





'操作系统原理与实践"实验报告

系统调用

实验三 系统调用

修改以下文件

1.

include目录下的unistd:

```
#define __NR_iam 72
#define NR whoami 73
int iam const char ;
int whoami char unsigned int ;
```

include/liunx目录下的sys.h:

```
extern int sys_iam ;
extern int sys_whoami ;
,sys_iam,sys_whoami
```

kemel目录下的system_call.s: 72改为74

kemel目录下创建文件who.c:

```
#define __LIBRARY__
#include <unistd.h>
#include <errno.h>
#include <asm/segment.h>
char usnm[ 64]={ 0};
int sys_iam const char
    int result= 0; int cnt;
    while (get_fs_byte(name+result) != "\0" && result< 64 ) result++;
    if (result> 23) return - EINVAL;
    else
         for (cnt= 0;cnt<=result;cnt++){usnm[cnt]=get_fs_byte(name+cnt);}
         return
               result;
int sys_whoami char unsigned int
    int result= 0; int cnt;
    while (usnm[result] != "0" && result< 64) result++;
    if (result>size) return -1;
    else
         for (cnt= 0;cnt<=result;cnt++){put_fs_byte(usnm[cnt],(name+cnt));}
         return result;
```

kemel目录下MakeFile:

```
who.s who.o:who.c ../ include /unistd.h ../ include /linux/kernel.h
 ../ include /errno.h ../ include /asm/segment.h
```

在oslab目录下执行命令\$ sudo ./mount-hdc 挂载虚拟机硬盘, oslab/hdc/usr/include目录下添加文件iam.c,

3.

iam.c

#define

__LIBRARY__

__LIBRARY__

<unistd.h>

whoami.c:

```
#include
             <unistd.h>
  #include
             <errno.h>
  #include
            <asm/segment.h>
  _syscall1( int ,iam, const char *,name)
  int main int
                        char
  if (argc> 1){
       if (iam(argv[ 1])< 0){</pre>
       return - 1;
       }else {
       printf ("name is %s\n" ,argv[ 1]);
  return 0;
whoami.c
```

#define #include

[/usr/root]# ls -l

name is HuShuMing [/usr/root]# whoami sys_whoami is called

,whoami()=0[/usr/root]# CTRL + 3rd button enables mouse A:

I am HuShuMing

```
#include
           <errno.h>
  #include
          <asm/segment.h>
           int ,whoami, char *,name, unsigned int ,size)
  _syscall2(
                      char
  int main int
  char namebuffer[
                  32]={ 0};
  int value= -1;
  if (argc){
      value=whoami(namebuffer,
                                 24);
      printf ("I am %s\n,whoami()=%d"
                                       ,namebuffer,value);
         0;
  return
下,在oslab目录下执行命令$ sudo umount hdc 卸载虚拟硬盘。
linux-0.11目录下输入make, ../run,运行虚拟机 编译链接 iam.c,whoami.c文件,运行
```

将linux-0.11/include/unistd.h复制到hdc/usr/include目录下,将linux-0.11/include/linux/sys.h复制到hdc/usr/linux目录

```
total 186
                                       1252 Mar 29
rw-r--rw-
                                                     2004 README
                         root
                                         96 Mar 29
                                                     2004 gcclib140
rwx--xrwx
               root
                         root
                                      20591 Nov 13
                                                     2004 hello
rwx--xrwx
             1 root
                         root
                                         74 Mar 21
                                                     2004 hello.c
rw-r--rw-
             1 root
                         root
                                                     2004 hello.o
                                        156 Nov 13
rw----rw-
             1 root
                         root
             1 root
                         root
                                      24702 ??? ??
                                                     ???? iam
                                                     2017 iam.c
                                        257 Feb 18
rw-rw-r--
             1 1000
                         232
                         232
                                          0 Feb 18
                                                     2017 iam.c~
rw-rw-r--
             1 1000
                                        176 Jun 25
             2 root
                                                     2006 linux-0.00
lrwx--xrwx
                         root
                                       4387 Jun 25
rw----rw-
                                                     2006 linux0.tgz
             1 root
                         root
             1 root
                                        420 Mar 21
                                                     2004 mtools.howto
rw-r--rw-
                         root
                                                     2004 shoe
                                        176 Sep 21
             3 root
drwx--xrwx
                         root
                         root
                                     101767 Sep 21
                                                     2004 shoelace.tar.Z
                                      24708 ??? ??
                                                     ???? whoami
               root
                         root
             1 1000
                         Z3Z
                                        314 ??? ??
                                                     ???? whoami.c
rw-rw-r--
             1 1000
                         232
                                          0 Feb 18
                                                     2017 whoami.c'
/usr/rootl# iam HuShuMing
sys_iam is called
```

CAPS SCRL

HD:0-M NUM

Bochs x86 emulator, http://bochs.sourceforge.net/

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