

Final exam: Machine structure and operating system

Exercise 1 (5 points): Complete the following table (8 bits):

	one's complement	two's complement	SVA
$(-55)_{10}$	11001000	11001001	10110111
$(-101)_{10}$	10011010	10011011	11100101
$(-48)_{10}$	11001111	11010000	10110000
$(-78)_{10}$	10110001	10110010	11001110
$(-14)_{10}$	11110001	11110010	10001110

Exercise 2 (5 points): Transform the following values:

$$(10111001)_2 = (185)_{10} = (271)_8,$$

$$(120)_{10} = (01111000)_2 = (78)_{16}$$

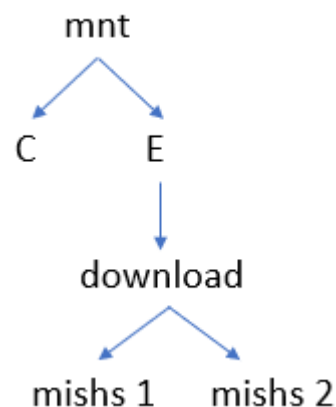
$$(ABCD)_{16} = (1010\ 1011\ 1100\ 1101)_2 = (125715)_8$$

$$(4562)_8 = (100\ 101\ 110\ 010)_2 = (972)_{16}$$

$$(101101)_{\text{gray}} = (110110)_2$$

Exercise 3 (7 points): we suppose that the hard drive is organized according to figure 1, provide the following Linux commands:

- 1- Go to the folder mishs 1.
cd /mnt/e/telechargement/mishs 1
- 2- Create a folder (directory) named test1 in the folder mishs 1.
mkdir /mnt/e/download/mishs 1/test1
- 3- Create a text file mi.txt in the folder test1.
touch /mnt/e/download/mishs 1/test1/mi.txt
- 4- Write "good morning" in the text file mi.txt without deleting the precedent contents.
echo "good morning" >> mi.txt
- 5- Copy the text file mi.txt and past in the folder "download".
cp /mnt/e/download/mishs 1/mi.txt /mnt/e/download/mi.txt
- 6- Create the user "amine".
sudo adduser amine
- 7- Connect with the user "amine".
su - amine



Exercise 4 (3 points):

What is the size of the memory in (MO and TO) knowing that the address bus is 64 bits and the data bus is 16 bits.

2^{45} MO, 2^{25} TO

Good luck