PWN mistake [pwnable.kr]CTF writeup题解系列8

原创

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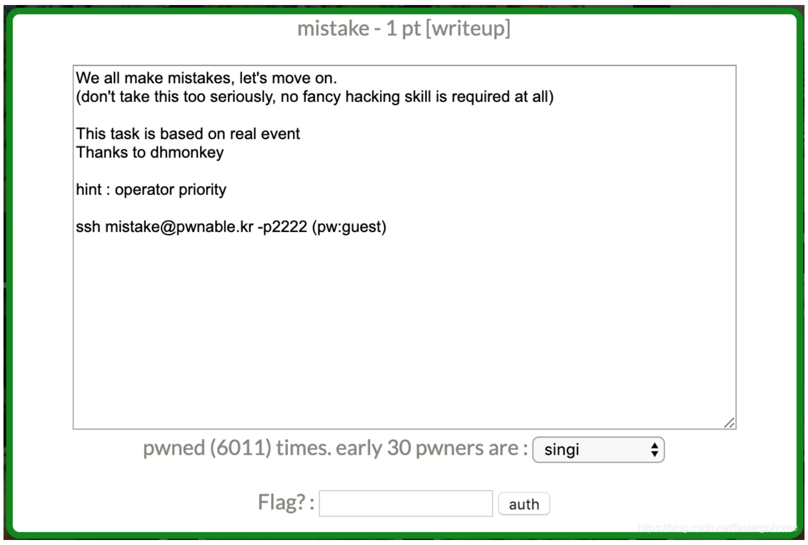
0x01 题目


mistake - 1 pt [writeup]

```
We all make mistakes, let's move on.
(don't take this too seriously, no fancy hacking skill is required at all)

This task is based on real event
Thanks to dhmonkey

hint : operator priority

ssh mistake@pwnable.kr -p2222 (pw:guest)
```

