P01 ： UNIX V6 运行调制环境的安装与配置

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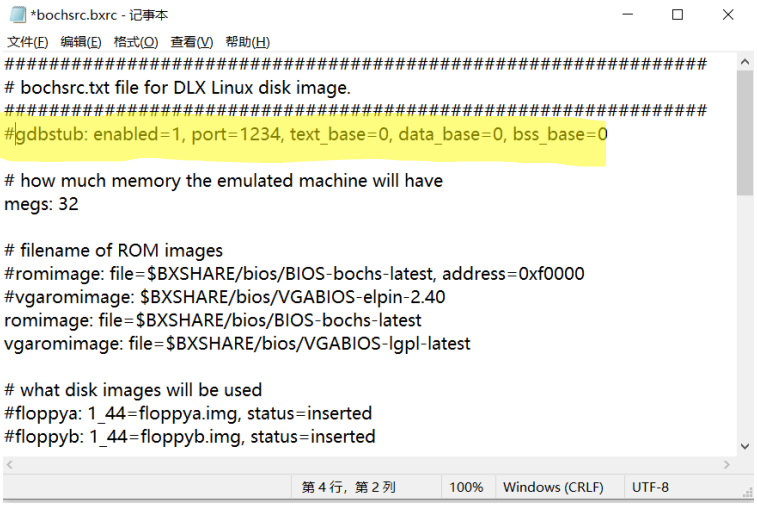
一、 实验目的

