

Bài tập về nhà tuần 1:

Dùng command mkdir để tạo các thư mục theo yêu cầu

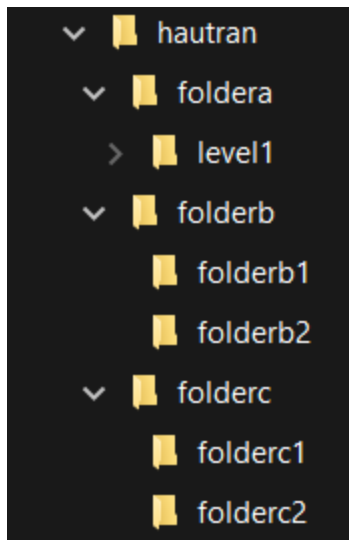


```
13/10/2023 18:15:33 /home/mobaxterm/Desktop/hautran cd -
/home/mobaxterm/Desktop/hautran
13/10/2023 18:15:38 /home/mobaxterm/Desktop/hautran cd folderc
13/10/2023 18:15:49 /home/mobaxterm/Desktop/hautran/folderc mkdir folderc
13/10/2023 18:16:03 /home/mobaxterm/Desktop/hautran/folderc ll
total 0
drwxr-xr-x 1 LENOVO UsersGrp 0 Oct 13 18:16 folderc
13/10/2023 18:16:12 /home/mobaxterm/Desktop/hautran/folderc rm -rf folderc/
13/10/2023 18:16:20 /home/mobaxterm/Desktop/hautran/folderc ll
total 0
13/10/2023 18:16:21 /home/mobaxterm/Desktop/hautran/folderc mkdir folderc1 folderc2
13/10/2023 18:16:36 /home/mobaxterm/Desktop/hautran/folderc ll
total 0
drwxr-xr-x 1 LENOVO UsersGrp 0 Oct 13 18:16 folderc1
drwxr-xr-x 1 LENOVO UsersGrp 0 Oct 13 18:16 folderc2
13/10/2023 18:16:38 /home/mobaxterm/Desktop/hautran/folderc cd -
/home/mobaxterm/Desktop/hautran
13/10/2023 18:16:42 /home/mobaxterm/Desktop/hautran ll
total 0
drwxr-xr-x 1 LENOVO UsersGrp 0 Oct 13 18:15 foldera
drwxr-xr-x 1 LENOVO UsersGrp 0 Oct 13 18:15 folderb
drwxr-xr-x 1 LENOVO UsersGrp 0 Oct 13 18:16 folderc

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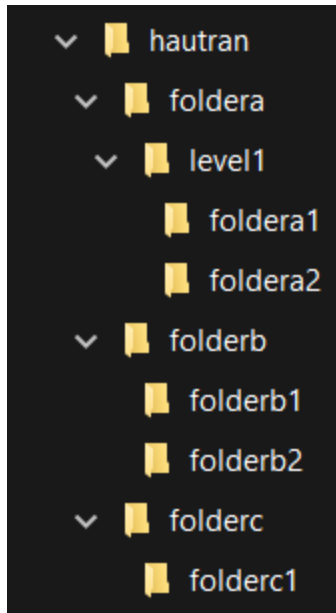
/home/mobaxterm/Desktop/hautran
13/10/2023 18:07:39 /home/mobaxterm cd Desktop
13/10/2023 18:12:30 /home/mobaxterm/Desktop mkdir hautran
13/10/2023 18:12:44 /home/mobaxterm/Desktop cd hautran/
13/10/2023 18:12:47 /home/mobaxterm/Desktop/hautran ll
total 0
13/10/2023 18:12:51 /home/mobaxterm/Desktop/hautran mkdir foldera folderb folderc
13/10/2023 18:14:16 /home/mobaxterm/Desktop/hautran ll
total 0
drwxr-xr-x 1 LENOVO UsersGrp 0 Oct 13 18:14 foldera
drwxr-xr-x 1 LENOVO UsersGrp 0 Oct 13 18:14 folderb
drwxr-xr-x 1 LENOVO UsersGrp 0 Oct 13 18:14 folderc
13/10/2023 18:14:19 /home/mobaxterm/Desktop/hautran cd foldera
13/10/2023 18:14:37 /home/mobaxterm/Desktop/hautran/foldera mkdir level1
13/10/2023 18:14:47 /home/mobaxterm/Desktop/hautran/foldera mkdir foldera1 foldera2
13/10/2023 18:15:03 /home/mobaxterm/Desktop/hautran/foldera cd -
/home/mobaxterm/Desktop/hautran
13/10/2023 18:15:09 /home/mobaxterm/Desktop/hautran cd folderb
13/10/2023 18:15:20 /home/mobaxterm/Desktop/hautran/folderb mkdir folderb1 folderb2
```

Kết quả cho ra:

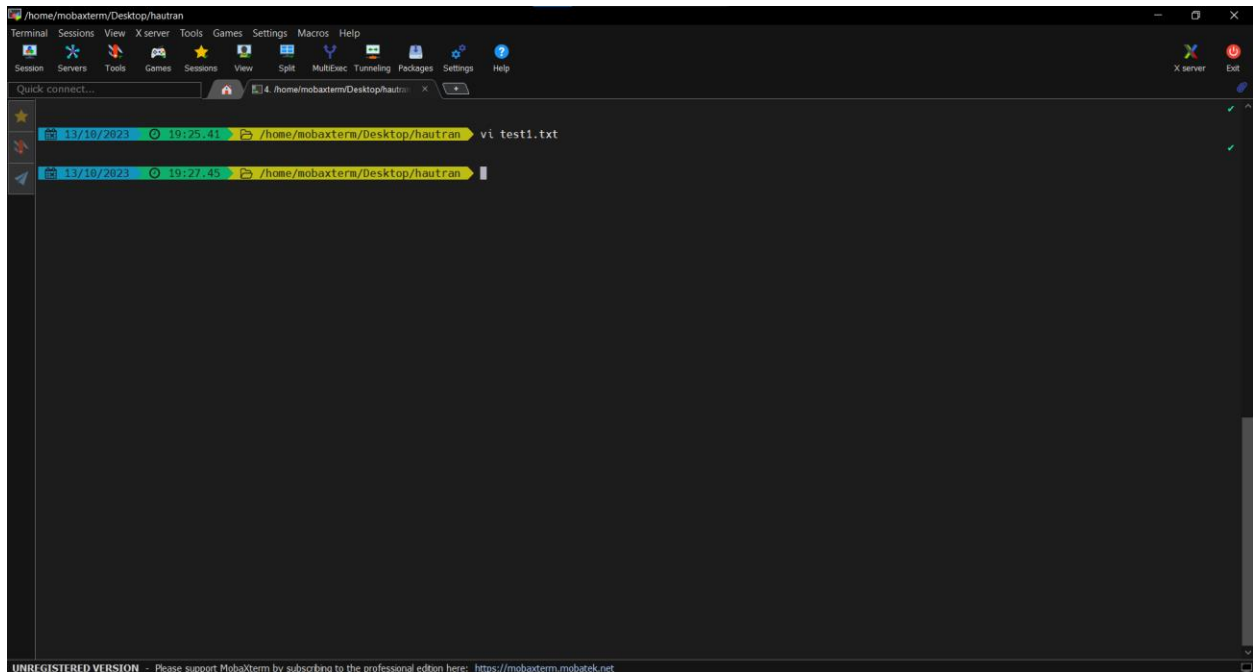


Để xóa 1 thư mục chúng ta dùng command RM -rf “tên thư mục”