pwned (6011) times. early 30 pwners are : singi

Flag? : auth

0x02 解题思路

这个题目比较简单，我就直接贴出来下载和检查过程

```
root@mypwn:/ctf/work/pwnable.kr# ssh mistake@pwnable.kr -p2222
mistake@pwnable.kr's password:
 ____  __    __  ____    ____  ____   _        ___      __  _  ____
|    \|  |__|  ||    \  /    ||    \ | |      /  _]    |  |/ ]|    \
|  o  )  |  |  ||  _  ||  o  ||  o  )| |     /  [_     |  ' / |  D  )
|   _/|  |  |  ||  |  ||     ||     || |___ |    _]    |    \ |    /
|  |  |  `  '  ||  |  ||  _  ||  O  ||     ||   [_  __ |     \|    \
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- Site admin : daehee87@gatech.edu
- IRC : irc.netgarage.org:6667 / #pwnable.kr
- Simply type "irssi" command to join IRC now
- files under /tmp can be erased anytime. make your directory under /tmp
- to use peda, issue `source /usr/share/peda/peda.py` in gdb terminal
Last login: Wed Jan  1 09:55:46 2020 from 182.96.176.177
mistake@prowl:~$ ls -la
total 44
drwxr-x---   5 root        mistake 4096 Oct 23  2016 .
drwxr-xr-x 116 root        root    4096 Nov 12 21:34 ..
d---------   2 root        root    4096 Jul 29  2014 .bash_history
-r--------   1 mistake_pwn root      51 Jul 29  2014 flag
dr-xr-xr-x   2 root        root    4096 Aug 20  2014 .irssi
-r-sr-x---   1 mistake_pwn mistake 8934 Aug  1  2014 mistake
-rw-r--r--   1 root        root     792 Aug  1  2014 mistake.c
-r--------   1 mistake_pwn root      10 Jul 29  2014 password
drwxr-xr-x   2 root        root    4096 Oct 23  2016 .pwntools-cache
mistake@prowl:~$ exit
logout
Connection to pwnable.kr closed.
root@mypwn:/ctf/work/pwnable.kr# scp -P 2222 mistake@pwnable.kr:/home/mistake/mistake ./
mistake@pwnable.kr's password:
mistake                                                                                100% 8934    32.5KB/
root@mypwn:/ctf/work/pwnable.kr# scp -P 2222 mistake@pwnable.kr:/home/mistake/mistake.c ./
mistake@pwnable.kr's password:
mistake.c                                                                              100%  792     2.5KB/
root@mypwn:/ctf/work/pwnable.kr# checksec mistake
[*] '/ctf/work/pwnable.kr/mistake'
    Arch:     amd64-64-little
    RELRO:    Partial RELRO
    Stack:    Canary found
    NX:       NX enabled
    PIE:      No PIE (0x400000)
root@mypwn:/ctf/work/pwnable.kr# ./mistake
can't open password 1
root@mypwn:/ctf/work/pwnable.kr# echo "test" > password
root@mypwn:/ctf/work/pwnable.kr# ./mistake
can't open password 1
root@mypwn:/ctf/work/pwnable.kr# mkdir -p /home/mistake
root@mypwn:/ctf/work/pwnable.kr# mv password /home/mistake/
root@mypwn:/ctf/work/pwnable.kr# ./mistake
do not bruteforce...
aaaaaaaaaaaaaaa
input password : Wrong Password
```
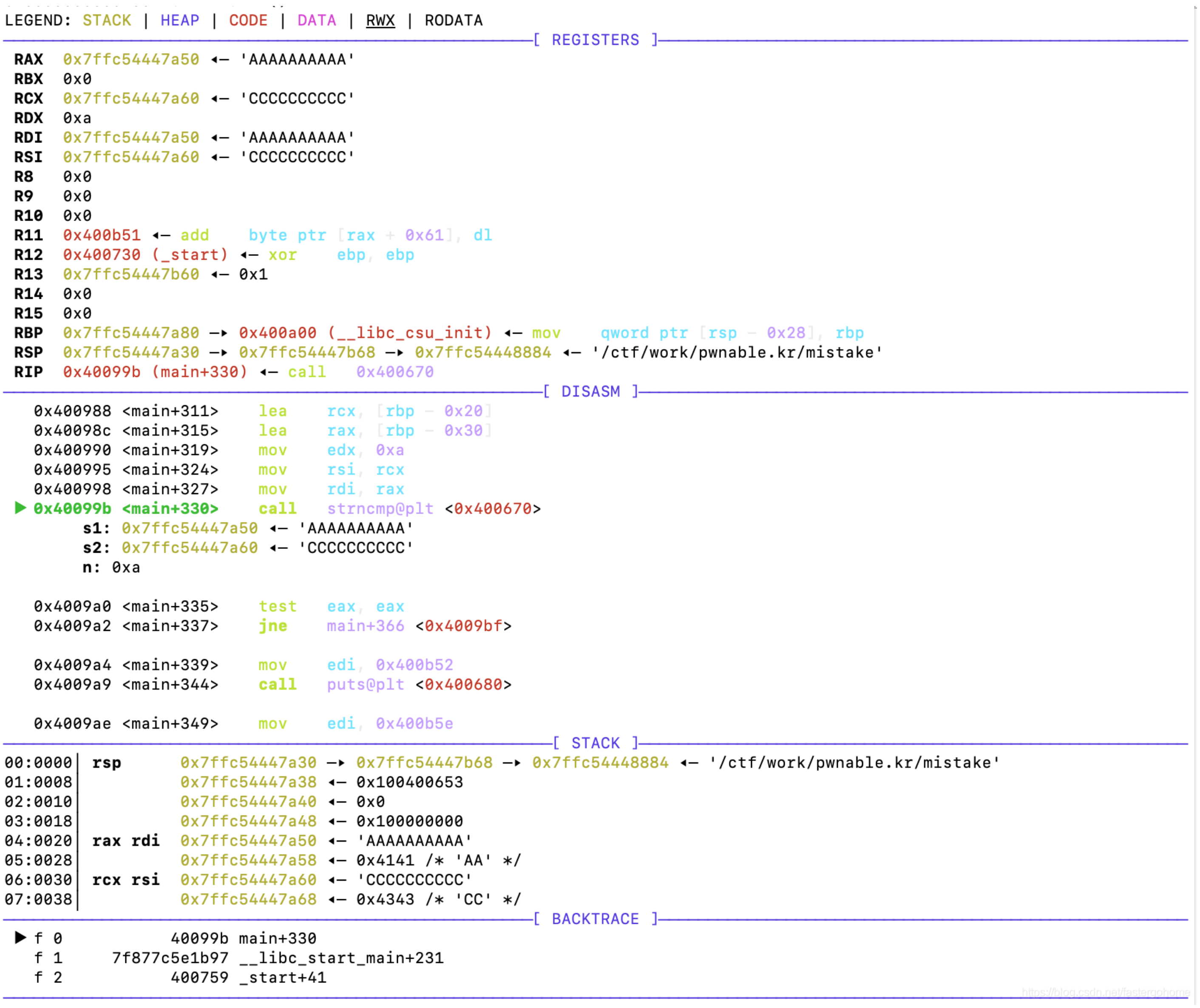

