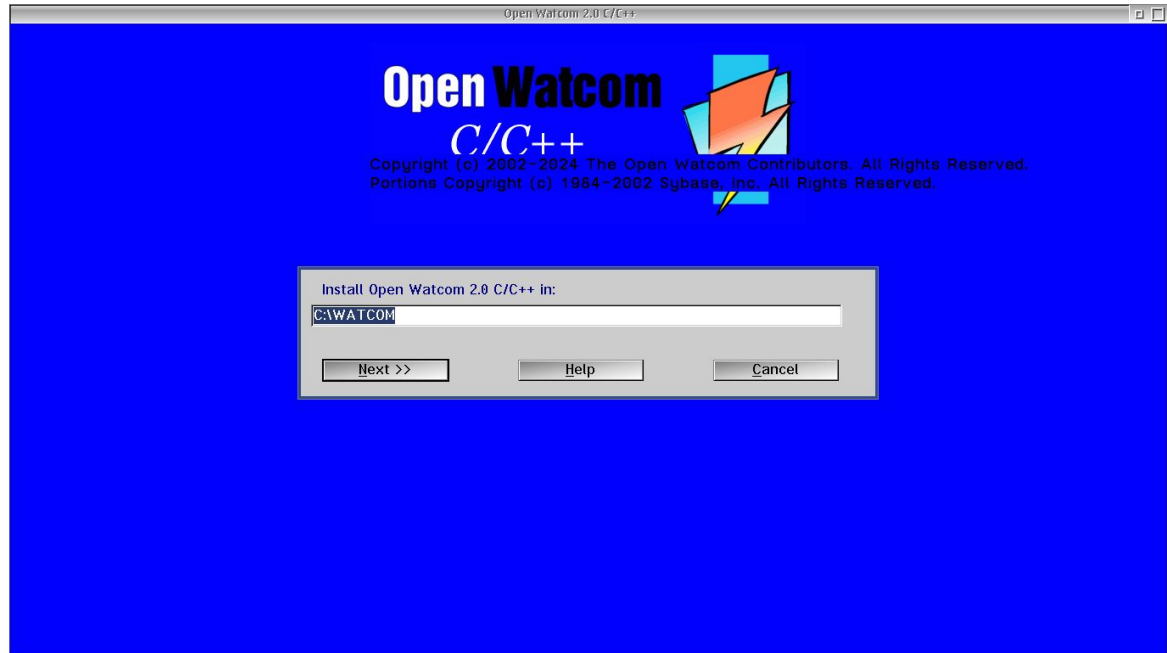
Installing OpenWatcom...

- When downloading, you have your choice between a version of OpenWatcom for C/C++ or for FORTRAN77.
- The installer is an exe style application and not a WarpIn bundle.
- The installer will also ask what kind of compilers you wish to include in your installation such as:
    - DOS
    - Win 3.1
    - Win NT / Win 9x / Win32s
    - Linux 32-bit
    - And of course... OS/2

