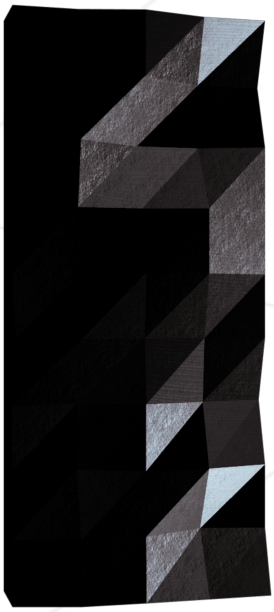

Project UNIX

Pestilence

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Summary: AND HIS NAME IS .....

Version: 3

Contents

Chapter I

Preamble

Because a little culture never hurt no one, here is what the CTRL+C management looks like on MS-DOS 2.0:

```
;
; ^C status routines for MSDOS
;

INCLUDE DOSSEG.ASM

CODE    SEGMENT BYTE PUBLIC  'CODE'
        ASSUME  SS:DOSGROUP,CS:DOSGROUP

.xlist
.xcref
INCLUDE DOSSYM.ASM
INCLUDE DEVSYM.ASM
.cref
.list

        i_need  DevIOBuf,BYTE
        i_need  DidCTRLC,BYTE
        i_need  INDOS,BYTE
        i_need  DSKSTCOM,BYTE
        i_need  DSKSTCALL,BYTE
        i_need  DSKSTST,WORD
        i_need  BCON,DWORD
        i_need  DSKCHRET,BYTE
        i_need  DSKSTCNT,WORD
        i_need  IDLEINT,BYTE
        i_need  CONSWAP,BYTE
        i_need  user_SS,WORD
        i_need  user_SP,WORD
        i_need  ERRORMODE,BYTE
        i_need  ConC_spSave,WORD
        i_need  Exit_type,BYTE
        i_need  PFLAG,BYTE
        i_need  ExitHold,DWORD
        i_need  WPErr,BYTE
        i_need  ReadOp,BYTE
        i_need  CONTSTK,WORD
        i_need  Exit_Code,WORD
        i_need  CurrentPDB,WORD
        i_need  DIVMES,BYTE
        i_need  DivMesLen,BYTE

SUBTTL Checks for ^C in CON I/O
PAGE
ASSUME  DS:NOTHING,ES:NOTHING

        procedure   DSKSTATCHK,NEAR ; Check for ^C if only one level in
        CMP     BYTE PTR [INDOS],1
        retnz                       ; Do NOTHING
        PUSH    CX
        PUSH    ES
        PUSH    BX
        PUSH    DS
        PUSH    SI
        PUSH    CS
        POP     ES
        PUSH    CS
        POP     DS
ASSUME  DS:DOSGROUP
        XOR     CX,CX
        MOV     BYTE PTR [DSKSTCOM],DEVRDND
        MOV     BYTE PTR [DSKSTCALL],DRDNDHL
        MOV     [DSKSTST],CX
        MOV     BX,OFFSET DOSGROUP:DSKSTCALL
        LDS     SI,[BCON]
ASSUME  DS:NOTHING
        invoke  DEVIOCALL2
        TEST    [DSKSTST],STBUI
        JNZ     ZRET                    ; No characters available
        MOV     AL,BYTE PTR [DSKCHRET]
```

```
DSK1:
        CMP     AL,"C"-"@"
        JNZ     RET36
        MOV     BYTE PTR [DSKSTCOM],DEVRD
        MOV     BYTE PTR [DSKSTCALL],DRDWRHL
        MOV     BYTE PTR [DSKCHRET],CL
        MOV     [DSKSTST],CX
        INC     CX
        MOV     [DSKSTCNT],CX
        invoke  DEVIOCALL2              ; Eat the ^C
        POP     SI
        POP     DS
        POP     BX                      ; Clean stack
        POP     ES
        POP     CX
        JMP     SHORT CNTCHAND

ZRET:
        XOR     AL,AL                   ; Set zero
RET36:
        POP     SI
        POP     DS
        POP     BX
        POP     ES
        POP     CX
        return

NOSTOP:
        CMP     AL,"P"-"@"
        JZ      INCHK

        IF      NOT TOGLPRN
        CMP     AL,"N"-"@"
        JZ      INCHK
        ENDIF

        CMP     AL,"C"-"@"
        JZ      INCHK
        return
DSKSTATCHK  ENDP

        procedure   SPOOLINT,NEAR
        PUSHF
        CMP     BYTE PTR [IDLEINT],0
        JZ      POPFRET
        CMP     BYTE PTR [ERRORMODE],0
        JNZ     POPFRET                 ;No spool ints in error mode
        INT     int_spooler
POPFRET:
        POPF
RET18:  return
SPOOLINT    ENDP

        procedure   STATCHK,NEAR

        invoke  DSKSTATCHK              ; Allows ^C to be detected under
                                        ; input redirection
        PUSH    BX
        XOR     BX,BX
        invoke  GET_IO_FCB
        POP     BX
        JC      RET18
        MOV     AH,1
        invoke  IOFUNC
        JZ      SPOOLINT
        CMP     AL,'S'-'@'
        JNZ     NOSTOP