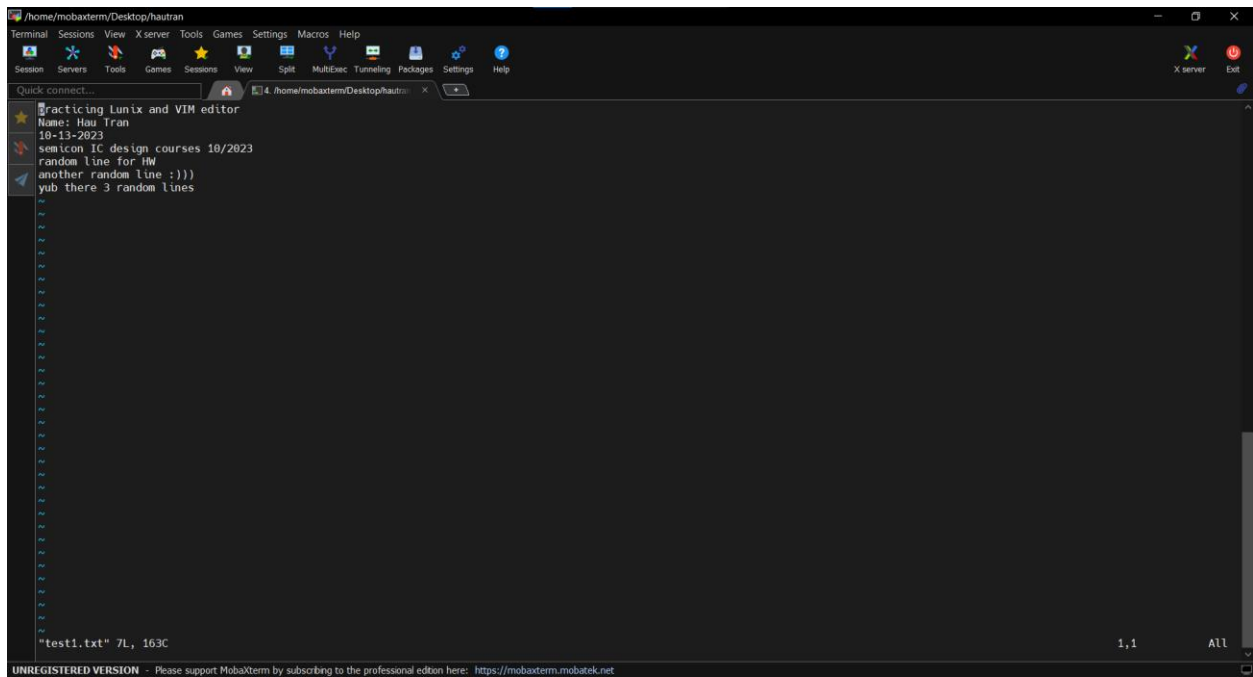
```
13/10/2023 18:23.22 /home/mobaxterm/Desktop/hautran/folderc rm -rf folderc2
13/10/2023 18:23.55 /home/mobaxterm/Desktop/hautran/folderc ;;
bash: syntax error near unexpected token ;;
13/10/2023 18:24.03 /home/mobaxterm/Desktop/hautran/folderc ll
total 0
drwxr-xr-x 1 LENOVO UsersGrp 0 Oct 13 18:16 folderc1
13/10/2023 18:24.04 /home/mobaxterm/Desktop/hautran/folderc
```



