IUS
INSTITUT
UNIVERSITAIRE
DES SCIENCES

FACULTÉ DES SCIENCES ET DES TECHNOLOGIES

(FST)

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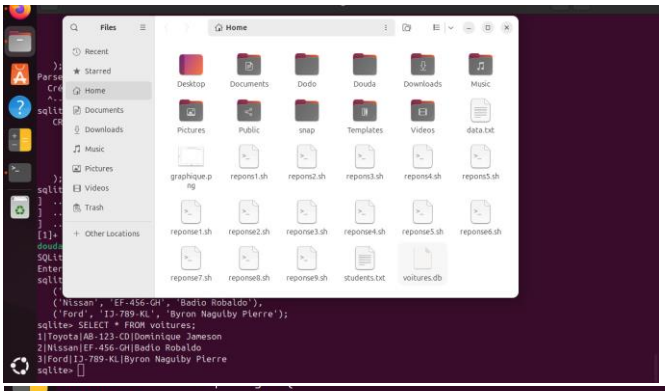
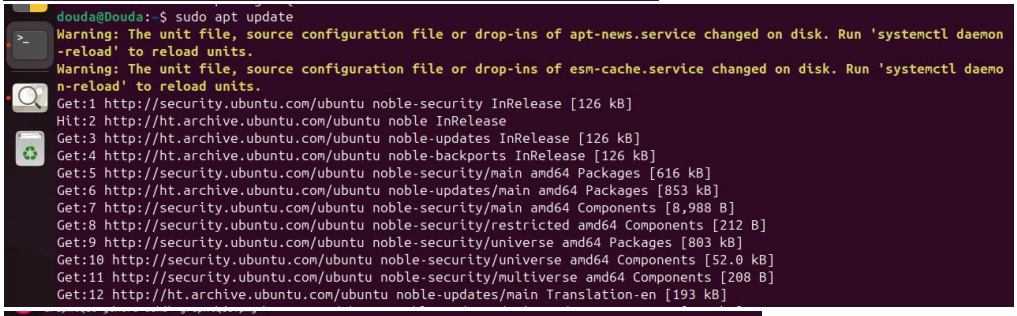
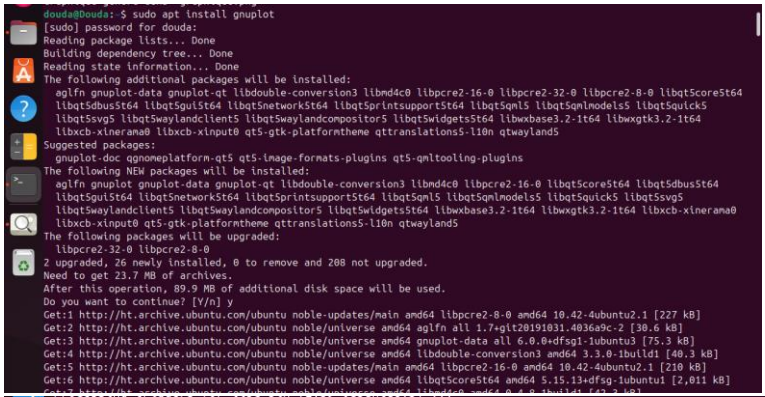
Niveau :	**3ième année**
Année :	**2024-2025**