看下提供的c代码：

```c
#include <stdio.h>
#include <fcntl.h>

#define PW_LEN 10
#define XORKEY 1

void xor(char* s, int len){
 int i;
 for(i=0; i<len; i++){
  s[i] ^= XORKEY;
 }
}

int main(int argc, char* argv[]){

 int fd;
 if(fd=open("/home/mistake/password",O_RDONLY,0400) < 0){
  printf("can't open password %d\n", fd);
  return 0;
 }

 printf("do not bruteforce...\n");
 sleep(time(0)%20);

 char pw_buf[PW_LEN+1];
 int len;
 if(!(len=read(fd,pw_buf,PW_LEN) > 0)){
  printf("read error\n");
  close(fd);
  return 0;
 }

 char pw_buf2[PW_LEN+1];
 printf("input password : ");
 scanf("%10s", pw_buf2);

 // xor your input
 xor(pw_buf2, 10);

 if(!strncmp(pw_buf, pw_buf2, PW_LEN)){
  printf("Password OK\n");
  system("/bin/cat flag\n");
 }
 else{
  printf("Wrong Password\n");
 }

 close(fd);
 return 0;
}
```

我下载了执行程序，用ida反编译了一下

```c
int __cdecl main(int argc, const char **argv, const char **envp)
{
  int v3; // eax
  int result; // eax
  int v5; // eax
  char buf; // [rsp+20h] [rbp-30h]
  char s2; // [rsp+30h] [rbp-20h]
  unsigned __int64 v8; // [rsp+48h] [rbp-8h]

  v8 = __readfsqword(0x28u);
  v3 = open("/home/mistake/password", 0, 256LL, argv);
  if ( v3 >= 0 )
  {
    puts("do not bruteforce...");
    v5 = time(0LL);
    sleep(v5 % 20);
    if ( (signed int)read(0, &buf, 0xAuLL) > 0 )
    {
      printf("input password : ", &buf);
      __isoc99_scanf("%10s", &s2);
      xor(&s2, 10LL);
      if ( !strncmp(&buf, &s2, 0xAuLL) )
      {
        puts("Password OK");
        system("/bin/cat flag\n");
      }
      else
      {
        puts("Wrong Password");
      }
      close(0);
      result = 0;
    }
    else
    {
      puts("read error");
      close(0);
      result = 0;
    }
  }
  else
  {
    printf("can't open password %d\n", (unsigned int)v3 >> 31);
    result = 0;
  }
  return result;
}
```