Tạo và mở file test1.txt với VIM editor

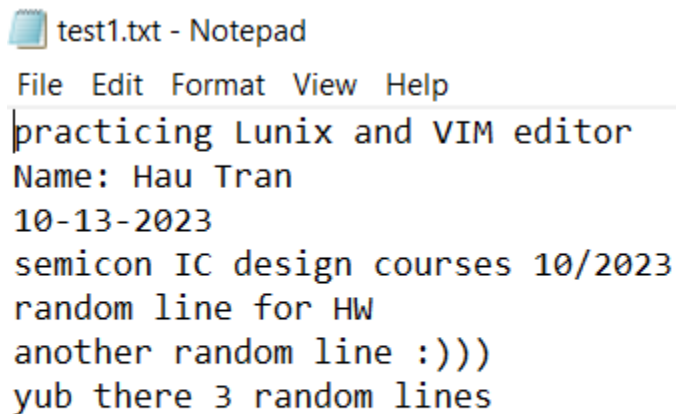


Nhập nội dung ngẫu nhiên

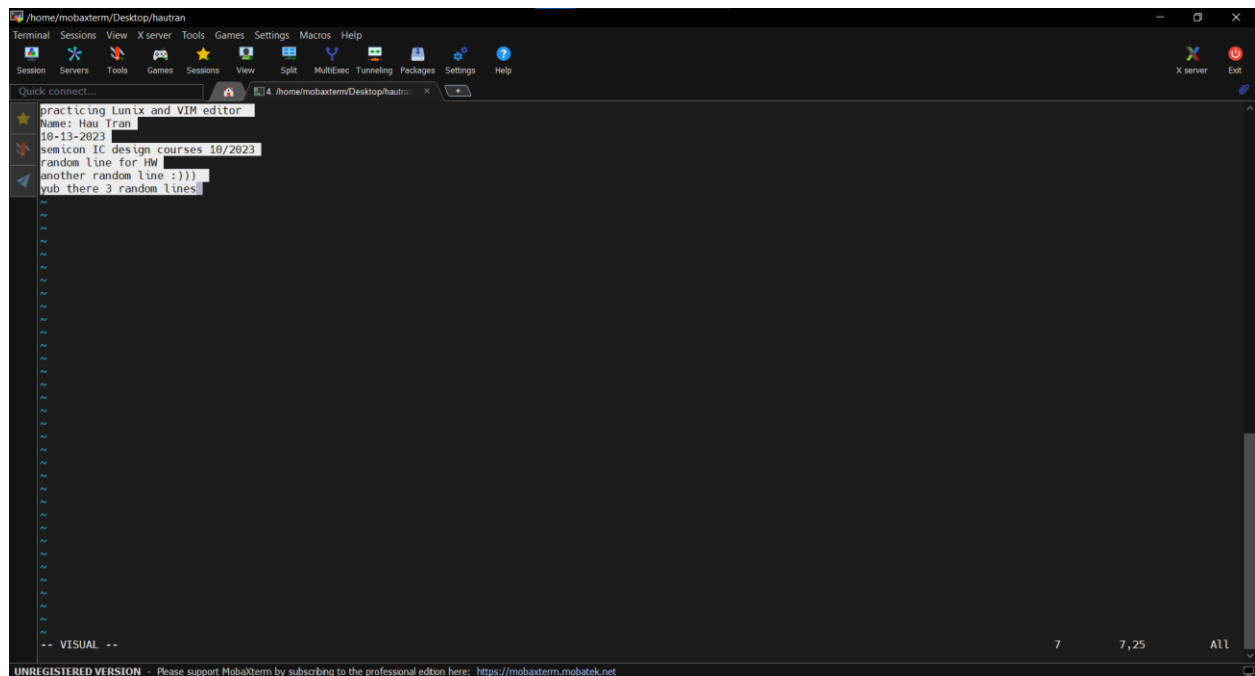


The screenshot shows a MobaXterm window with a terminal session. The terminal title is "/home/mobaxterm/Desktop/hastran". The menu bar includes Terminal, Sessions, View, X server, Tools, Games, Settings, Macros, and Help. The toolbar contains icons for Session, Servers, Tools, Games, Sessions, View, Split, MultiExec, Tunneling, Packages, Settings, and Help. A "Quick connect..." dialog is open, showing a list of sessions. The first session is selected, showing details: "Practicing Linux and VIM editor", "Name: Hau Tran", "10-13-2023", and "semicon IC design courses 10/2023". The terminal window shows the Vim editor interface with the following text: "practicing Linux and VIM editor", "Name: Hau Tran", "10-13-2023", "semicon IC design courses 10/2023", "random line for HW", "another random line :)))", "yub there 3 random lines". The status bar at the bottom indicates "UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: https://mobaxterm.mobatek.net".

Kết quả trên window như sau:

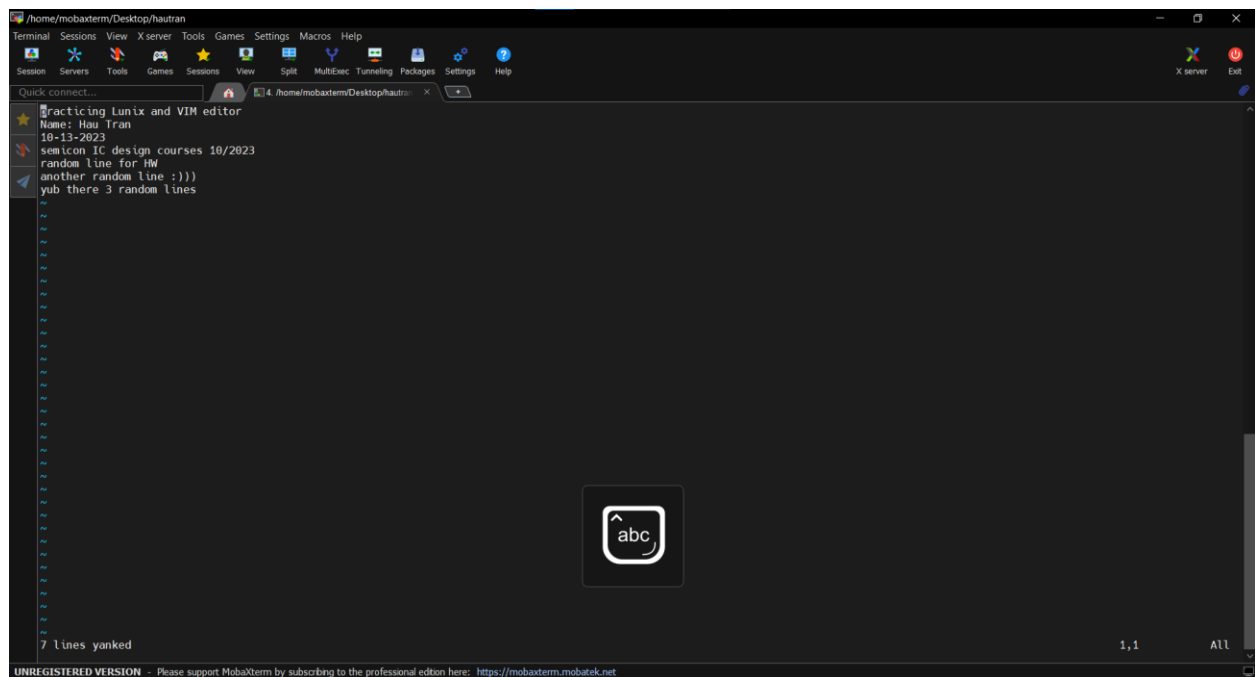


The screenshot shows a Notepad window titled "test1.txt - Notepad". The menu bar includes File, Edit, Format, View, and Help. The text content is: "practicing Lunix and VIM editor", "Name: Hau Tran", "10-13-2023", "semicon IC design courses 10/2023", "random line for HW", "another random line :)))", "yub there 3 random lines".

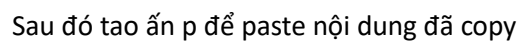


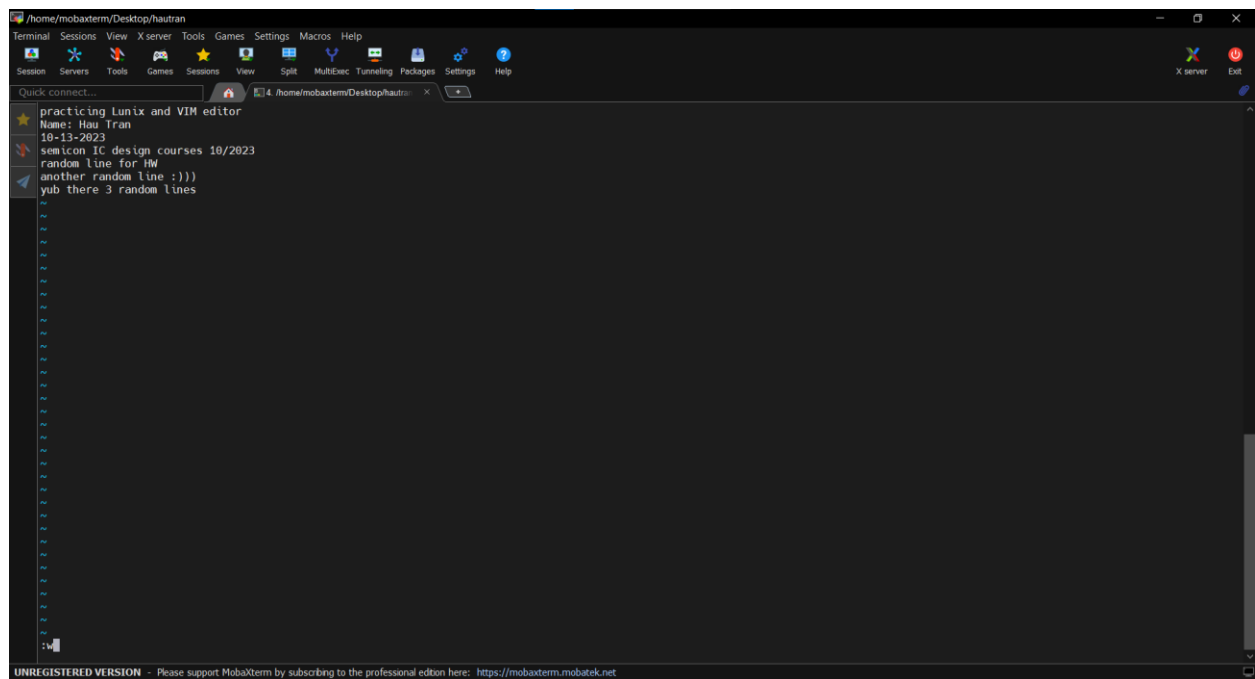
Trong giao diện VIM editor chúng ta nhấn V để vào visual mode dùng phím điều hướng để tô đen nội dung cần copy

