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# RISCV开发环境搭建及评测文档

版本修订记录

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| --- | --- | --- | --- |
| 版本 | 编写人 | 主要修订内容 | 备注 |
| 1.0 | 高铮 | 建立文档 |  |
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|  |  |  |  |

2017年3月28日

相关说明

平台介绍

16,17 2台实验室服务器

环境说明

源码包路径为 /opt/src

安装路径为/opt/

使用lxh账号搭建环境

具体内容

1.安装riscv-gnu-toolchain with glibc

使用lxh账号登陆服务器

在/opt下创建文件夹src

sudo mkdir /opt/src

将riscv-gnu-toolchain.tar复制到源码路径下

sudo cp /home/gaozheng/riscv-gnu-toolchain.tar /opt/src

进入opt/src/目录下

解压缩源码包

sudo tar –xvf riscv-gnu-toolchain

进入源码包目录下，准备安装基于glibc库的toolchain

sudo ./configure –prefix=/opt/riscv-glibc

sudo make linux

2.安装riscv-qemu system模式、user模式

进入riscv-qemu目录下，执行以下命令，注意权限

./configure --target-list=riscv64-softmmu,riscv32-softmmu,riscv64-linux-user,riscv32-linux-user --prefix=/opt/riscv-qemu

make

make install

3.使用工具链进行Whestones评测

1.使用工具链编译whestones.c

/opt/riscv-glibc/bin/riscv64-unknown-linux-gnu-gcc whetstone.c -lm -o whetstone

2.使用模拟器执行

/opt/riscv-qemu/bin/qemu-riscv64 -L /opt/riscv-glibc/sysroot/ whetstone

运行结果如下

Loops: 1000, Iterations: 1, Duration: 1 sec.

C Converted Double Precision Whetstones: 100.0 MIPS

4.Dhrystone评测

修改Makefile使Dhrystone使用riscv-gnu-toolchain工具进行编译

将

GCC=gcc

修改为

GCC=/opt/riscv-glibc/bin/riscv64-unknown-linux-gnu-gcc

手动删除gcc\_dhry2 gcc\_dhry2reg文件，重新执行make

使用riscv模拟器qemu运行Dhrystone

1.gcc\_dry2

/opt/riscv-qemu/bin/qemu-riscv64 -L /opt/riscv-glibc/sysroot/ gcc\_dry2

运行结果如下

Dhrystone Benchmark, Version 2.1 (Language: C)

Program compiled without 'register' attribute

Please give the number of runs through the benchmark: 1000000

Execution starts, 1000000 runs through Dhrystone

Execution ends

Final values of the variables used in the benchmark:

Int\_Glob: 5

should be: 5

Bool\_Glob: 1

should be: 1

Ch\_1\_Glob: A

should be: A

Ch\_2\_Glob: B

should be: B

Arr\_1\_Glob[8]: 7

should be: 7

Arr\_2\_Glob[8][7]: 1000010

should be: Number\_Of\_Runs + 10

Ptr\_Glob->

Ptr\_Comp: 90128

should be: (implementation-dependent)

Discr: 0

should be: 0

Enum\_Comp: 2

should be: 2

Int\_Comp: 17

should be: 17

Str\_Comp: DHRYSTONE PROGRAM, SOME STRING

should be: DHRYSTONE PROGRAM, SOME STRING

Next\_Ptr\_Glob->

Ptr\_Comp: 90128

should be: (implementation-dependent), same as above

Discr: 0

should be: 0

Enum\_Comp: 1

should be: 1

Int\_Comp: 18

should be: 18

Str\_Comp: DHRYSTONE PROGRAM, SOME STRING

should be: DHRYSTONE PROGRAM, SOME STRING

Int\_1\_Loc: 5

should be: 5

Int\_2\_Loc: 13

should be: 13

Int\_3\_Loc: 7

should be: 7

Enum\_Loc: 1

should be: 1

Str\_1\_Loc: DHRYSTONE PROGRAM, 1'ST STRING

should be: DHRYSTONE PROGRAM, 1'ST STRING

Str\_2\_Loc: DHRYSTONE PROGRAM, 2'ND STRING

should be: DHRYSTONE PROGRAM, 2'ND STRING

Measured time too small to obtain meaningful results

Please increase number of runs

2.运行gcc\_dry2reg

/opt/riscv-qemu/bin/qemu-riscv64 -L /opt/riscv-glibc/sysroot/ gcc\_dry2reg

运行结果如下

Dhrystone Benchmark, Version 2.1 (Language: C)

Program compiled with 'register' attribute

Please give the number of runs through the benchmark: 1000000

Execution starts, 1000000 runs through Dhrystone

Execution ends

Final values of the variables used in the benchmark:

Int\_Glob: 5

should be: 5

Bool\_Glob: 1

should be: 1

Ch\_1\_Glob: A

should be: A

Ch\_2\_Glob: B

should be: B

Arr\_1\_Glob[8]: 7

should be: 7

Arr\_2\_Glob[8][7]: 1000010

should be: Number\_Of\_Runs + 10

Ptr\_Glob->

Ptr\_Comp: 90128

should be: (implementation-dependent)

Discr: 0

should be: 0

Enum\_Comp: 2

should be: 2

Int\_Comp: 17

should be: 17

Str\_Comp: DHRYSTONE PROGRAM, SOME STRING

should be: DHRYSTONE PROGRAM, SOME STRING

Next\_Ptr\_Glob->

Ptr\_Comp: 90128

should be: (implementation-dependent), same as above

Discr: 0

should be: 0

Enum\_Comp: 1

should be: 1

Int\_Comp: 18

should be: 18

Str\_Comp: DHRYSTONE PROGRAM, SOME STRING

should be: DHRYSTONE PROGRAM, SOME STRING

Int\_1\_Loc: 5

should be: 5

Int\_2\_Loc: 13

should be: 13

Int\_3\_Loc: 7

should be: 7

Enum\_Loc: 1

should be: 1

Str\_1\_Loc: DHRYSTONE PROGRAM, 1'ST STRING

should be: DHRYSTONE PROGRAM, 1'ST STRING

Str\_2\_Loc: DHRYSTONE PROGRAM, 2'ND STRING

should be: DHRYSTONE PROGRAM, 2'ND STRING

Measured time too small to obtain meaningful results

Please increase number of runs