        XOR     AH,AH
        invoke  IOFUNC                  ; Eat Cntrl-S
        JMP     SHORT PAUSOSTRT
```

```
PRINTOFF:
PRINTON:
        NOT     BYTE PTR [PFLAG]
        return

PAUSOLP:
        CALL    SPOOLINT
PAUSOSTRT:
        MOV     AH,1
        invoke  IOFUNC
        JZ      PAUSOLP
INCHK:
        PUSH    BX
        XOR     BX,BX
        invoke  GET_IO_FCB
        POP     BX
        JC      RET18
        XOR     AH,AH
        invoke  IOFUNC
        CMP     AL,'P'-'@'
        JZ      PRINTON
        IF      NOT TOGLPRN
        CMP     AL,'N'-'@'
        JZ      PRINTOFF
        ENDIF
        CMP     AL,'C'-'@'
        retnz
STATCHK ENDP

        procedure   CNTCHAND,NEAR
; Ctrl-C handler.
; "^C" and CR/LF is printed.  Then the user registers are restored and
; the user CTRL-C handler is executed.  At this point the top of the stack
; has 1) the interrupt return address should the user CTRL-C handler wish
; to allow processing to continue; 2) the original interrupt return address
; to the code that performed the function call in the first place.  If
; the user CTRL-C handler wishes to continue, it must leave all registers
; unchanged and RET (not IRET) with carry CLEAR.  If carry is SET then
; an terminate system call is simulated.
        MOV     AL,3                ; Display "^C"
        invoke  BUFOUT
        invoke  CRLF
        PUSH    SS
        POP     DS
ASSUME  DS:DOSGROUP
        CMP     BYTE PTR [CONSWAP],0
        JZ      NOSWAP
        invoke  SWAPBACK
NOSWAP:
        CLI                         ; Prepare to play with stack
        MOV     SP,[user_SP]
        MOV     SS,[user_SS]        ; User stack now restored
ASSUME  SS:NOTHING
        invoke  restore_world       ; User registers now restored
ASSUME  DS:NOTHING
        MOV     BYTE PTR [INDOS],0  ; Go to known state
        MOV     BYTE PTR [ERRORMODE],0
        MOV     [ConC_spsave],SP    ; save his SP
        INT     int_ctrl_c          ; Execute user Ctrl-C handler
        MOV     [user_SS],AX        ; save the AX
        PUSHF                       ; and the flags (maybe new call)
        POP     AX
        CMP     SP,[ConC_spsave]
        JNZ     ctrlc_try_new       ; new syscall maybe?
ctrlc_repeat:
        MOV     AX,[user_SS]        ; no...
        transfer    COMMAND         ; Repeat command otherwise

ctrlc_try_new:
        SUB     [ConC_spsave],2     ; Are there flags on the stack?
        CMP     SP,[ConC_spsave]
        JZ      ctrlc_new           ; yes, new system call
```

```
ctrlc_abort:
        MOV     AX,(EXIT SHL 8) + 0
        MOV     BYTE PTR [DidCTRLC],0FFh

        transfer    COMMAND         ; give up by faking $EXIT

ctrlc_new:
        PUSH    AX
        POPF
        POP     [user_SS]
        JNC     ctrlc_repeat        ; repeat operation
        JMP     ctrlc_abort         ; indicate ^ced

CNTCHAND ENDP

SUBTTL DIVISION OVERFLOW INTERRUPT
PAGE
; Default handler for division overflow trap
        procedure   DIVOV,NEAR
ASSUME  DS:NOTHING,ES:NOTHING,SS:NOTHING
        MOV     SI,OFFSET DOSGROUP:DIVMES
        CALL    RealDivOv
        JMP     ctrlc_abort     ; Use Ctrl-C abort on divide overflow
DIVOV   ENDP

;
; RealDivOv: perform actual divide overflow stuff.
; Inputs:   none
; Outputs:  message to BCON
;
        procedure   RealDivOv,NEAR  ; Do divide overflow and clock process

        PUSH    CS                  ; get ES addressability
        POP     ES

        PUSH    CS                  ; get DS addressability
        POP     DS
ASSUME  DS:DOSGROUP

        MOV     BYTE PTR [DskStCom],DevWrt
        MOV     BYTE PTR [DskStCall],DRdWrHL
        MOV     [DskSTST],0