Sau đó ấn 'y' để copy (yank)

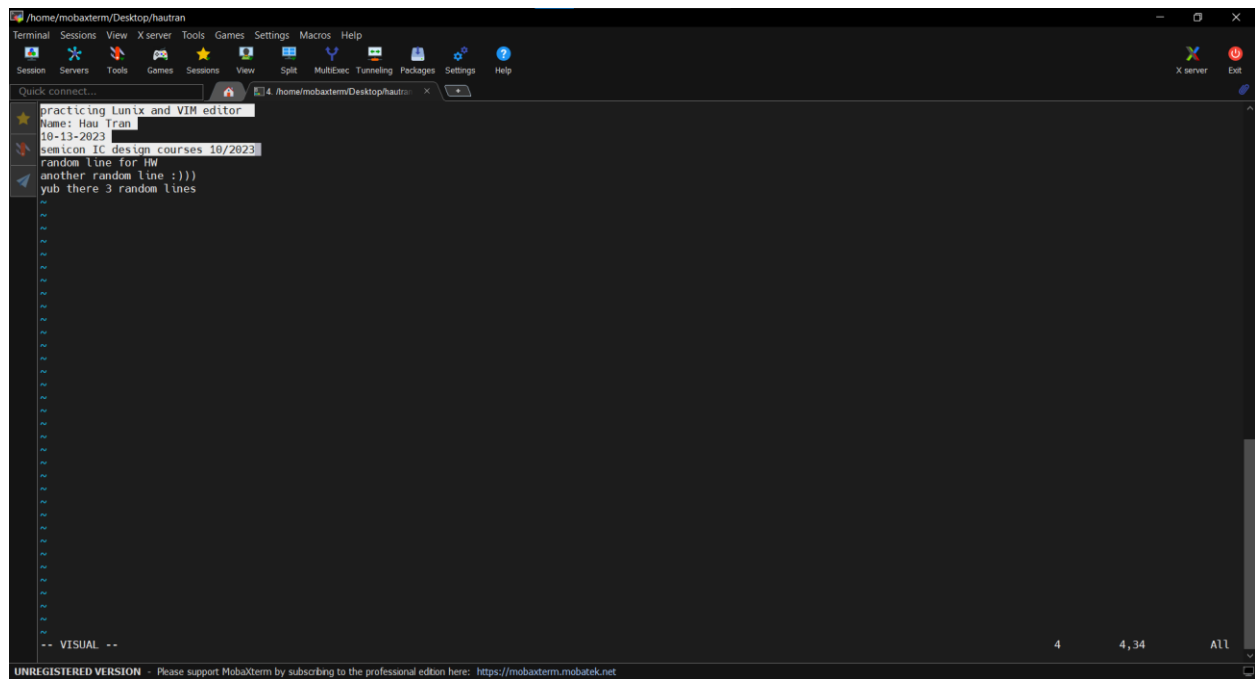


Sau khi đã có thông báo yanked ở góc màn hình

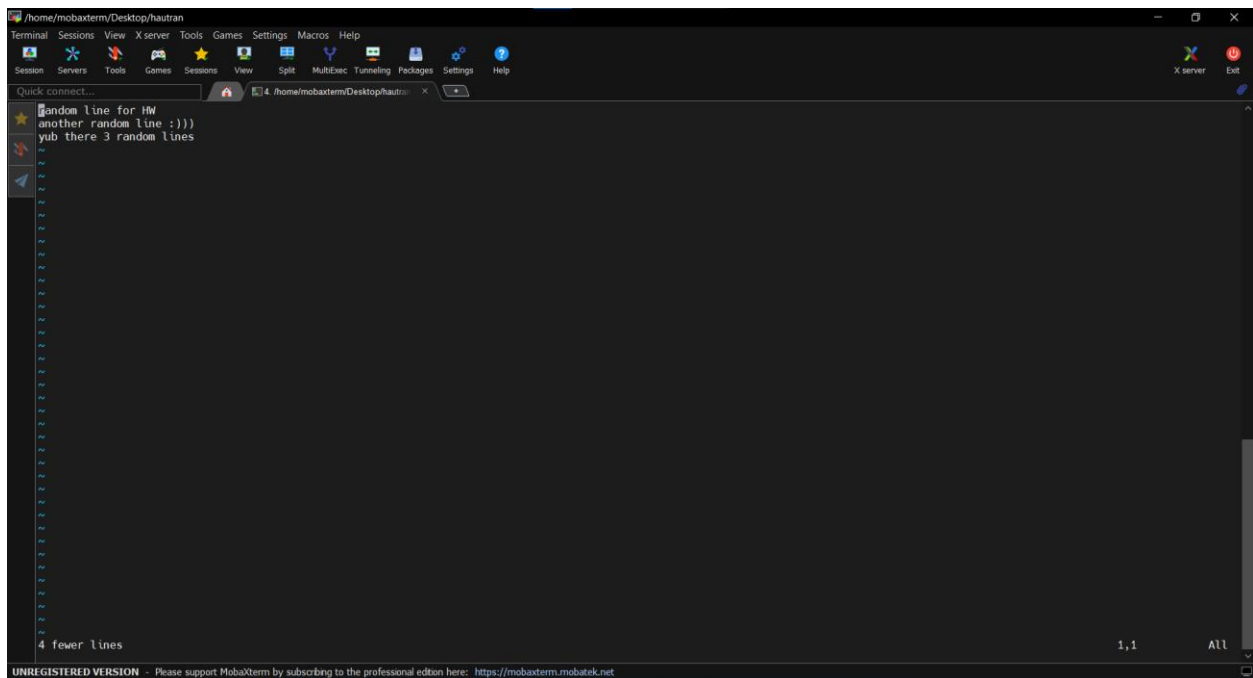




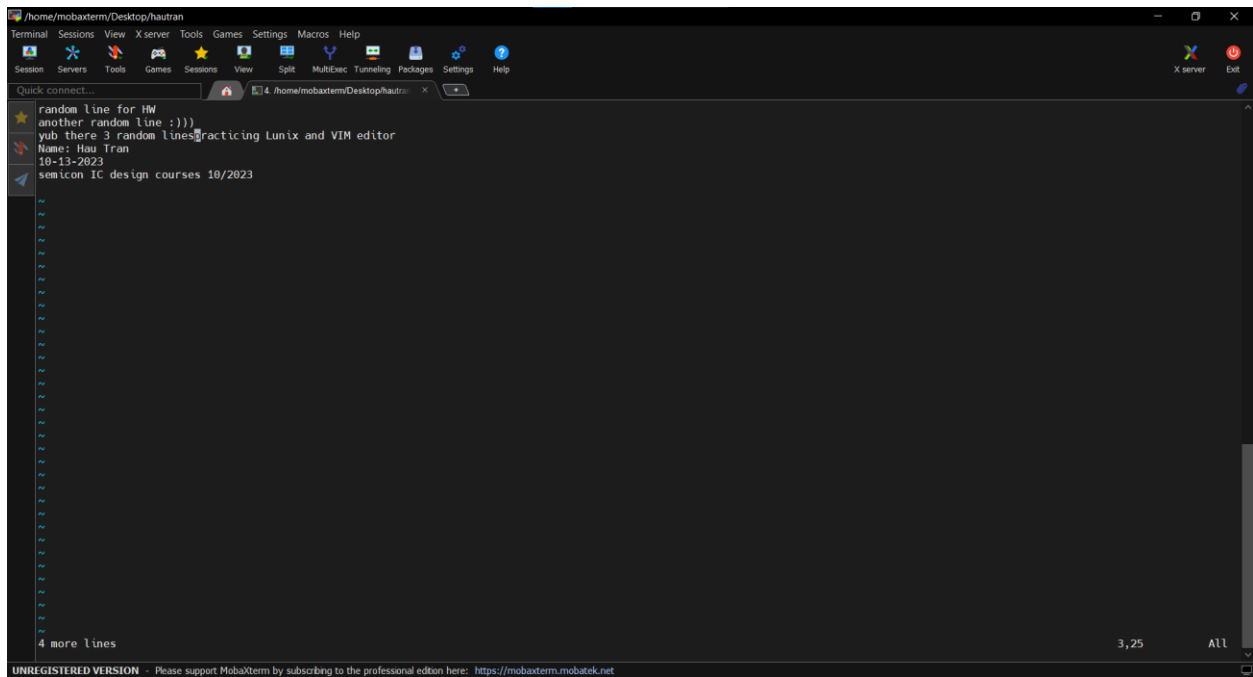
Lưu lại nội dung cho test2.txt



Tiếp tục dung v để vào Visual mode và tô đen nội dung cần cắt và lưu vào vùng đệm




Ấn phím d để cắt và lưu



Duy chuyển con trỏ tới vị trí muốn paste nội dung sau đó ấn phím p