Installing OpenWatcom...
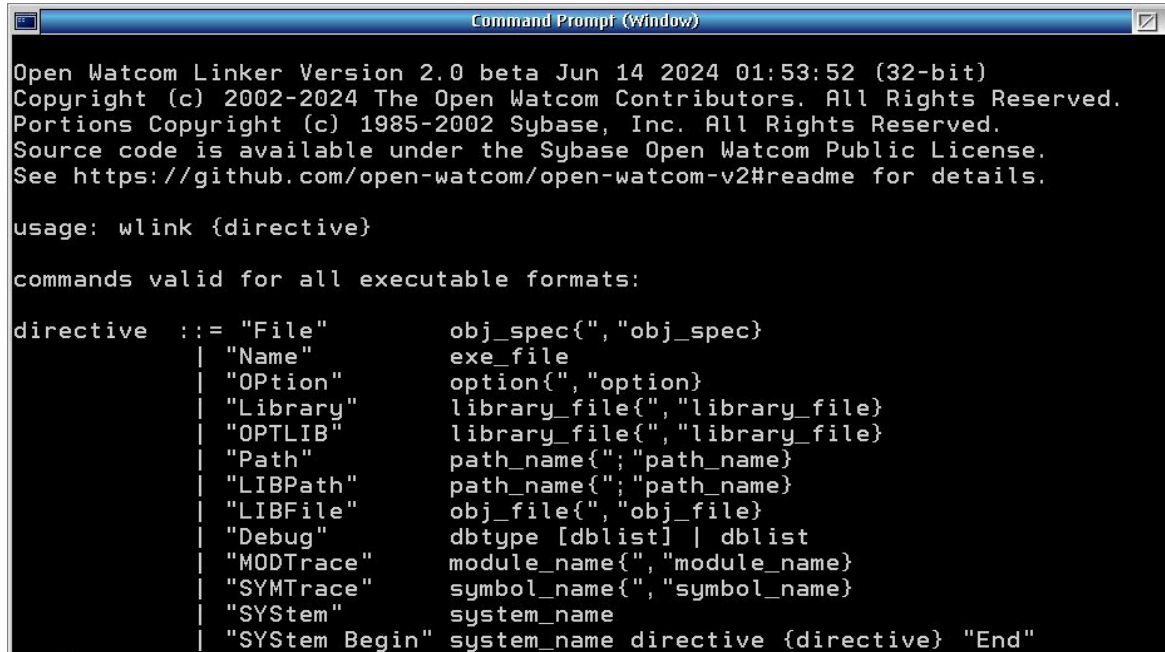
Installing OpenWatcom...

Stand out features

OpenWatcom has a few tools up its sleeve.

- WLINK - The Watcom linker utility, useful for compiling code from the command line.
- IDE - this is the graphical development environment that allows you to write code, run, and debug, all from one place.
- TECHINFO - This program lists all OS/2 environment variables in a handy display, complete with page breaks.
- WASM - Watcom assembler for compiling asm files.
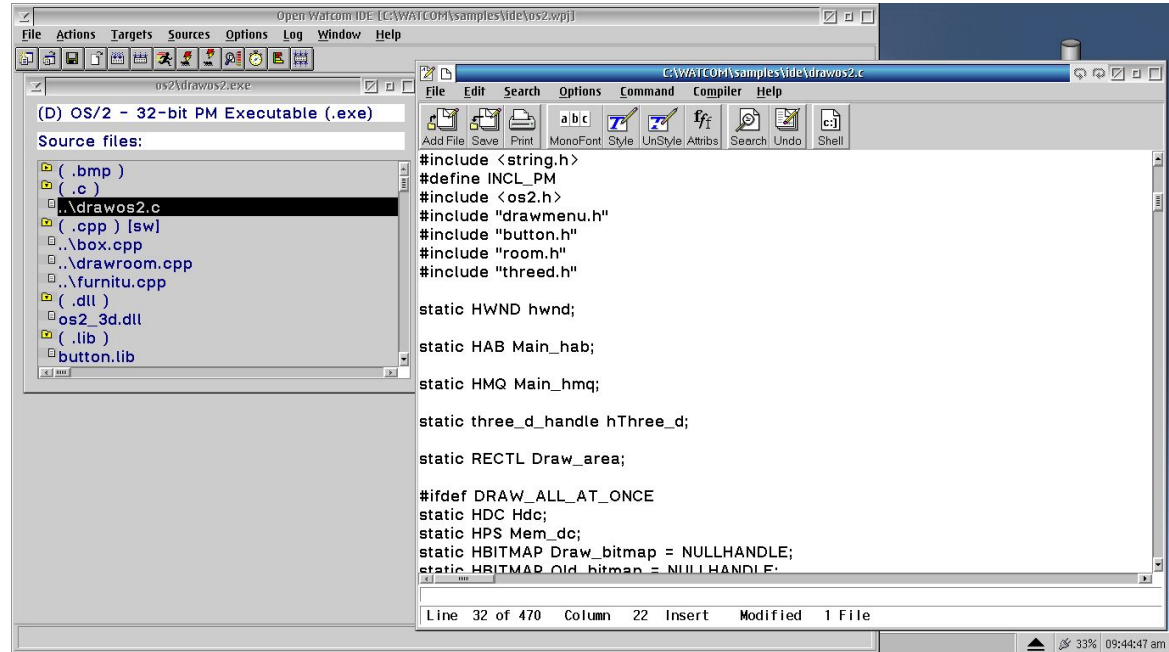- VI - A surprisingly robust vi-style editor, complete with menus.