        MOV     BL,[DivMesLen]
        XOR     BH,BH
        MOV     [DskStCnt],BX
        MOV     BX,OFFSET DOSGROUP:DskStCall
        MOV     WORD PTR [DskChRet+1],SI    ; transfer address (need an EQU)
        LDS     SI,[BCON]
ASSUME  DS:NOTHING
        invoke  DEVIOCALL2
        MOV     WORD PTR [DskChRet+1],OFFSET DOSGROUP:DevIOBuf
        MOV     [DskStCnt],1
        return
RealDivOv   ENDP

SUBTTL CHARHRD,HARDERR,ERROR -- HANDLE DISK ERRORS AND RETURN TO USER
PAGE
        procedure   CHARHARD,NEAR
ASSUME  DS:NOTHING,ES:NOTHING,SS:DOSGROUP

; Character device error handler
; Same function as HARDERR

        MOV     WORD PTR [EXITHOLD+2],ES
        MOV     WORD PTR [EXITHOLD],BP
        PUSH    SI
        AND     DI,STECODE
        MOV     BP,DS                   ;Device pointer is BP:SI
        CALL    FATALC
        POP     SI
        return
CHARHARD    ENDP

        procedure   HardErr,NEAR
```

```
ASSUME  DS:NOTHING,ES:NOTHING
; Hard disk error handler. Entry conditions:
;       DS:BX = Original disk transfer address
;       DX = Original logical sector number
;       CX = Number of sectors to go (first one gave the error)
;       AX = Hardware error code
;       DI = Original sector transfer count
;       ES:BP = Base of drive parameters
;       [READOP] = 0 for read, 1 for write
                                ;
        XCHG    AX,DI           ; Error code in DI, count in AX
        AND     DI,STECODE      ; And off status bits
        CMP     DI,WRECODE      ; Write Protect Error?
        JNZ     NOSETWRPERR
        PUSH    AX
        MOV     AL,ES:[BP.dpb_drive]
        MOV     BYTE PTR [WPERR],AL             ; Flag drive with WP error
        POP     AX
NOSETWRPERR:
        SUB     AX,CX           ; Number of sectors successfully transferred
        ADD     DX,AX           ; First sector number to retry
        PUSH    DX
        MUL     ES:[BP.dpb_sector_size]         ; Number of bytes transferred
        POP     DX
        ADD     BX,AX           ; First address for retry
        XOR     AH,AH           ; Flag disk section in error
        CMP     DX,ES:[BP.dpb_first_FAT]    ; In reserved area?
        JB      ERRINT
        INC     AH              ; Flag for FAT
        CMP     DX,ES:[BP.dpb_dir_sector]   ; In FAT?
        JB      ERRINT
        INC     AH
        CMP     DX,ES:[BP.dpb_first_sector]       ; In directory?
        JB      ERRINT
        INC     AH              ; Must be in data area
ERRINT:
        SHL     AH,1            ; Make room for read/write bit
        OR      AH,BYTE PTR [READOP]
        entry   FATAL
        MOV     AL,ES:[BP.dpb_drive]      ; Get drive number
        entry   FATAL1
        MOV     WORD PTR [EXITHOLD+2],ES
        MOV     WORD PTR [EXITHOLD],BP  ; The only things we preserve
        LES     SI,ES:[BP.dpb_driver_addr]
        MOV     BP,ES           ; BP:SI points to the device involved
FATALC:
        CMP     BYTE PTR [ERRORMODE],0
        JNZ     SETIGN          ; No INT 24s if already INT 24
        MOV     [CONTSTK],SP
        PUSH    SS
        POP     ES
ASSUME  ES:DOSGROUP
        CLI                     ; Prepare to play with stack
        INC     BYTE PTR [ERRORMODE]    ; Flag INT 24 in progress
        DEC     BYTE PTR [INDOS]        ; INT 24 handler might not return
        MOV     SS,[user_SS]
ASSUME  SS:NOTHING
        MOV     SP,ES:[user_SP]         ; User stack pointer restored
        INT     int_fatal_abort         ; Fatal error interrupt vector, must preserve ES
        MOV     ES:[user_SP],SP         ; restore our stack
        MOV     ES:[user_SS],SS
        MOV     SP,ES
        MOV     SS,SP