Cho ra kết quả trên window như sau

 test1.txt - Notepad

File Edit Format View Help

practicing Linux and VIM editor

Name: Hau Tran


10-13-2023

semicon IC design courses 10/2023

random line for HW

another random line :)))

yub there 3 random lines

 test2.txt - Notepad

File Edit Format View Help

random line for HW

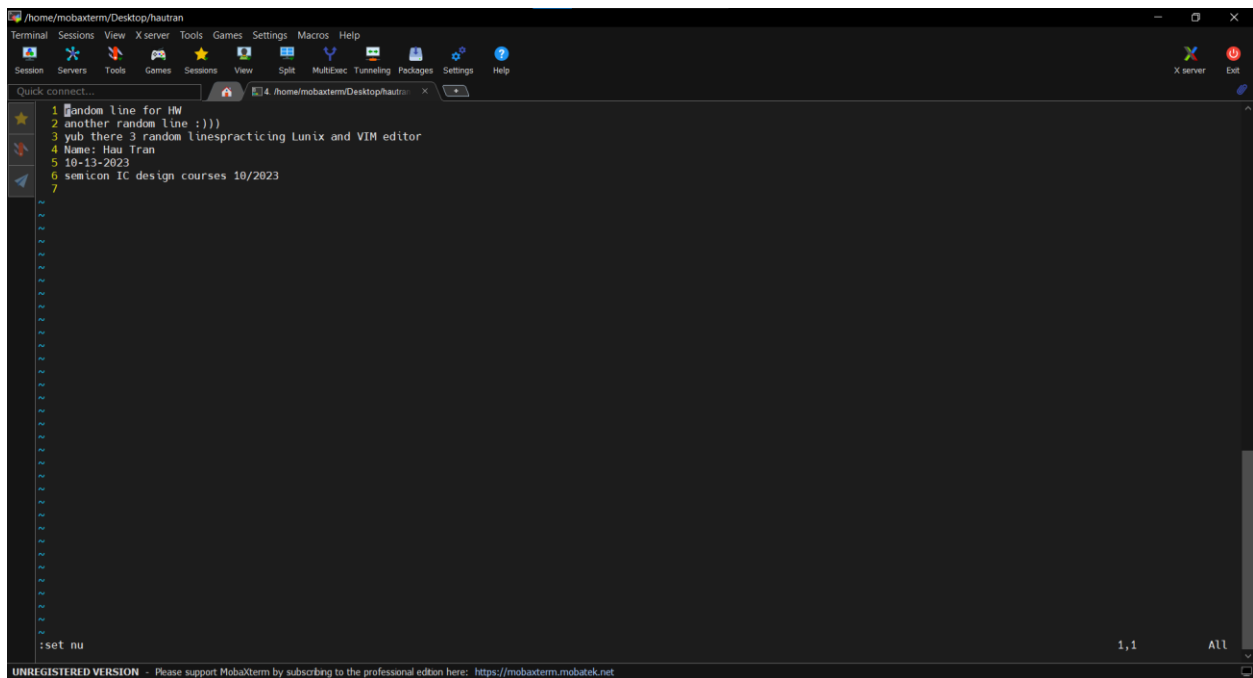
another random line :)))