好像不太一样，拿gdb跟踪了一下程序，比较的位置就是我们输入的两个字符串，其中一个做了xor操作



```
LEGEND: STACK | HEAP | CODE | DATA | RWX | RODATA
─────────────────────────────────────[ REGISTERS ]─────────────────────────────────────
 RAX  0x7ffc54447a50 ◂— 'AAAAAAAAAA'
 RBX  0x0
 RCX  0x7ffc54447a60 ◂— 'CCCCCCCCCC'
 RDX  0xa
 RDI  0x7ffc54447a50 ◂— 'AAAAAAAAAA'
 RSI  0x7ffc54447a60 ◂— 'CCCCCCCCCC'
 R8   0x0
 R9   0x0
 R10  0x0
 R11  0x400b51 ◂— add    byte ptr [rax + 0x61], dl
 R12  0x400730 (_start) ◂— xor    ebp, ebp
 R13  0x7ffc54447b60 ◂— 0x1
 R14  0x0
 R15  0x0
 RBP  0x7ffc54447a80 —▸ 0x400a00 (__libc_csu_init) ◂— mov    qword ptr [rsp - 0x28], rbp
 RSP  0x7ffc54447a30 —▸ 0x7ffc54447b68 —▸ 0x7ffc54448884 ◂— '/ctf/work/pwnable.kr/mistake'
 RIP  0x40099b (main+330) ◂— call   0x400670
──────────────────────────────────────[ DISASM ]───────────────────────────────────────
   0x400988 <main+311>    lea    rcx, [rbp - 0x20]
   0x40098c <main+315>    lea    rax, [rbp - 0x30]
   0x400990 <main+319>    mov    edx, 0xa
   0x400995 <main+324>    mov    rsi, rcx
   0x400998 <main+327>    mov    rdi, rax
 ► 0x40099b <main+330>    call   strncmp@plt <0x400670>
        s1: 0x7ffc54447a50 ◂— 'AAAAAAAAAA'
        s2: 0x7ffc54447a60 ◂— 'CCCCCCCCCC'
        n: 0xa

   0x4009a0 <main+335>    test   eax, eax
   0x4009a2 <main+337>    jne    main+366 <0x4009bf>

   0x4009a4 <main+339>    mov    edi, 0x400b52
   0x4009a9 <main+344>    call   puts@plt <0x400680>

   0x4009ae <main+349>    mov    edi, 0x400b5e
───────────────────────────────────────[ STACK ]───────────────────────────────────────
00:0000│ rsp      0x7ffc54447a30 —▸ 0x7ffc54447b68 —▸ 0x7ffc54448884 ◂— '/ctf/work/pwnable.kr/mistake'
01:0008│          0x7ffc54447a38 ◂— 0x100400653
02:0010│          0x7ffc54447a40 ◂— 0x0
03:0018│          0x7ffc54447a48 ◂— 0x100000000
04:0020│ rax rdi  0x7ffc54447a50 ◂— 'AAAAAAAAAA'
05:0028│          0x7ffc54447a58 ◂— 0x4141 /* 'AA' */
06:0030│ rcx rsi  0x7ffc54447a60 ◂— 'CCCCCCCCCC'
07:0038│          0x7ffc54447a68 ◂— 0x4343 /* 'CC' */
─────────────────────────────────────[ BACKTRACE ]─────────────────────────────────────
 ► f 0           40099b main+330
   f 1     7f877c5e1b97 __libc_start_main+231
   f 2           400759 _start+41
───────────────────────────────────────────────────────────────────────────────────────
```

0x03 题解

题解非常简单：

```
root@mypwn:/ctf/work/pwnable.kr# ssh mistake@pwnable.kr -p2222
mistake@pwnable.kr's password:
 ____  __    __  ____    ____  ____   _        ___      __  _  ____
|    \|  |__|  ||    \  /    ||    \ | |      /  _]    |  |/ ]|    \
|  o  )  |  |  ||  _  ||  o  ||  o  )| |     /  [_     |  ' / |  D  )
|   _/|  |  |  ||  |  ||     ||     || |___ |    _]    |    \ |    /
|  |  |  `  '  ||  |  ||  _  ||  O  ||     ||   [_  __ |     \|    \
|  |   \      / |  |  ||  |  ||     ||     ||     ||  ||  .  ||  .  \
|__|    \_/\_/  |__|__||__|__||_____||_____||_____||__||__|\_||__|\_|

- Site admin : daehee87@gatech.edu
- IRC : irc.netgarage.org:6667 / #pwnable.kr
- Simply type "irssi" command to join IRC now
- files under /tmp can be erased anytime. make your directory under /tmp
- to use peda, issue `source /usr/share/peda/peda.py` in gdb terminal
Last login: Wed Jan  1 11:43:35 2020 from 120.84.12.64
mistake@prowl:~$ ./mistake
do not bruteforce...
CCCCCCCCCC
input password : BBBBBBBBBB
Password OK
Mommy, the operator priority always confuses me :(
mistake@prowl:~$ Connection to pwnable.kr closed by remote host.
Connection to pwnable.kr closed.
root@mypwn:/ctf/work/pwnable.kr#
```