ASSUME  SS:DOSGROUP
        MOV     SP,[CONTSTK]
        INC     BYTE PTR [INDOS]        ; Back in the DOS
        MOV     BYTE PTR [ERRORMODE],0  ; Back from INT 24
        STI
IGNRET:
        LES     BP,[EXITHOLD]
ASSUME  ES:NOTHING
        CMP     AL,2
        JZ      error_abort
        MOV     BYTE PTR [WPERR],-1             ;Forget about WP error
        return
```

```
SETIGN:
        XOR     AL,AL                   ;Flag ignore
        JMP     SHORT IGNRET

error_abort:
        PUSH    SS
        POP     DS
ASSUME  DS:DOSGROUP
        CMP     BYTE PTR [CONSWAP],0
        JZ      NOSWAP2
        invoke  SWAPBACK
NOSWAP2:
        MOV     BYTE PTR [exit_Type],Exit_hard_error
        MOV     DS,[CurrentPDB]
ASSUME  DS:NOTHING

;
; reset_environment checks the DS value against the CurrentPDB.  If they
; are different, then an old-style return is performed.  If they are
; the same, then we release jfns and restore to parent.  We still use
; the PDB at DS:0 as the source of the terminate addresses.
;
; output:   none.
;
        entry   reset_environment
        ASSUME  DS:NOTHING,ES:NOTHING
        PUSH    DS                      ; save PDB of process

        MOV     AL,int_Terminate
        invoke  $Get_interrupt_vector   ; and who to go to
        MOV     WORD PTR [EXITHOLD+2],ES ; save return address
        MOV     WORD PTR [EXITHOLD],BX

        MOV     BX,[CurrentPDB]         ; get current process
        MOV     DS,BX                   ;
        MOV     AX,DS:[PDB_Parent_PID]  ; get parent to return to
        POP     CX
;
; AX = parentPDB, BX = CurrentPDB, CX = ThisPDB
; Only free handles if AX <> BX and BX = CX and [exit_code].upper is not
; Exit_keep_process
;
        CMP     AX,BX
        JZ      reset_return            ; parentPDB = CurrentPDB
        CMP     BX,CX
        JNZ     reset_return            ; CurrentPDB <> ThisPDB
        PUSH    AX                      ; save parent
        CMP     BYTE PTR [exit_type],Exit_keep_process
        JZ      reset_to_parent         ; keeping this process

        invoke  arena_free_process

        ; reset environment at [CurrentPDB]; close those handles
        MOV     CX,FilPerProc

reset_free_jfn:
        MOV     BX,CX
        PUSH    CX
        DEC     BX                      ; get jfn
        invoke  $CLOSE                  ; close it, ignore return
        POP     CX
        LOOP    reset_free_jfn          ; and do 'em all

reset_to_parent:
        POP     [CurrentPDB]            ; set up process as parent

reset_return:                           ; come here for normal return
        PUSH    CS
        POP     DS
        ASSUME  DS:DOSGROUP
        MOV     AL,-1
        invoke  FLUSHBUF                ; make sure that everything is clean

        CLI
        MOV     BYTE PTR [INDOS],0              ;Go to known state
        MOV     BYTE PTR [WPERR],-1             ;Forget about WP error
```

```
; $
; Snake into multitasking... Get stack from CurrentPDB person
;
        MOV     DS,[CurrentPDB]
        ASSUME  DS:NOTHING
        MOV     SS,WORD PTR DS:[PDB_user_stack+2]
        MOV     SP,WORD PTR DS:[PDB_user_stack]

        ASSUME  SS:NOTHING
        invoke  restore_world
        ASSUME  ES:NOTHING
        POP     AX                      ; suck off CS:IP of interrupt...
        POP     AX
        POP     AX
        MOV     AX,0F202h               ; STI
        PUSH    AX
        PUSH    WORD PTR [EXITHOLD+2]
        PUSH    WORD PTR [EXITHOLD]
        STI
        IRET            ; Long return back to user terminate address
HardErr ENDP

        ASSUME  SS:DOSGROUP

do_ext

CODE    ENDS
    END
```