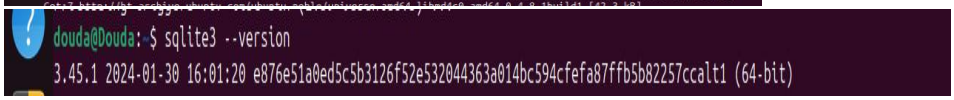
Le 06/03/2025

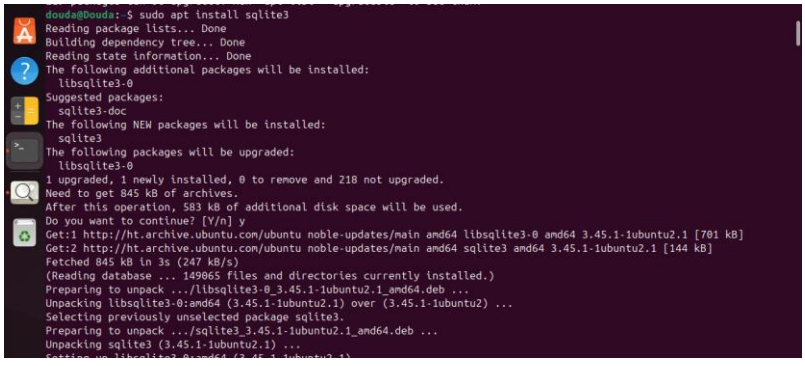
Exécution du TD







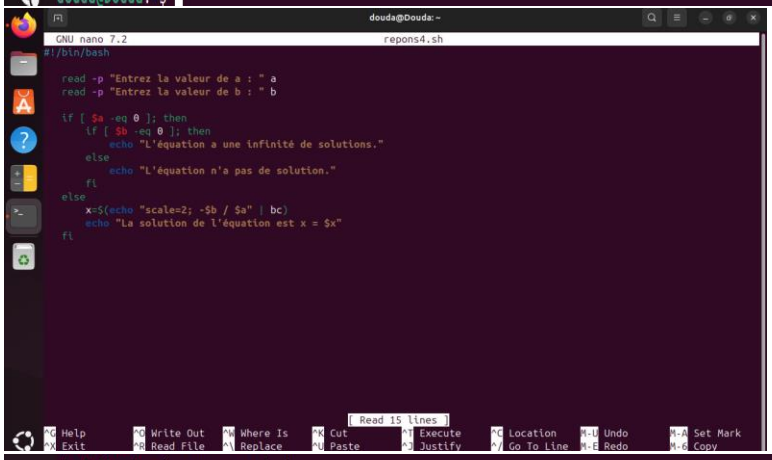




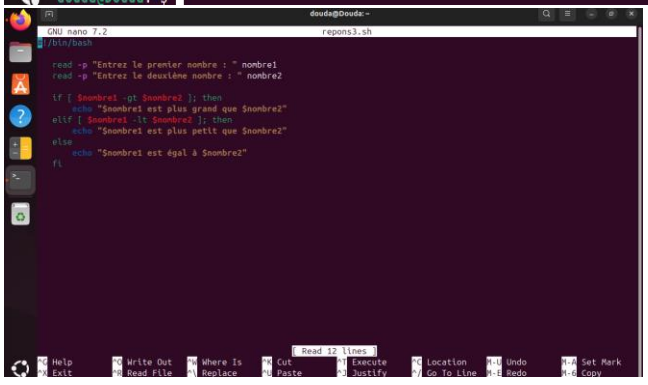
```
sqlite>
   CREATE TABLE voitures (
       id INTEGER PRIMARY KEY AUTOINCREMENT,
       marque TEXT NOT NULL,
       plaque_immatriculation TEXT NOT NULL,
       proprietaire TEXT NOT NULL
   );
```

```
sqlite> INSERT INTO voitures (marque, plaque_immatriculation, proprietaire) VALUES
   ('Toyota', 'AB-123-CD', 'Dominique Jameson'),
   ('Nissan', 'EF-456-GH', 'Badio Robaldo'),
   ('Ford', 'IJ-789-KL', 'Byron Naguiby Pierre');
sqlite> SELECT * FROM voitures;
1|Toyota|AB-123-CD|Dominique Jameson
2|Nissan|EF-456-GH|Badio Robaldo
3|Ford|IJ-789-KL|Byron Naguiby Pierre
sqlite>
```