（1） 安装配置 UNIX V6++的运行环境；
（2） 安装配置 UNIX V6++的调试环境

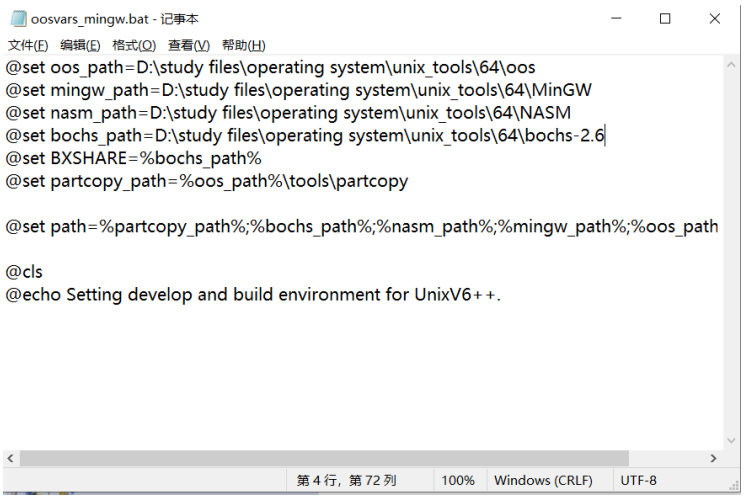
二、 实验内容

2.1 配置 UNIX V6++的运行环境

在..\oos\targets\UNIXV6++中找到虚拟机 bochs 的配置文件 bochsrc.bxrc，先注释掉控制 gdb 调试功能的代码

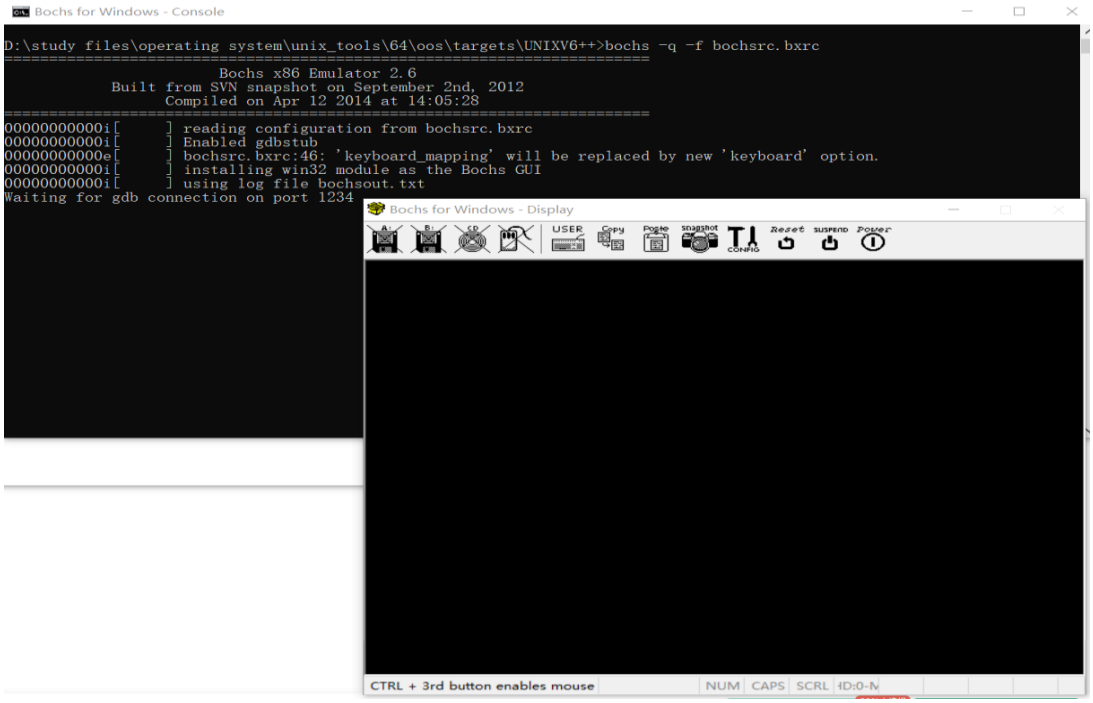


再打开 oosvars_mingw.bat，将其中路径设置为工具包中工具在本机上的路径

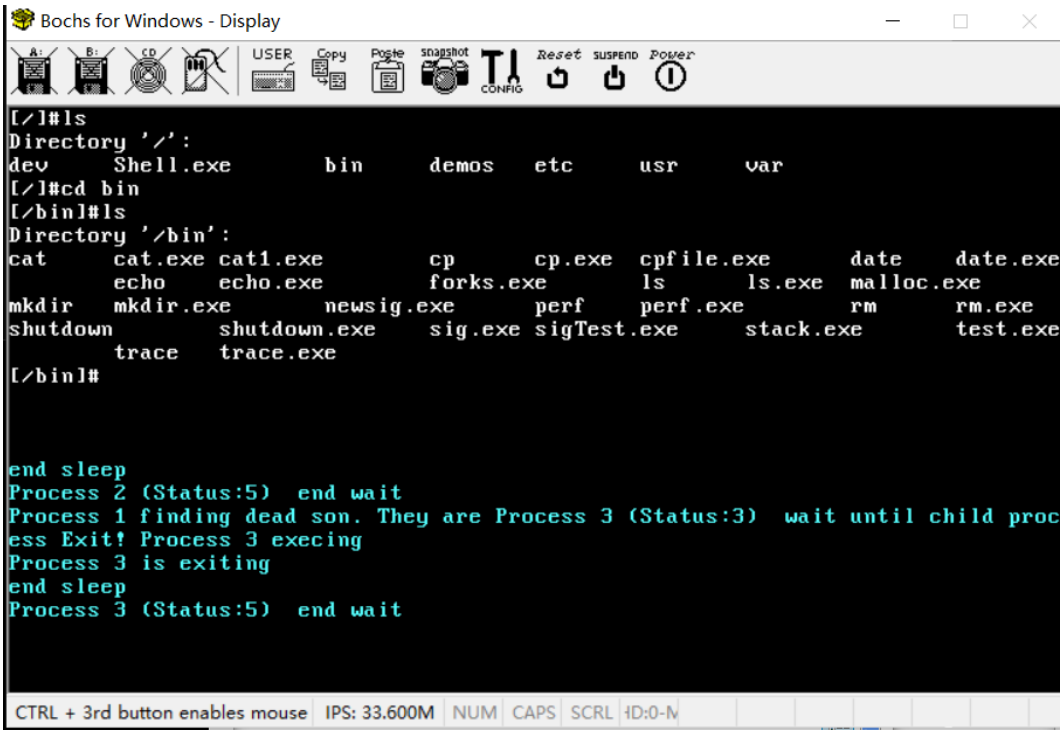


2.2 运行 UNIX V6++

运行“UNIX V6++\oos\tools\”目录下的 OOS Command Prompt 快捷方式，输入 run 启动 bochs 虚拟机和 UNIX V6++