Chapter II

Introduction

Obfuscation is a information management strategy that aims to cloud the meaning of a message. This strategy can be intentional or unintended.

This strategy can be used for the protection of privacy (personal date protection of digital reputation for instance), but it can also be a base for the message content, war tactics or confidentiality saving.

Chapter III

Objectives

Thanks to the Famine subject, you know what self-replicating programming means. You also know the subject difficulty to obtain a little "virus" useless in an updated system.

We are going to make this virus running method more complex bringing programming methods that you were not necessarily introduced to during your school years.

Your little Famine program is about to be upgraded. You will quickly understand that if you want to validate this project, you're going to have to make radical changes in your source code. When Famine just needed you to discreetly patch a binary, Pestilence will require a way more discreet binary forcing you to apply a "simple" obfuscation strategy within your code... when we say simple, keep in mind this is a very subjective matter...

Chapter IV

Mandatory part

`Pestilence` is a binary of your own design which, just like Famine, will apply a signature that will at least include your own logins on binaries located in a specific folder, following the same constraints as Famine. The signature might have this header for instance:

```
Pestilence version 1.0 (c)oded by <first-login> - <second-login>
```

However you will have to code `Pestilence` so that:

- the code won't execute if a specific process is active on the target machine.
- the code doesn't execute if you try to use a debugger to run it.
- when a manual modification on the virus in order to avoid the anti- debugging launching is made, the infection routine must be partly obfuscated.

In regards of the latest point difficulty, the goal will simply be to make the reading and understanding of your infection routine difficult for a physical person. Being an actual issue in the real world, the obfuscation level will have an influence on your final grade.

Here are the constraints for this subject:

- The executable will be named `Pestilence`.
- This executable is coded in assembler, C or C++. Nothing else.
- Your program will not display anything on the standard or error outputs.
- You **WILL HAVE** to work in a VM.
- You will choose the target OS type. However, you will have to set up a proper VM for the evaluation.
- Your program will have to act on the /tmp/test and /tmp/test2 folders or the counterpart on your chosen OS and NOTHING ELSE. You're responsible for the propagation of your program.