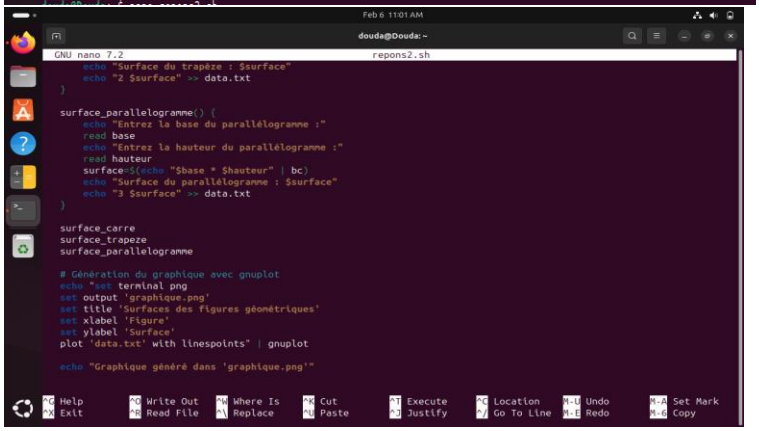
```
douda@Douda:~$ nano repons4.sh
douda@Douda:~$ chmod +x repons4.sh
douda@Douda:~$ ./repons4.sh
Entrez la valeur de a : 4
Entrez la valeur de b : 5
La solution de l'équation est x = -1.25
douda@Douda:~$
```

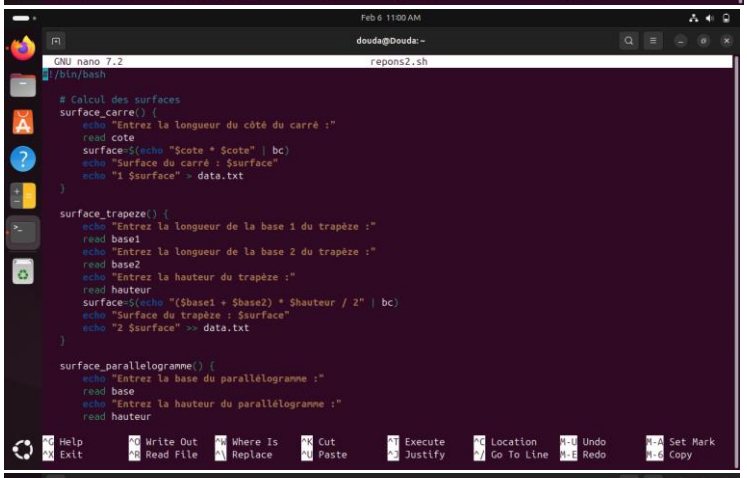


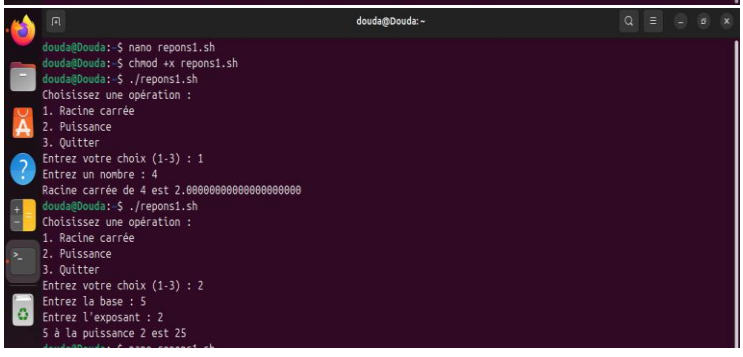

```
douda@Douda:~$ nano repons3.sh
douda@Douda:~$ chmod +x repons3.sh
douda@Douda:~$ ./repons3.sh
Entrez le premier nombre : 12
Entrez le deuxième nombre : 43
12 est plus petit que 43
douda@Douda:~$
```



```
douda@Douda:~$ ./repons2.sh
Entrez la longueur du côté du carré :
4
Surface du carré : 16
Entrez la longueur de la base 1 du trapèze :
3
Entrez la longueur de la base 2 du trapèze :
4
Entrez la hauteur du trapèze :
2
Surface du trapèze : 7
Entrez la base du parallélogramme :
5
Entrez la hauteur du parallélogramme :
4
Surface du parallélogramme : 20
Graphique généré dans 'graphique.png'
```