yub there 3 random linespracticing Linux and VIM editor

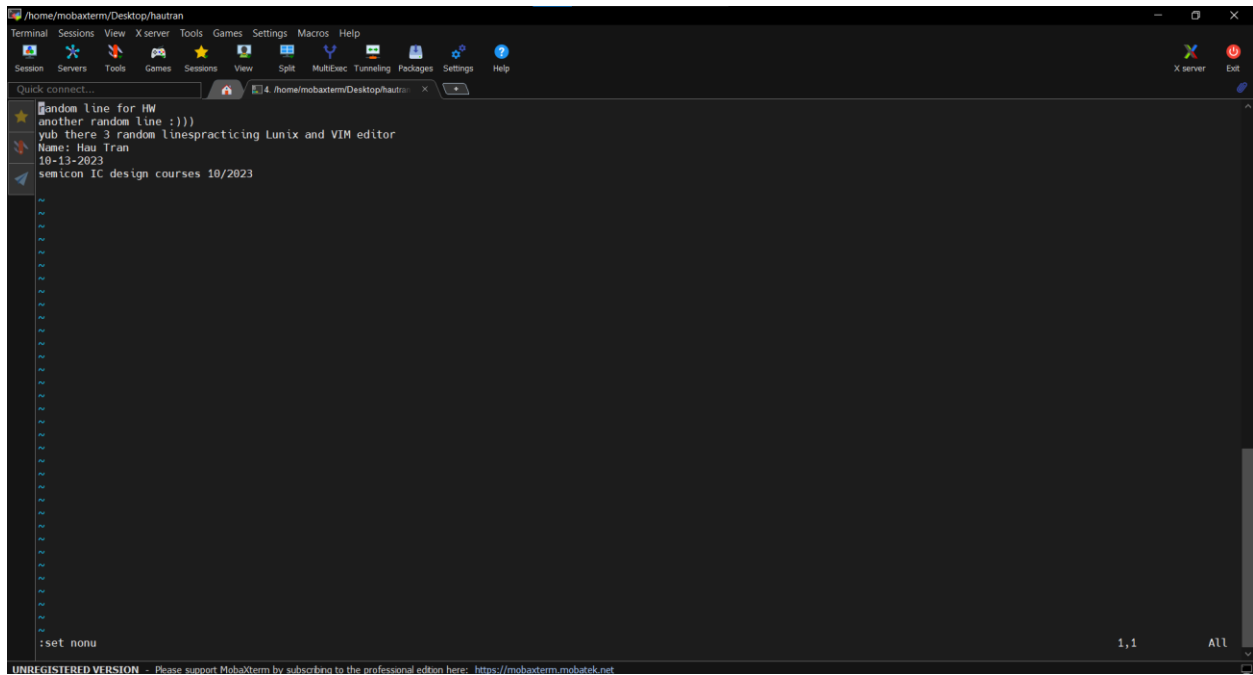
Name: Hau Tran

10-13-2023

semicon IC design courses 10/2023



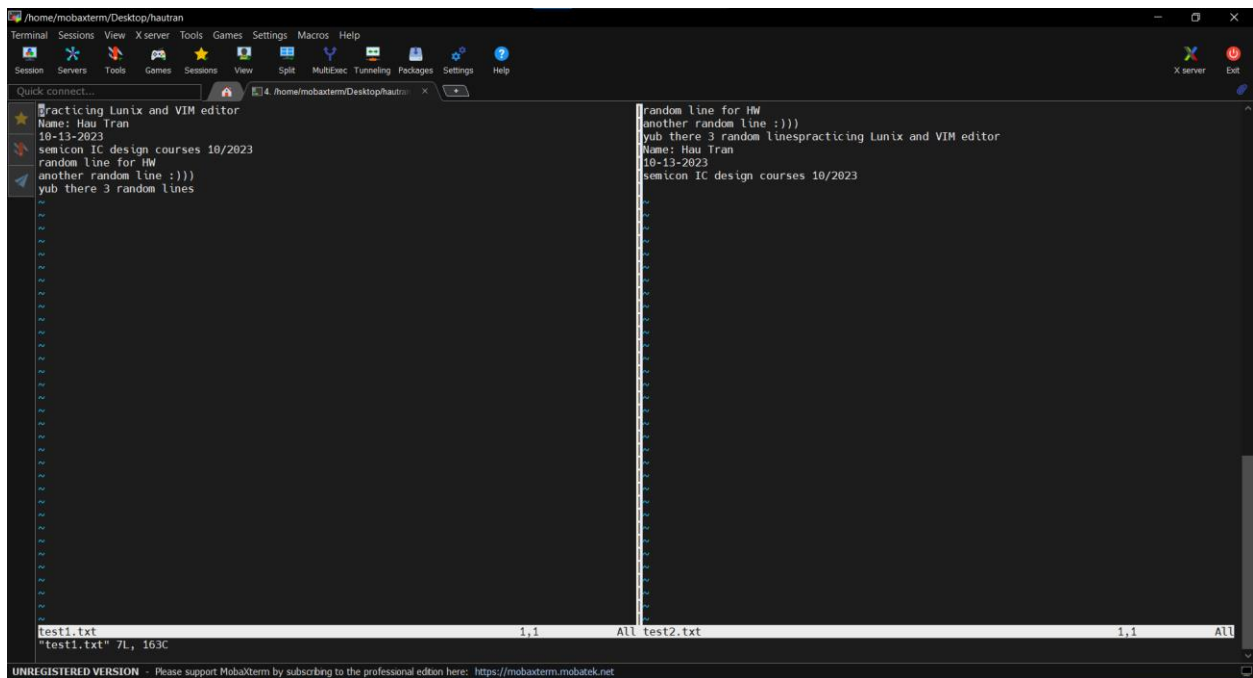
d



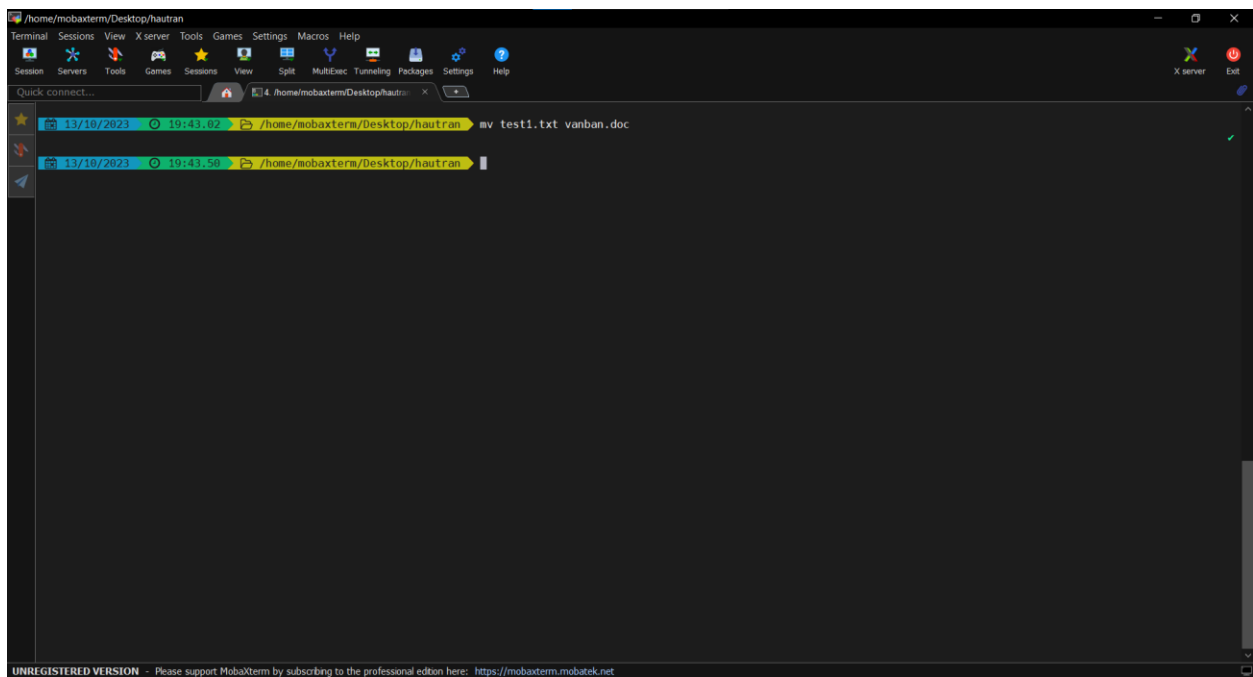
đánh số và không đánh số dung:

Set: nu






Set: nonu



Xem nội dung 2 file theo 2 kiểu chia màn hình khác nhau



Đổi tên file ta dùng lệnh mv


	foldera	10/13/2023 6:19 PM	File folder	
	folderb	10/13/2023 6:15 PM	File folder	
	folderc	10/13/2023 6:23 PM	File folder	
<input checked="" type="checkbox"/> 	test2.txt	10/13/2023 7:35 PM	Text Document	1 KB
	vanban.doc	10/13/2023 7:27 PM	Microsoft Word 97...	1 KB

```

/home/mobaxterm/Desktop/hastran
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect... 4 /home/mobaxterm/Desktop/hastran
13/10/2023 19:43.02 /home/mobaxterm/Desktop/hastran mv test1.txt vanban.doc
13/10/2023 19:43.50 /home/mobaxterm/Desktop/hastran mv vanban.doc folderc/folderc1/
13/10/2023 19:44.58 /home/mobaxterm/Desktop/hastran
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```

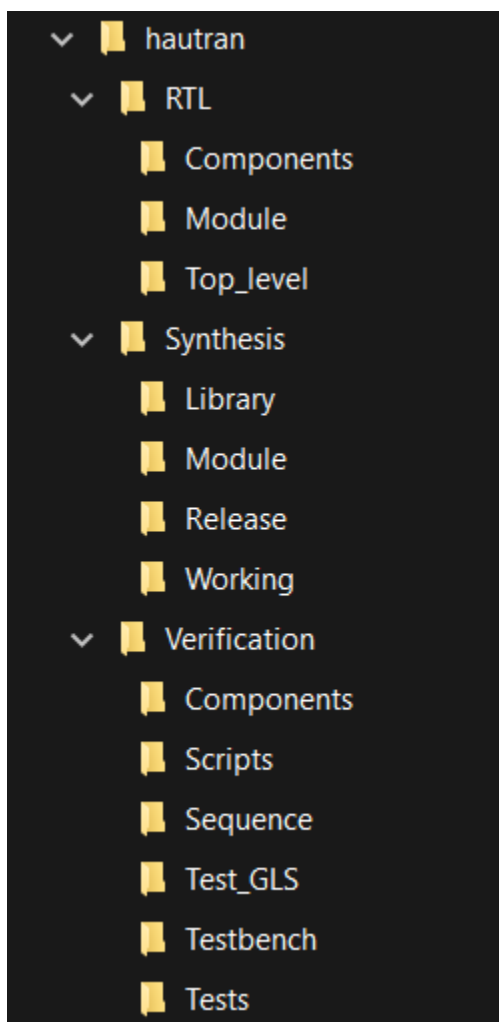
PC > Desktop > hastran > folderc > folderc1

Name	Date modified	Type	Size
 vanban.doc	10/13/2023 7:27 PM	Microsoft Word 97...	1 KB

Để duy chuyển file ta cũng dung lệnh mv “tên file” “path tới vị trí mong muốn”

```
15/10/2023 11:30.12 /home/mobaxterm/Desktop mkdir hautran
15/10/2023 11:30.34 /home/mobaxterm/Desktop cd hautran/
15/10/2023 11:30.36 /home/mobaxterm/Desktop/hautran mkdir RTL Verification Synthesis
15/10/2023 11:31.05 /home/mobaxterm/Desktop/hautran cd RTL/
15/10/2023 11:31.08 /home/mobaxterm/Desktop/hautran/RTL mkdir Components Module Top_level
15/10/2023 11:31.32 /home/mobaxterm/Desktop/hautran/RTL cd ..
15/10/2023 11:31.46 /home/mobaxterm/Desktop/hautran cd Verification/
15/10/2023 11:31.54 /home/mobaxterm/Desktop/hautran/Verification mkdir Components Sequence Scripts Tests Testbench Test_GLS
15/10/2023 11:32.52 /home/mobaxterm/Desktop/hautran/Verification cd ..
15/10/2023 11:32.54 /home/mobaxterm/Desktop/hautran cd Synthesis/
15/10/2023 11:33.00 /home/mobaxterm/Desktop/hautran/Synthesis mkdir Working Library Release Module
15/10/2023 11:33.31 /home/mobaxterm/Desktop/hautran/Synthesis
```

Tạo các folder bằng lệnh mkdir



```
15/10/2023 11:35.48 /home/mobaxterm/Desktop/hautran touch readme.txt
```

Tạo file txt bằng lệnh touch

```
15/10/2023 11:45.11 /home/mobaxterm/Desktop/hautran mv readme.txt RTL/Module/
```

```
15/10/2023 11:45.27 /home/mobaxterm/Desktop/hautran cd RTL/Module/
```

```
15/10/2023 11:45.44 /home/mobaxterm/Desktop/hautran/RTL/Module ll
total 1
-rw-r--r-- 1 LENOVO UsersGrp 71 Oct 15 11:38 readme.txt
```

```
15/10/2023 11:52.55 /home/mobaxterm/Desktop/hautran/RTL mv design.v Module
```

Duy chuyển các file theo yêu cầu

```
15/10/2023 11:54.08 /home/mobaxterm/Desktop/hautran/RTL/Module cp -rf design.v ../../Verification/Components
```

Copy file design.v vào Verification/components

```
15/10/2023 11:54.37 /home/mobaxterm/Desktop/hautran/RTL/Module cd ../../Verification/Components/
```

```
15/10/2023 11:56.24 /home/mobaxterm/Desktop/hautran/Verification/Components mv design.v sequential_counter.v
```

```
15/10/2023 11:57.04 /home/mobaxterm/Desktop/hautran/Verification/Components vi sequential_counter.v
```

Đổi tên file và xme lại nội dung

```
module SequenceCounter(
    input wire clk,    // Clock input
    output wire [2:0] count // 3-bit count output
);

    reg [2:0] counter; // 3-bit counter register

    always @(posedge clk) begin
        // Increment the counter on each clock edge
        if (counter == 3'b111) // Reset the counter when it reaches 7 (111 in binary)
            counter <= 3'b000;
        else
            counter <= counter + 1;
        end

        assign count = counter; // Output the counter value
    endmodule

~
~
~
~
~
~
~
~
```

Nội dung file sequential_counter

```

module SequenceCounter(
input wire clk,    // Clock input
output wire [2:0] count // 3-bit count output
);

reg [2:0] counter; // 3-bit counter register

always @(posedge clk) begin
    // Increment the counter on each clock edge
    if (counter == 3'b111) // Reset the counter when it reaches 7 (111 in binary)
        counter <= 3'b000;
    else
        counter <= counter + 1;
    end

assign count = counter; // Output the counter value
endmodule

```

```

module SequenceCounter(
input wire clk,    // Clock input
output wire [2:0] count // 3-bit count output
);

reg [2:0] counter; // 3-bit counter register

always @(posedge clk) begin
    // Increment the counter on each clock edge
    if (counter == 3'b111) // Reset the counter when it reaches 7 (111 in binary)
        counter <= 3'b000;
    else
        counter <= counter + 1;
    end

assign count = counter; // Output the counter value
endmodule

```

Xem 2 file bằng cách vertical split