- **WARNING!** There will only be one infection on said binary. Not more.
- Infections will start running on your OS binaries with a 64 bits architecture.

Chapter V

Example of use

Here is a potential use:

Lay the foundation:

```
# ls -al ~/Pestilence
total 736
drwxr-xr-x 3 root root 4096 May 24 08:03 .
drwxr-xr-x 5 root root 4096 May 24 07:32 ..
-rwxr-xr-x 1 root root 744284 May 24 08:03 Pestilence
```

We create a sample.c for our tests:

```
# nl sample.c
1 #include <stdio.h>
2 int
3 main(void) {
4     printf("Hello, World!\n");
5     return 0;
6 }
# gcc -m64 ~/Virus/sample/sample.c
#
```

We copy binaries (tests + ls) for our tests:

```
# cp ~/Virus/sample/sample /tmp/test2/.
# ls -al /tmp/test
total 16
drwxr-xr-x 2 root root 4096 May 24 08:07 .
drwxrwxrwt 13 root root 4096 May 24 08:08 ..
-rwxr-xr-x 1 root root 6712 May 24 08:11 sample
# /tmp/test/sample
Hello, World!
# file /tmp/test/sample
/tmp/test/sample: ELF 64-bit LSB executable, x86-64, version 1 (SYSV), dynamically linked, interpreter /
    lib64/ld-linux-x86-64.so.2, for GNU/Linux 2.6.32, BuildID[sha1]=938[...]10b, not stripped
# strings /tmp/test/sample | grep "wandre"
# cp /bin/ls /tmp/test2/
# ls -al /tmp/test2
total 132
drwxr-xr-x 2 root root  4096 May 24 08:11 .
drwxrwxrwt 14 root root 4096 May 24 08:11 ..
-rwxr-xr-x 1 root root 126480 May 24 08:12 ls
# file /tmp/test2/ls
/ tmp/test2/ls: ELF 64-bit LSB executable, x86-64, version 1 (SYSV), dynamically linked, interpreter /
    lib64/ld-linux-x86-64.so.2, for GNU/Linux 2.6.32, BuildID[sha1]=67e[...]281, stripped
#
```

`Pestilence` without the "test" process:

```
# pgrep "test"
# ./Pestilence
# strings /tmp/test/sample | grep "wandre"
Pestilence version 1.1 (c)oded may-2017 by wandre
# /tmp/test/sample
Hi!
# strings /tmp/test2/ls | grep "wandre"
Pestilence version 1.1 (c)oded may-2017 by wandre
# /tmp/test2/ls -la /tmp/test2/
total 132
drwxr-xr-x 2 root root  4096 May 2 10:11 .
drwxrwxrwt 14 root root 4096 May 2 10:17 ..
-rwxr-xr-x 1 root root xxxxxx May 2 10:12 ls
# gcc -m64 ~/Virus/sample/sample.c -o /tmp/test/sample
# ls -al /tmp/test
total 16
drwxr-xr-x 2 root root 4096 May 2 10:07 .
drwxrwxrwt 13 root root 4096 May 2 10:08 ..
-rwxr-xr-x 1 root root xxxx May 2 10:12 sample
# /tmp/test/sample
Hi!
# file /tmp/test/sample
/tmp/test/sample: ELF 64-bit LSB executable, x86-64, version 1 (SYSV), dynamically linked, interpreter /
     lib64/ld-linux-x86-64.so.2, for GNU/Linux 2.6.32, BuildID[sha1]=
     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx, not stripped
# strings /tmp/test/sample | grep "wandre"
#  /tmp/test2/ls -la /tmp/test2/
total 132
drwxr-xr-x 2 root root  4096 May 2 10:11 .
drwxrwxrwt 14 root root 4096 May 2 10:17 ..
-rwxr-xr-x 1 root root xxxxxx May 2 10:12 ls
# strings /tmp/test/sample | grep "wandre"
Pestilence version 1.1 (c)oded may-2017 by wandre
#
```