WLINK


```
Open Watcom Linker Version 2.0 beta Jun 14 2024 01:53:52 (32-bit)
Copyright (c) 2002-2024 The Open Watcom Contributors. All Rights Reserved.
Portions Copyright (c) 1985-2002 Sybase, Inc. All Rights Reserved.
Source code is available under the Sybase Open Watcom Public License.
See https://github.com/open-watcom/open-watcom-v2#readme for details.

usage: wlink {directive}

commands valid for all executable formats:

directive  ::= "File"        obj_spec{","obj_spec}
             | "Name"        exe_file
             | "OPtion"      option{","option}
             | "Library"     library_file{","library_file}
             | "OPTLIB"      library_file{","library_file}
             | "Path"        path_name{";"path_name}
             | "LIBPath"     path_name{";"path_name}
             | "LIBFile"     obj_file{","obj_file}
             | "Debug"       dbtype [dblist] | dblist
             | "MODTrace"    module_name{","module_name}
             | "SYMTrace"    symbol_name{","symbol_name}
             | "SYStem"      system_name
             | "SYStem Begin" system_name directive {directive} "End"
```
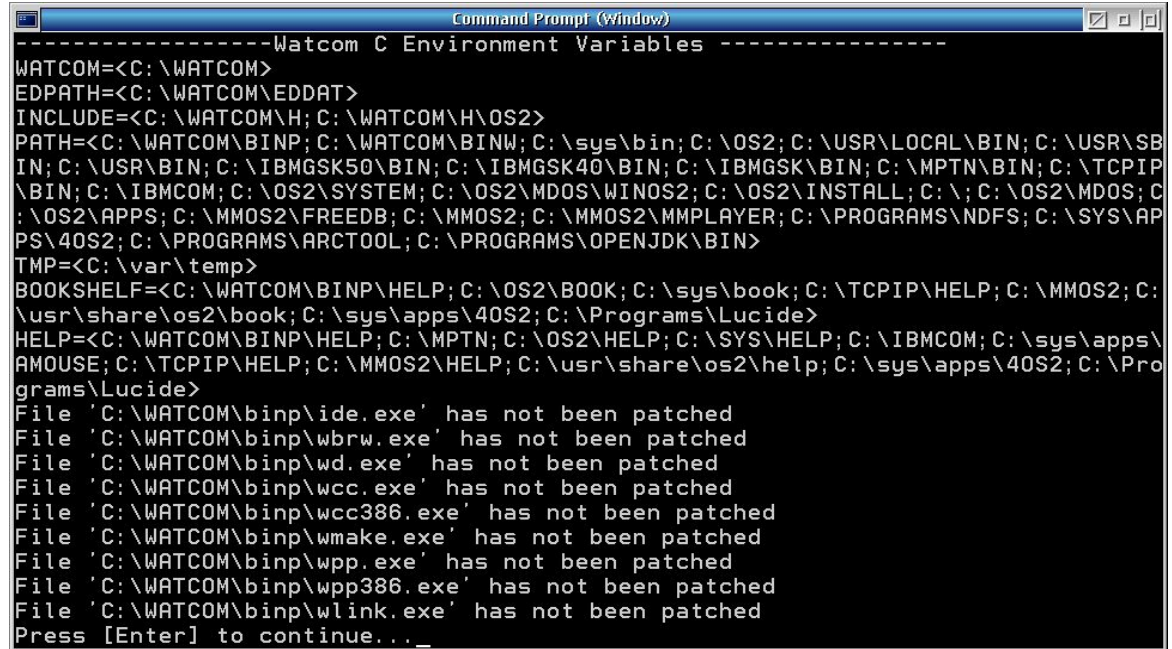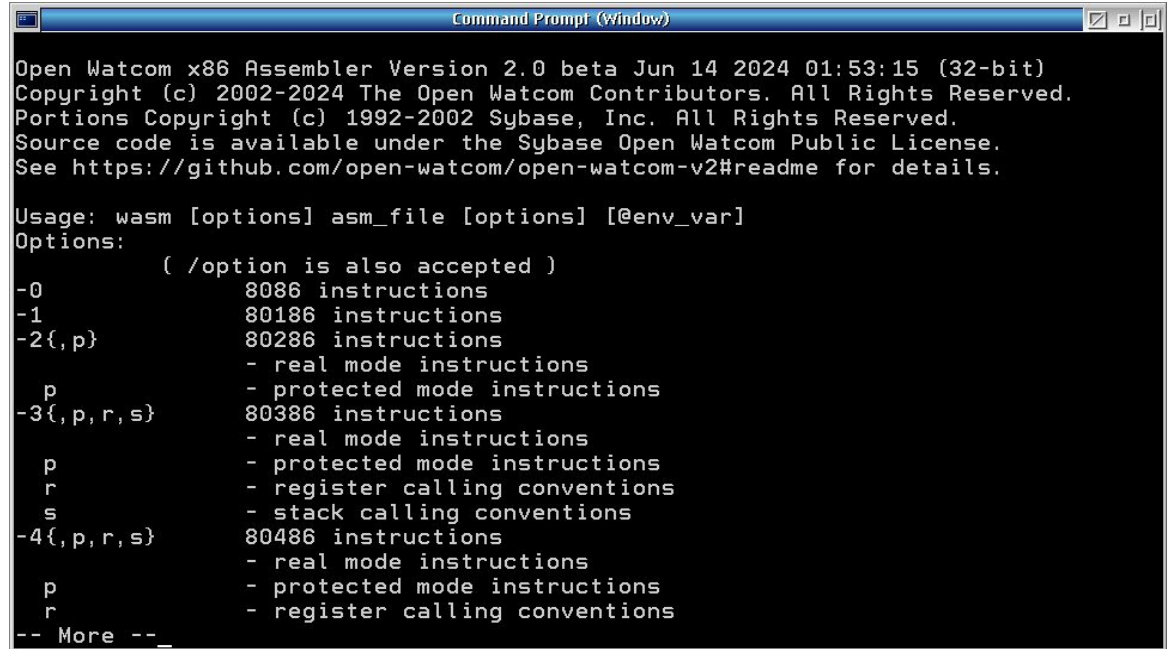
IDE