douda@Douda: ~

GNU nano 7.2 repons1.sh

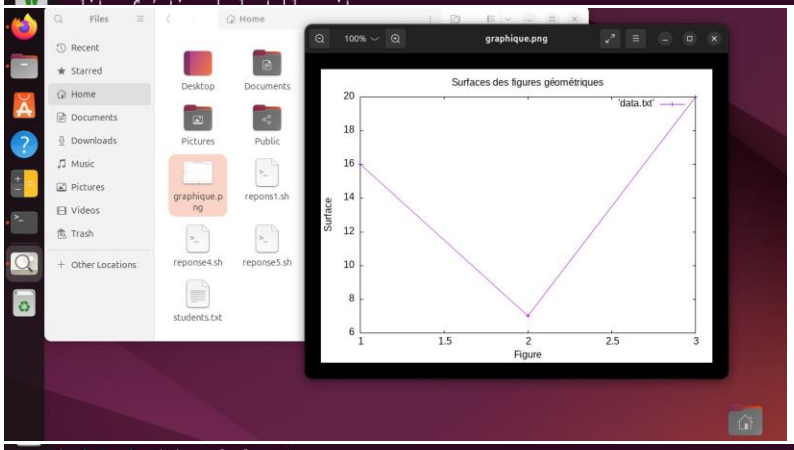
```
#!/bin/bash

echo "Choisissez une opération :"
echo "1. Racine carrée"
echo "2. Puissance"
echo "3. Quitter"

read -p "Entrez votre choix (1-3) : " choix

case $choix in
  1)
    read -p "Entrez un nombre : " nombre
    resultat=$(echo "sqrt($nombre)" | bc -l)
    echo "Racine carrée de $nombre est $resultat"
    ;;
  2)
    read -p "Entrez la base : " base
    read -p "Entrez l'exposant : " exposant
    resultat=$(echo "$base^$exposant" | bc -l)
    echo "$base à la puissance $exposant est $resultat"
    ;;
  3)
    echo "Au revoir !"
    exit 0
    ;;
  *)
    echo "Choix invalide"
    ;;
```

```
douda@Douda:~$ sqlite3 --version
3.45.1 2024-01-30 16:01:20 e876e51a0ed5c5b3126f52e532044363a014bc594cfefa87ffb5b82257ccalt1 (64-bit)
douda@Douda:~$ sqlite3 voitures.db
SQLite version 3.45.1 2024-01-30 16:01:20
Enter ".help" for usage hints.
```




```
douda@Douda:~$ journalctl -n 10
Feb 06 12:29:11 Douda pkexec[26128]: pam_unix(polkit-1:session): session opened for user root(uid=0) by douda(uid=1000)
Feb 06 12:29:11 Douda pkexec[26128]: douda: Executing command [USER=root] [TTY=unknown] [CWD=/home/douda] [COMMAND=/usr>
Feb 06 12:30:01 Douda CRON[26176]: pam_unix(cron:session): session opened for user root(uid=0) by root(uid=0)
Feb 06 12:30:01 Douda CRON[26177]: (root) CMD ([ -x /etc/init.d/anacron ] && if [ ! -d /run/systemd/system ]; then /usr>
Feb 06 12:30:01 Douda systemd[1]: Starting sysstat-collect.service - system activity accounting tool...
Feb 06 12:30:01 Douda CRON[26176]: pam_unix(cron:session): session closed for user root
Feb 06 12:30:01 Douda systemd[1]: sysstat-collect.service: Deactivated successfully.
Feb 06 12:30:01 Douda systemd[1]: Finished sysstat-collect.service - system activity accounting tool.
Feb 06 12:37:28 Douda systemd-resolved[369]: Clock change detected. Flushing caches.
Feb 06 12:37:28 Douda systemd[1]: anacron.service - Run anacron jobs was skipped because of an unmet condition check (C>
```

```
douda@Douda:~$ journalctl -b
Feb 05 21:24:11 Douda kernel: Linux version 6.8.0-52-generic (buildd@lcy02-amd64-046) (x86_64-linux-gnu-gcc-13 (Ubuntu
Feb 05 21:24:11 Douda kernel: Command line: BOOT_IMAGE=/boot/vmlinuz-6.8.0-52-generic root=UUID=ddafe2cc-b834-4265-8742
Feb 05 21:24:11 Douda kernel: KERNEL supported cpus:
Feb 05 21:24:11 Douda kernel:   Intel GenuineIntel
Feb 05 21:24:11 Douda kernel:   AMD AuthenticAMD
Feb 05 21:24:11 Douda kernel:   Hygon HygonGenuine
Feb 05 21:24:11 Douda kernel:   Centaur CentaurHauls
Feb 05 21:24:11 Douda kernel:   zhaoxin   Shanghai
Feb 05 21:24:11 Douda kernel: BIOS-provided physical RAM map:
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x0000000000000000-0x000000000009fbff] usable
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x000000000009fc00-0x000000000009ffff] reserved
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x00000000000f0000-0x00000000000fffff] reserved
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x0000000000100000-0x00000000dffeffff] usable
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x00000000dfff0000-0x00000000dfffffff] ACPI data
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x00000000fec00000-0x00000000fec00fff] reserved
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x00000000fee00000-0x00000000fee00fff] reserved
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x00000000fffc0000-0x00000000ffffffff] reserved
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x0000000100000000-0x00000002f07fffff] usable
Feb 05 21:24:11 Douda kernel: NX (Execute Disable) protection: active
Feb 05 21:24:11 Douda kernel: APIC: Static calls initiallzed
Feb 05 21:24:11 Douda kernel: SMBIOS 2.5 present.
Feb 05 21:24:11 Douda kernel: DMI: innotek GmbH VirtualBox/VirtualBox, BIOS VirtualBox 12/01/2006
Feb 05 21:24:11 Douda kernel: Hypervisor detected: KVM
```

```
douda@Douda:~$ journalctl -f
Feb 06 12:26:58 Douda systemd[1]: Started packagekit.service - PackageKit Daemon.
Feb 06 12:27:01 Douda sudo[25874]: pam_unix(sudo:session): session closed for user root
Feb 06 12:29:11 Douda pkexec[26128]: pam_unix(polkit-1:session): session opened for user root(uid=0) by douda(uid=1000)