`Pestilence` with the "test" process:

```
# pgrep "test"
22987
# ./Pestilence
# strings /tmp/test/sample | grep "wandre"
# /tmp/test/sample
Hi!
# strings /tmp/test2/ls | grep "wandre"
# /tmp/test2/ls -la /tmp/test2/
total 132
drwxr-xr-x 2 root root  4096 May 2 10:11 .
drwxrwxrwt 14 root root 4096 May 2 10:17 ..
-rwxr-xr-x 1 root root xxxxxx May 2 10:12 ls
# gcc -m64 ~/Virus/sample/sample.c -o /tmp/test/sample
# ls -al /tmp/test
total 16
drwxr-xr-x 2 root root 4096 May 2 10:07 .
drwxrwxrwt 13 root root 4096 May 2 10:08 ..
-rwxr-xr-x 1 root root xxxx May 2 10:12 sample
# /tmp/test/sample
Hi!
# file /tmp/test/sample
/tmp/test/sample: ELF 64-bit LSB executable, x86-64, version 1 (SYSV), dynamically linked, interpreter /
     lib64/ld-linux-x86-64.so.2, for GNU/Linux 2.6.32, BuildID[sha1]=
     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx, not stripped
# strings /tmp/test/sample | grep "wandre"
# /tmp/test2/ls -la /tmp/test2/
total 132
drwxr-xr-x 2 root root  4096 May 2 10:11 .
drwxrwxrwt 14 root root 4096 May 2 10:17 ..
-rwxr-xr-x 1 root root xxxxxx May 2 10:12 ls
# strings /tmp/test/sample | grep "wandre"
#
```

And now, last but not least, let's try to run `Pestilence` with gdb. It will be best understood with a little message:

```
# gdb -q ./Pestilence
(gdb) run
Starting program: /root/a.out
DEBUGGING..
[Inferior 1 (process 2683) exited with code 01]
# strings /tmp/test/sample | grep "wandre"
# /tmp/test/sample
Hi!
# strings /tmp/test2/ls | grep "wandre"
#
```

For the obfuscation part, since I don't want to demand anything or guide you, it will be mostly code review. If you can understand the infection routine execution too easily, it will mean your method is not enough! You can obfuscate your code with a key algorithm or using useless functions to complicate the reading and understanding of your virus.

You must understand that the harder the reading and understanding of your infection routine, the higher your grade. Be crafty!

Chapter VI

Bonus part

Bonus will be taken into account only if the mandatory part is PERFECT. PERFECT meaning it is completed, that its behavior cannot be faulted, even because of the slightest mistake, improper use, etc... Practically, it means that if the mandatory part is not validated, none of the bonus will be taken in consideration.

Bonus ideas:

- Being able to infect 32 bits binaries.
- Being able to infect all the files recursively from your OS root.

You must optimize this part executing infected binaries...

- Allowing infection on non-binary files.
- Using packing like methods directly on the virus. The aim being to make the binary as light as possible.
- You can play around adding a backdoor through your virus but make sure no error is visible... moreover if your backdoor provides a mean to open a port on your machine.

Chapter VII

Turn-in and peer-evaluation

- This project will only be reviewed by humans. You're free to organize and name your files as you will as long as you respect the following instructions.
- You must manage the errors a reasonable way. Your program will not quit unexpectedly (Segmentation fault, etc...).
- As usual, turn in your work on your repo `GiT`. Only the work included on your repo will be reviewed during the evaluation.
- During evaluation, you must be in a VM. For your information, the grading scale was built with a stable 64 bits Debian 7.0.
- You can use anything you will need except libraries that will do the dirty work for you. This would be considered cheating.
- You can post your questions on the forum, Jabber, IRC, Slack...