TECHINFO


```
------------------Watcom C Environment Variables ----------------
WATCOM=<C:\WATCOM>
EDPATH=<C:\WATCOM\EDDAT>
INCLUDE=<C:\WATCOM\H;C:\WATCOM\H\OS2>
PATH=<C:\WATCOM\BINP;C:\WATCOM\BINW;C:\sys\bin;C:\OS2;C:\USR\LOCAL\BIN;C:\USR\SB
IN;C:\USR\BIN;C:\IBMGSK50\BIN;C:\IBMGSK40\BIN;C:\IBMGSK\BIN;C:\MPTN\BIN;C:\TCPIP
\BIN;C:\IBMCOM;C:\OS2\SYSTEM;C:\OS2\MDOS\WINOS2;C:\OS2\INSTALL;C:\;C:\OS2\MDOS;C
:\OS2\APPS;C:\MMOS2\FREEDB;C:\MMOS2;C:\MMOS2\MMPLAYER;C:\PROGRAMS\NDFS;C:\SYS\AP
PS\4OS2;C:\PROGRAMS\ARCTOOL;C:\PROGRAMS\OPENJDK\BIN>
TMP=<C:\var\temp>
BOOKSHELF=<C:\WATCOM\BINP\HELP;C:\OS2\BOOK;C:\sys\book;C:\TCPIP\HELP;C:\MMOS2;C:
\usr\share\os2\book;C:\sys\apps\4OS2;C:\Programs\Lucide>
HELP=<C:\WATCOM\BINP\HELP;C:\MPTN;C:\OS2\HELP;C:\SYS\HELP;C:\IBMCOM;C:\sys\apps\
AMOUSE;C:\TCPIP\HELP;C:\MMOS2\HELP;C:\usr\share\os2\help;C:\sys\apps\4OS2;C:\Pro
grams\Lucide>
File 'C:\WATCOM\binp\ide.exe' has not been patched
File 'C:\WATCOM\binp\wbrw.exe' has not been patched
File 'C:\WATCOM\binp\wd.exe' has not been patched
File 'C:\WATCOM\binp\wcc.exe' has not been patched
File 'C:\WATCOM\binp\wcc386.exe' has not been patched
File 'C:\WATCOM\binp\wmake.exe' has not been patched
File 'C:\WATCOM\binp\wpp.exe' has not been patched
File 'C:\WATCOM\binp\wpp386.exe' has not been patched
File 'C:\WATCOM\binp\wlink.exe' has not been patched
Press [Enter] to continue..._
```
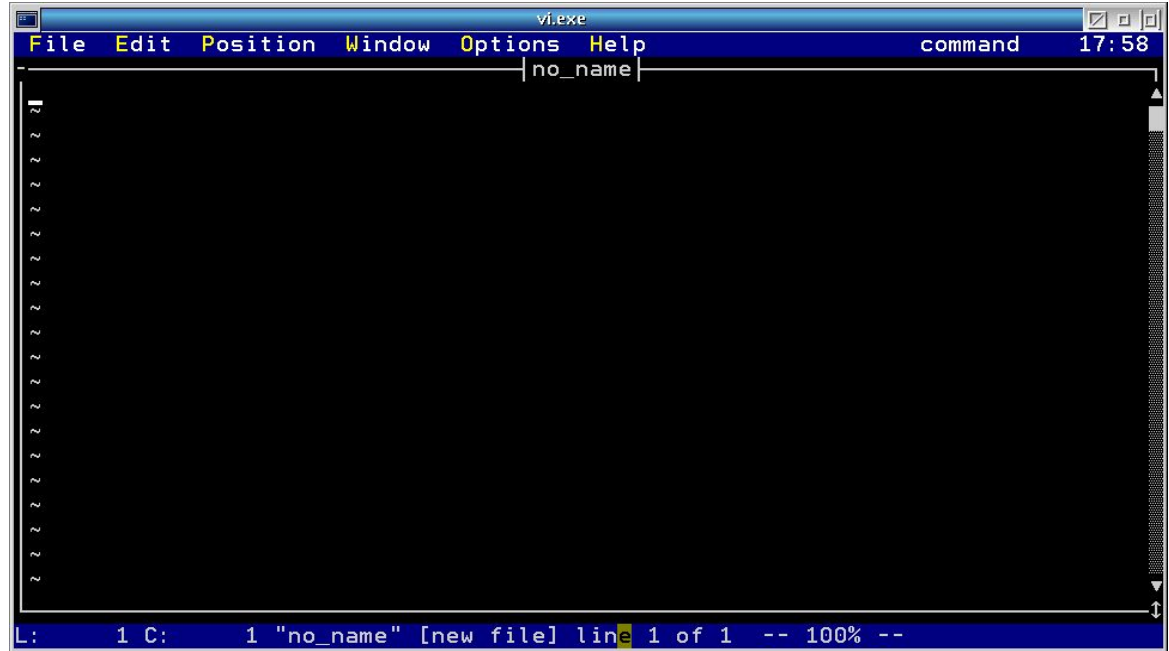
WASM

VI

Possible drawbacks

Although few in number, there are a few potential downsides for OpenWatcom.

- The user interface in the tools are a bit dated, with a bit of a split personality. i.e. the Virtual DOS Machine debug utility utilizes WinOS/2 instead of a native interface.
- Some more advanced features, like C99 support, are either highly experimental or not present at all.
- It can be a bit clunky for working with multibyte characters. A command line switch has to be passed to inform what multibyte character set to use. It's from an era of Code Page 437 after all!

Possible drawbacks

- If you're a free software license hound, the terms and conditions of the Sybase OpenWatcom Public License Agreement is considered to be *MORE* copyleft than the GPL and has termination clauses. Therefore, it's not FSF approved, but OSI is fine with it.

Thank You