运行几个 shell 命令：ls——列目录 cat——串联显示命令 cd——改变当前目录 等

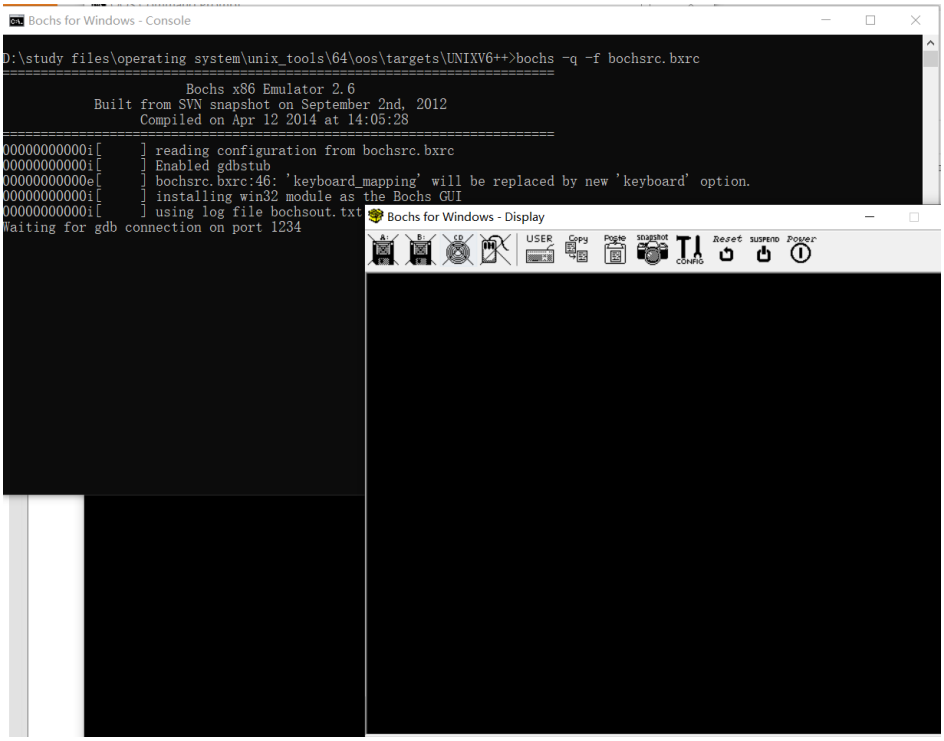


2.3 UNIX V6++调试环境的配置

（1）开启对虚拟机的调试选项

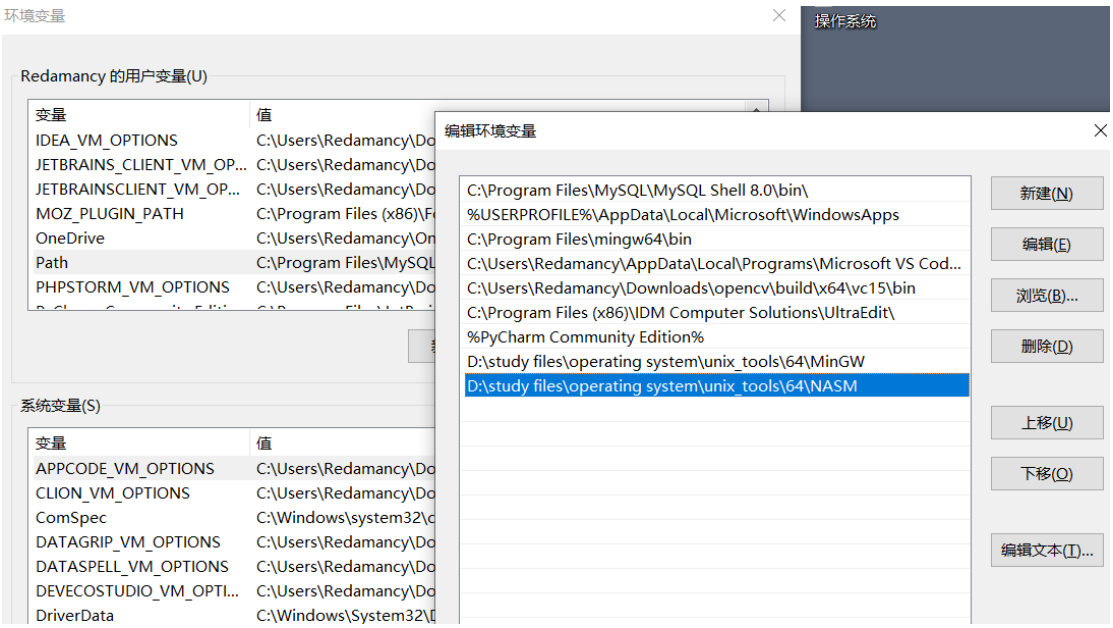
将 bochsrc.bxrc 中控制 gdb 调试功能的代码取消注释，这样 bochs 虚拟机打开了一个 1234 的端口，通过端口接收调试指令。