Feb 06 12:29:11 Douda pkexec[26128]: douda: Executing command [USER=root] [TTY=unknown] [CWD=/home/douda] [COMMAND=/usr/
lib/update-notifier/package-systen-locked]
Feb 06 12:30:01 Douda CRON[26176]: pam_unix(cron:session): session opened for user root(uid=0) by root(uid=0)
Feb 06 12:30:01 Douda CRON[26177]: (root) CMD ([ -x /etc/init.d/anacron ] && if [ ! -d /run/systemd/system ]; then /usr/
sbin/invoke-rc.d anacron start >/dev/null; fi)
Feb 06 12:30:01 Douda systemd[1]: Starting sysstat-collect.service - system activity accounting tool...
Feb 06 12:30:01 Douda CRON[26176]: pam_unix(cron:session): session closed for user root
Feb 06 12:30:01 Douda systemd[1]: sysstat-collect.service: Deactivated successfully.
Feb 06 12:30:01 Douda systemd[1]: Finished sysstat-collect.service - system activity accounting tool.
Feb 06 12:37:28 Douda systemd-resolved[369]: Clock change detected. Flushing caches.
```

```
douda@Douda:~$ journalctl
Feb 05 21:24:11 Douda kernel: Linux version 6.8.0-52-generic (buildd@lcy02-amd64-046) (x86_64-linux-gnu-gcc-13 (Ubuntu
Feb 05 21:24:11 Douda kernel: Command line: BOOT_IMAGE=/boot/vmlinuz-6.8.0-52-generic root=UUID=ddafe2cc-b834-4265-8742
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Feb 05 21:24:11 Douda kernel:   Centaur CentaurHauls
Feb 05 21:24:11 Douda kernel:   zhaoxin   Shanghai
Feb 05 21:24:11 Douda kernel: BIOS-provided physical RAM map:
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Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x000000000009fc00-0x000000000009ffff] reserved
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x00000000000f0000-0x00000000000fffff] reserved
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x0000000000100000-0x00000000dffeffff] usable
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x00000000dfff0000-0x00000000dfffffff] ACPI data
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x00000000fec00000-0x00000000fec00fff] reserved
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x00000000fee00000-0x00000000fee00fff] reserved
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x00000000fffc0000-0x00000000ffffffff] reserved
Feb 05 21:24:11 Douda kernel: BIOS-e820: [mem 0x0000000100000000-0x00000002f07fffff] usable
Feb 05 21:24:11 Douda kernel: NX (Execute Disable) protection: active
Feb 05 21:24:11 Douda kernel: APIC: Static calls initialized
```

```
douda@Douda:~$ ss -tuln
Netid      State       Recv-Q      Send-Q           Local Address:Port            Peer Address:Port      Process
udp        UNCONN      0           0                      0.0.0.0:37946                0.0.0.0:*
udp        UNCONN      0           0                      0.0.0.0:5353                 0.0.0.0:*
udp        UNCONN      0           0                    127.0.0.54:53                  0.0.0.0:*
udp        UNCONN      0           0                 127.0.0.53%lo:53                  0.0.0.0:*
udp        UNCONN      0           0                         [::]:5353                    [::]:*
udp        UNCONN      0           0                         [::]:34734                   [::]:*
tcp        LISTEN      0           4096              127.0.0.53%lo:53                  0.0.0.0:*
tcp        LISTEN      0           4096                 127.0.0.1:631                  0.0.0.0:*
tcp        LISTEN      0           4096                 127.0.0.54:53                  0.0.0.0:*
tcp        LISTEN      0           4096                     [::1]:631                    [::]:*
```

```
20  * * *
21  * * *
22  * * *
23  * * *
24  * * *
25  * * *
26  * * *
27  * * *
28  * * *
29  * * *
30  * * *
douda@Douda:~$ netstat -tuln
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 127.0.0.53:53           0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:631           0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.54:53           0.0.0.0:*               LISTEN
tcp6       0      0 ::1:631                 :::*                    LISTEN
udp        0      0 0.0.0.0:37946           0.0.0.0:*
udp        0      0 0.0.0.0:5353            0.0.0.0:*
udp        0      0 127.0.0.54:53           0.0.0.0:*
udp        0      0 127.0.0.53:53           0.0.0.0:*
udp6       0      0 :::5353                 :::*
udp6       0      0 :::34734                :::*
```