```
15/10/2023 12:00.18 /home/mobaxterm/Desktop/hautran/Verification/Components chmod 762 sequential_counter.v
15/10/2023 12:01.24 /home/mobaxterm/Desktop/hautran/Verification/Components chmod 753 ../../RTL/Module/design.v
```

Thay đổi quyền truy cập

Tên: Trần Minh Hậu

Bài Kiểm tra Kỹ thuật số đầu khóa

1/ a) $10110_2 = 1 \cdot 2^4 + 0 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 16 + 4 + 2 = 22_{10}$
 b) $10001101_2 = 1 \cdot 2^7 + 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^0 =$
 c) $100100001001_2 = 1 \cdot 2^{11} + 1 \cdot 2^8 + 1 \cdot 2^5 + 1 \cdot 2^0 =$
 d) $1111010111_2 = 1 \cdot 2^9 + 1 \cdot 2^8 + 1 \cdot 2^7 + 1 \cdot 2^6 + 1 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^1 + 1 \cdot 2^0 =$
 e) $10111111_2 = 1 \cdot 2^7 + 1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 =$
 f) $110001101_2 = 1 \cdot 2^8 + 1 \cdot 2^7 + 1 \cdot 2^5 + 1 \cdot 2^2 + 1 \cdot 2^0 =$

2/ a) $37_{10} \rightarrow 100101_2$

b) $14_{10} = 1110_2$

c) $189_{10} = 10111101_2$

d) $105_{10} = 11001101_2$

e) $2313_{10} = 11100001001_2$

f) $511_{10} = 111111111_2$

3/ Octal \rightarrow binary

0 \rightarrow 000

1 \rightarrow 001

2 \rightarrow 010

3 \rightarrow 011

4 \rightarrow 100

5 \rightarrow 101

6 \rightarrow 110

7 \rightarrow 111

a) $47_8 = 100111_2$

b) $23_8 = 0010011_2$

c) $170_8 = 001111000_2$

d) $206_8 = 010000110_2$

e) $1313_8 = 010011001011_2$

f) $616_8 = 0110001110_2$

4/ HEX \rightarrow binary

1 \rightarrow 0001
 2 \rightarrow 0010
 3 \rightarrow 0011
 4 \rightarrow 0100
 5 \rightarrow 0101
 6 \rightarrow 0110
 7 \rightarrow 0111
 8 \rightarrow 1000
 9 \rightarrow 1001
 A \rightarrow 1010
 B \rightarrow 1011
 C \rightarrow 1100
 D \rightarrow 1101
 E \rightarrow 1110
 F \rightarrow 1111

a) $AF_{16} = 10101111_2$

b) $1A2_{16} = 00011010010_2$

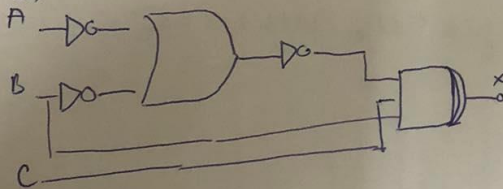
c) $234_{16} = 001000110100_2$

d) $12A4_{16} = 0001001010100100_2$

E) $BC12_{16} = 1011110000010010_2$

F) $517_{16} = 010100010111_2$

5/ a)

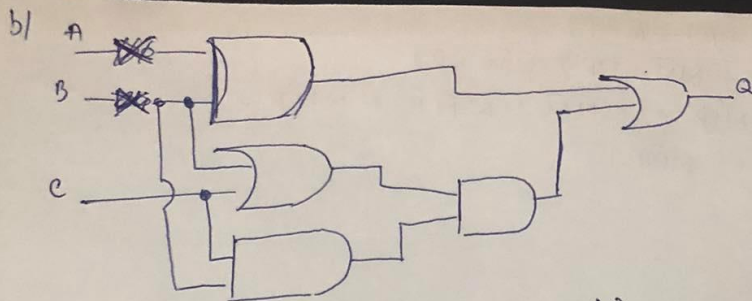


Biểu thức

$$X = (\overline{A} + \overline{B}) \cdot C$$

truth table

A	B	C	X
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

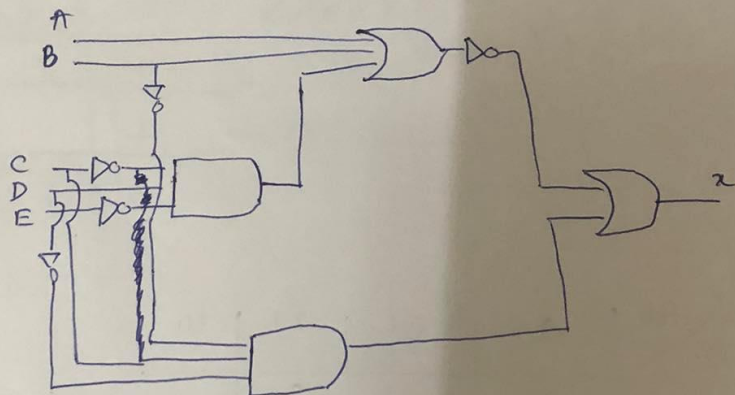


Biểu thức : $Q = (AB + ((B+C) \cdot CB))$

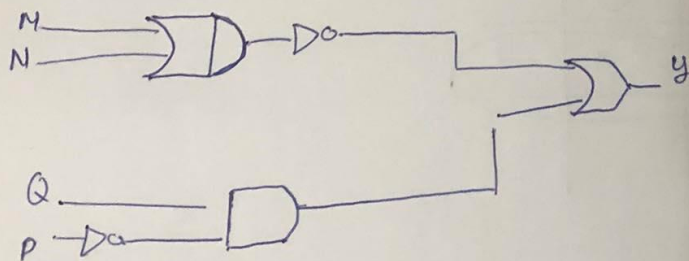
truth-table

A	B	C	Q
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

G/ $x = (A + B + \bar{C}D\bar{E}) + \bar{B}C\bar{D}$



b) $y = (\overline{M+N}) + \bar{P}Q$



$$\begin{aligned}
 7/ \quad x &= (M+N)(\bar{M}+P)(\bar{N}+\bar{P}) \\
 &= (M\bar{N} + MP + N\bar{M} + NP)(\bar{N} + \bar{P}) \\
 &= MP\bar{N} + MP\bar{P} + N\bar{M}\bar{N} + N\bar{M}\bar{P} + N\bar{N}P + N\bar{P}P \\
 &= MP\bar{N} + N\bar{M}\bar{P}
 \end{aligned}$$

2a/

AB \ CD	00	01	11	10
00	1		1	
01				
11	1	1	1	1
10				

$$y = (AB\bar{C}) + (CD) + (\bar{A}\bar{B}\bar{C}\bar{D})$$

b)

$\begin{matrix} wx \\ yz \end{matrix}$	00	01	11	10
00	1	1	1	1
01		1		
11		1	1	1
10				

$$Q = (\bar{y}\bar{z}) + (z\bar{w}x) + (yzw)$$

$\begin{matrix} ab \\ cd \end{matrix}$	00	01	11	10
00	1	1	1	1
01				1
11		1		1
10	1	1	1	

$$X = (\bar{c}\bar{d}) + (b\bar{d}) + (\bar{a}cd) + (\bar{a}bc) + (ab\bar{d})$$