此时再次运行 UNIX V6++，得到等待调试指令的 bochs 虚拟机



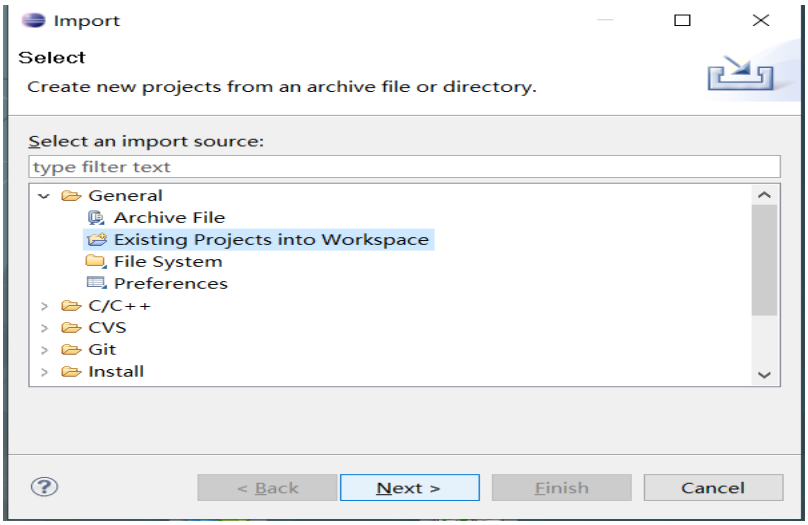
（3） 调试相关的系统环境变量设置

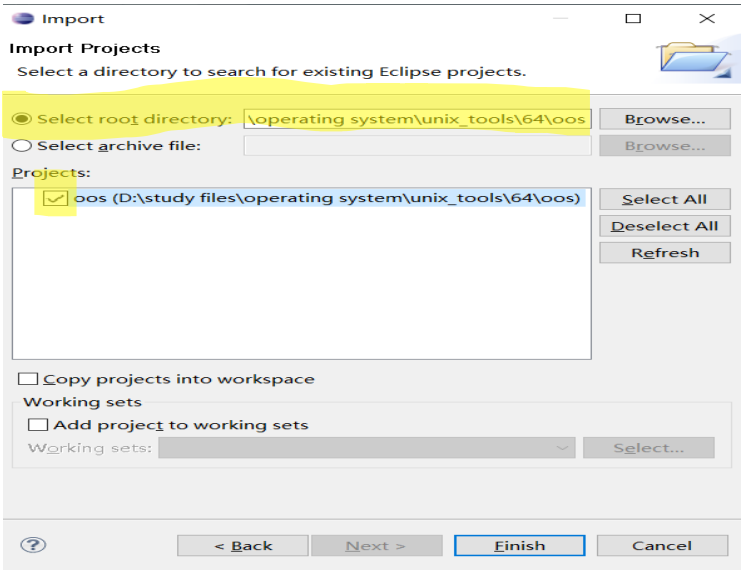
在 Windows 环境变量设置->用户变量->path->编辑环境变量中，加入 MinGW 和 NSAM 的路径

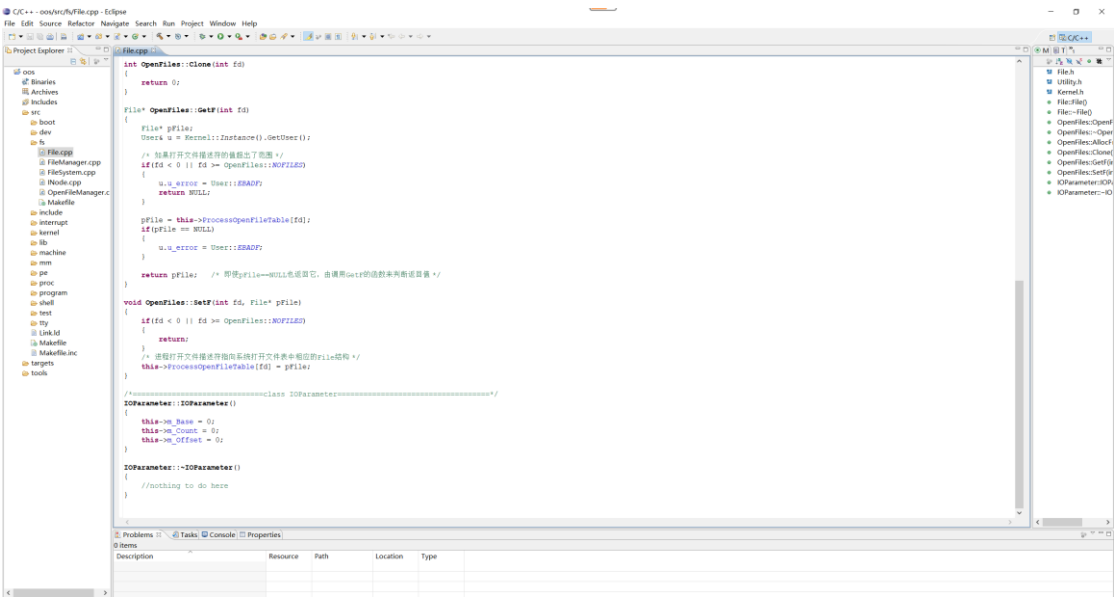


2.4 eclips 远程调试环境的配置

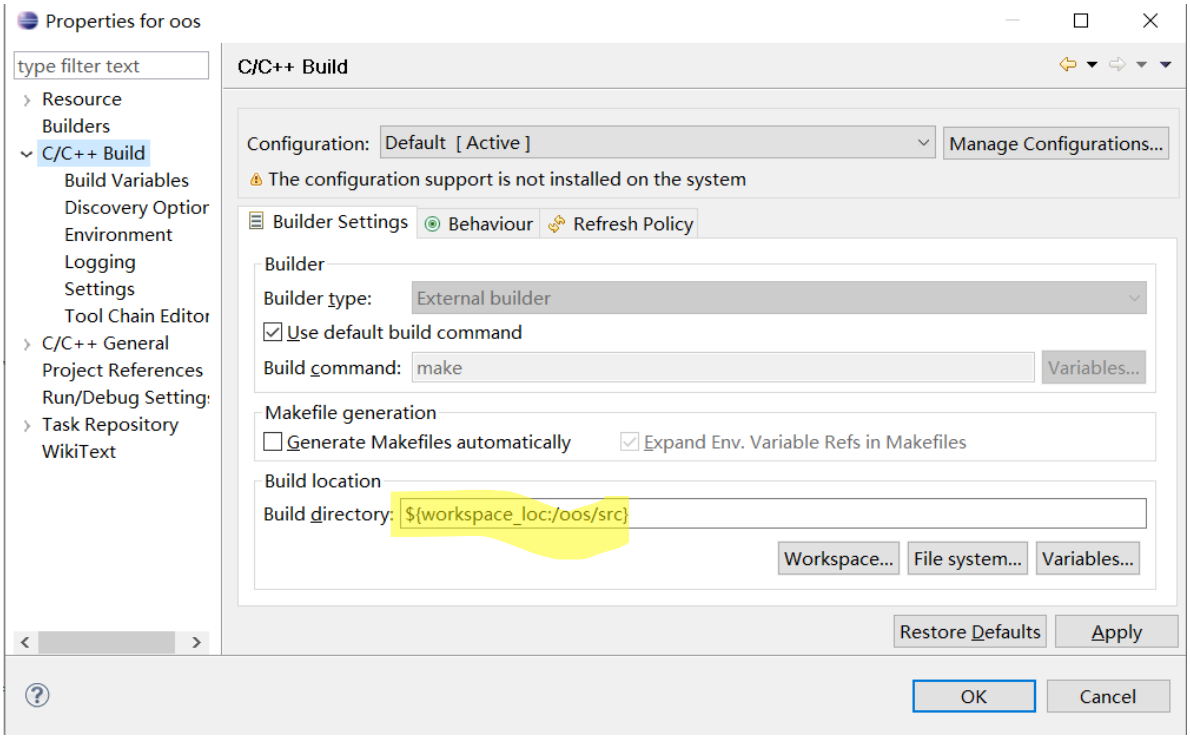
打开 eclipse 并导入 oos 项目，

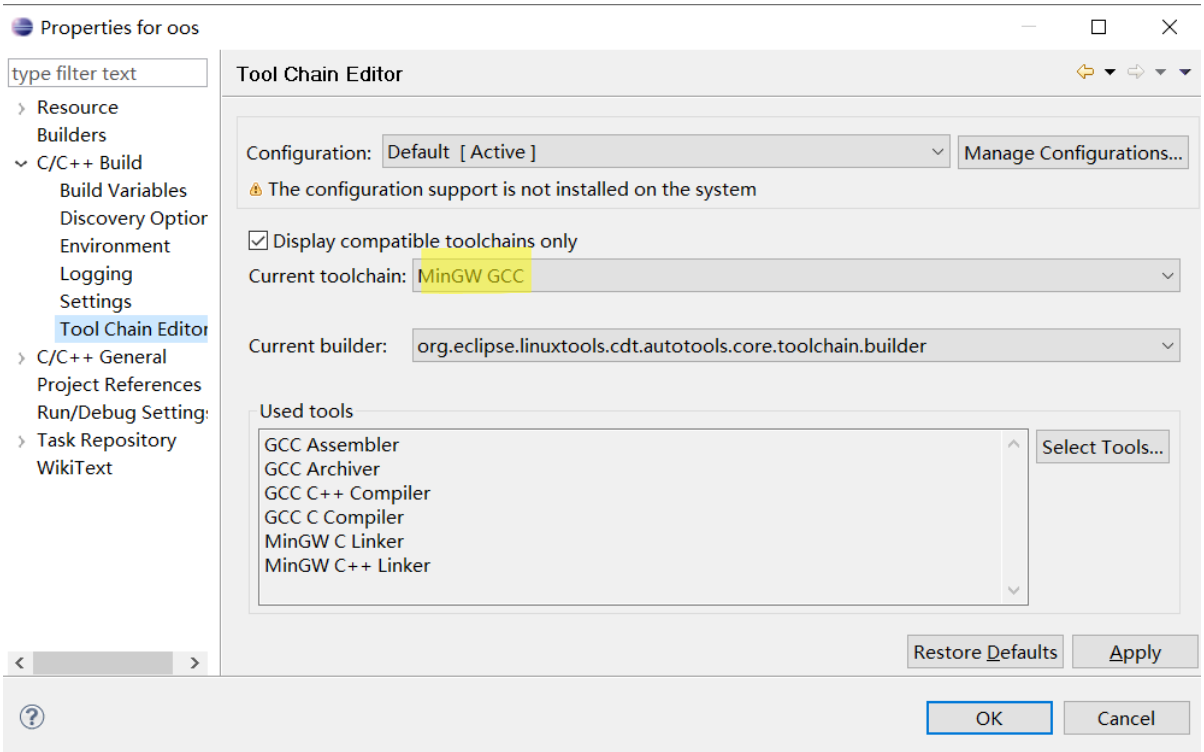




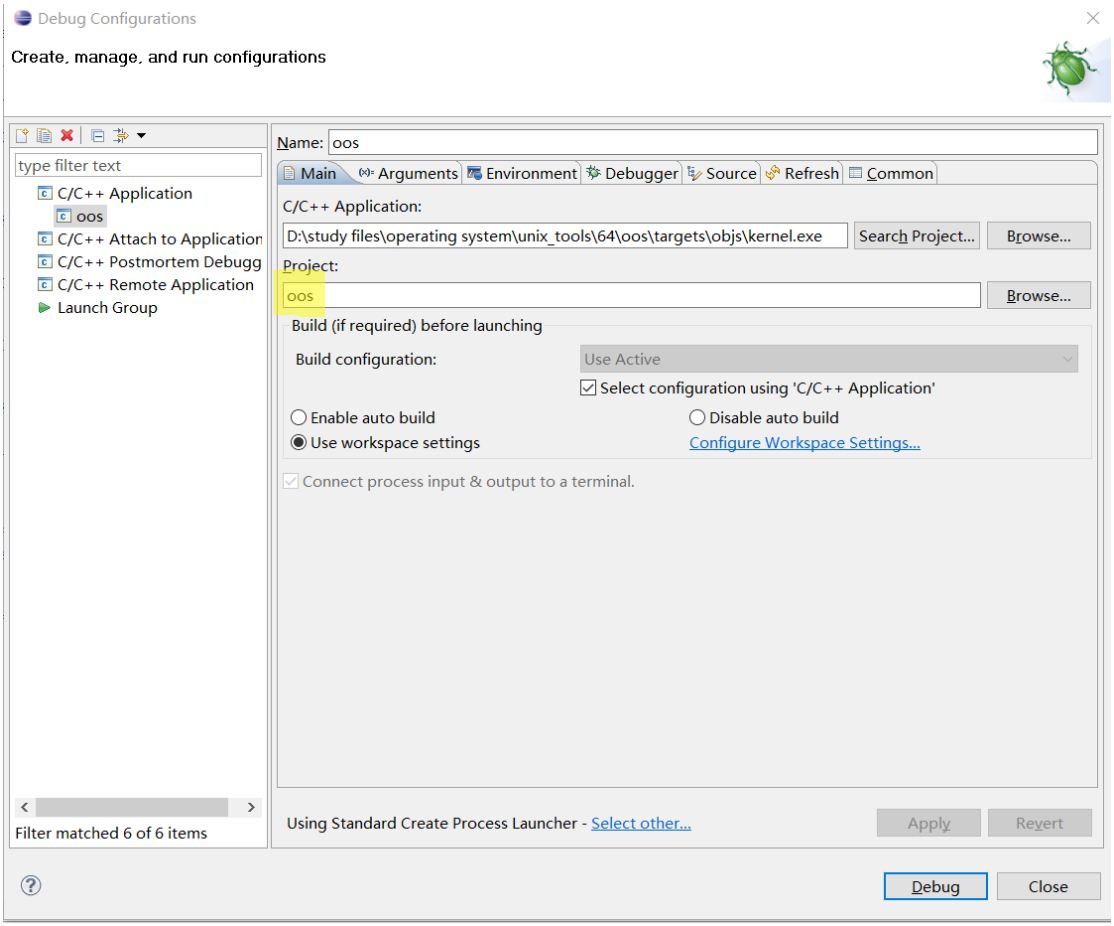


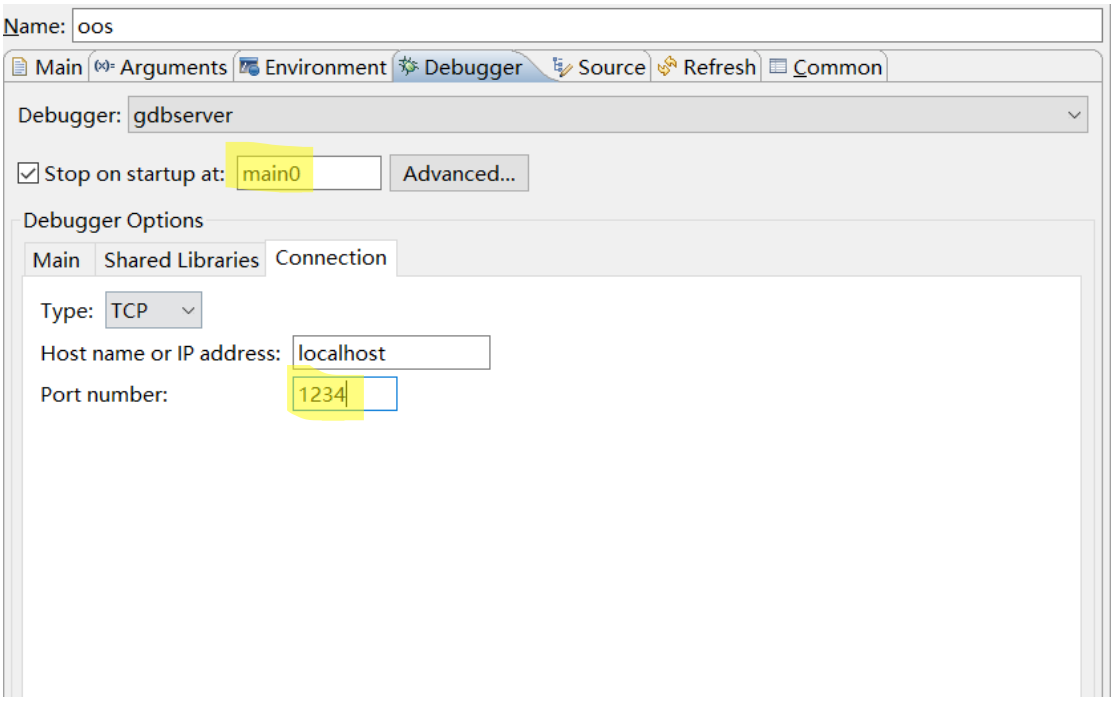
设置 oos 工程属性


Properties for oos
type filter text
Resource
Builders
C/C++ Build
Build Variables
Discovery Optior
Environment
Logging
Settings
Tool Chain Editor
C/C++ General
Project References
Run/Debug Setting
Task Repository
WikiText
C/C++ Build
Configuration: Default [Active]
Manage Configurations...
The configuration support is not installed on the system
Builder Settings
Behaviour
Refresh Policy
Builder
Builder type: External builder
Use default build command
Build command: make
Variables...
Makefile generation
Generate Makefiles automatically
Expand Env. Variable Refs in Makefiles
Build location
Build directory: ${workspace_loc:/oos/src}
Workspace...
File system...
Variables...
Restore Defaults
Apply
OK
Cancel


Properties for oos
type filter text
Resource
Builders
C/C++ Build
Build Variables
Discovery Optior
Environment
Logging
Settings
Tool Chain Editor
C/C++ General
Project References
Run/Debug Setting
Task Repository
WikiText
Tool Chain Editor
Configuration: Default [Active]
Manage Configurations...
The configuration support is not installed on the system
Display compatible toolchains only
Current toolchain: MinGW GCC
Current builder: org.eclipse.linuxtools.cdt.autotools.core.toolchain.builder
Used tools
GCC Assembler
GCC Archiver
GCC C++ Compiler
GCC C Compiler
MinGW C Linker
MinGW C++ Linker
Select Tools...
Restore Defaults
Apply
OK
Cancel

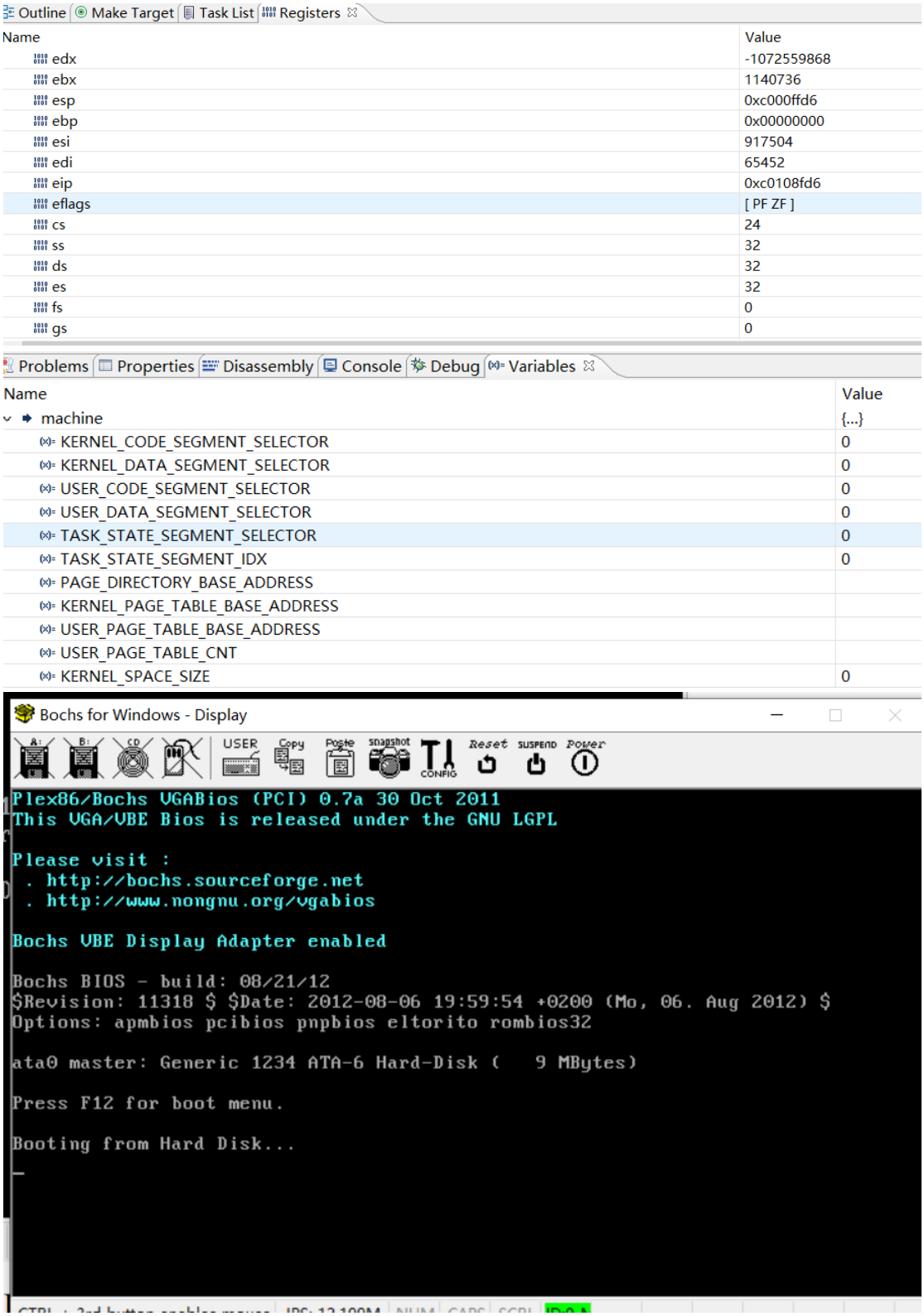
配置 gdb 远程调试

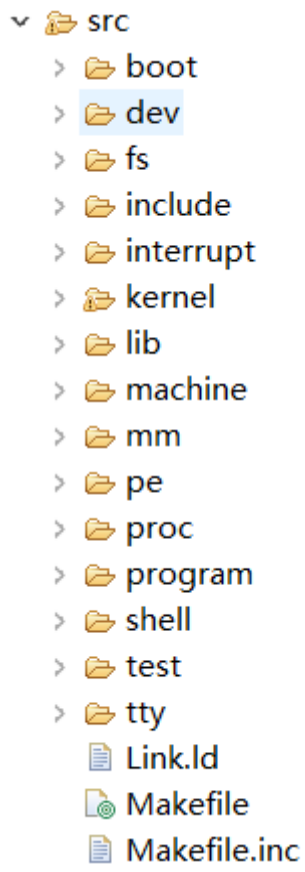

Debug Configurations
Create, manage, and run configurations
type filter text
C/C++ Application
oos
C/C++ Attach to Application
C/C++ Postmortem Debugg
C/C++ Remote Application
Launch Group
Filter matched 6 of 6 items
Name: oos
Main
Arguments
Environment
Debugger
Source
Refresh
Common
C/C++ Application:
D:\study files\operating system\unix_tools\64\oos\targets\objs\kernel.exe
Search Project...
Browse...
Project:
oos
Browse...
Build (if required) before launching
Build configuration:
Use Active
Select configuration using 'C/C++ Application'
Enable auto build
Disable auto build
Use workspace settings
Configure Workspace Settings...
Connect process input & output to a terminal.
Using Standard Create Process Launcher - Select other...
Apply
Revert
Debug
Close


Name: oos
Main
Arguments
Environment
Debugger
Source
Refresh
Common
Debugger: gdbserver
Stop on startup at: main0
Advanced...
Debugger Options
Main
Shared Libraries
Connection
Type: TCP
Host name or IP address: localhost
Port number: 1234

开始调试

设置断点并调试后，可以在窗口内查看变量和寄存器的值，同时可以观察到 UNIX V6++停在断点





目录中各文件夹的作用：

/src/dev unix 设备文件
/src/boot 启动文件目录
/src/fs 文件存储目录
/src/include 存放头文件
/src/interrupt 控制中断
/src/kernel 内核及主函数
/src/lib 库文件源码
/src/machine 管理硬件的接口
/src/mm 管理内存
/src/pe 文件读写
/src proc 虚拟文件通过这些文件可以查看硬件和正在运行的进程信息
/src program 存放一些 shell 命令函数的源码
/src shell 管理 shell 命令行
/src test 调试管理
/src tty 控制输入输出