You can paste the image from the clipboard.

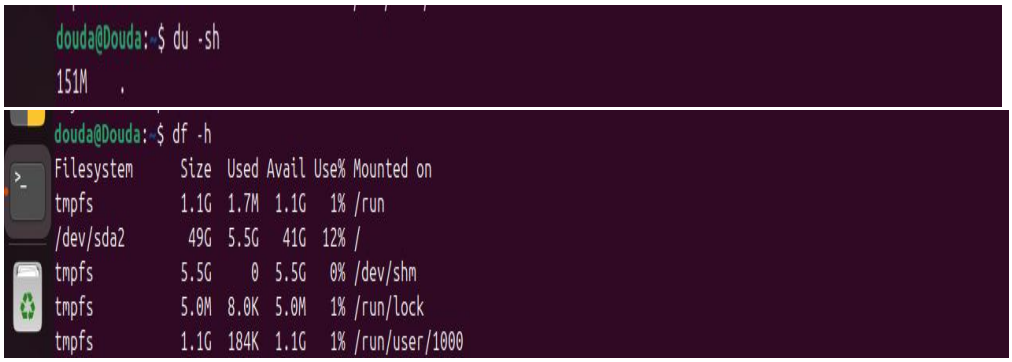
```
douda@Douda:~$ traceroute google.com
traceroute to google.com (142.250.217.238), 30 hops max, 60 byte packets
 1  10.0.2.2 (10.0.2.2)  15.391 ms  14.087 ms  2.510 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
24  * * *
```

```
douda@Douda:~$ sudo apt install traceroute
[sudo] password for douda:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  traceroute
0 upgraded, 1 newly installed, 0 to remove and 218 not upgraded.
Need to get 60.5 kB of archives.
After this operation, 162 kB of additional disk space will be used.
Get:1 http://ht.archive.ubuntu.com/ubuntu noble/universe amd64 traceroute amd64 1:2.1.5-1 [60.5 kB]
Fetched 60.5 kB in 1s (108 kB/s)
Selecting previously unselected package traceroute.
(Reading database ... 149071 files and directories currently installed.)
Preparing to unpack .../traceroute_1%3a2.1.5-1_amd64.deb ...
Unpacking traceroute (1:2.1.5-1) ...
Setting up traceroute (1:2.1.5-1) ...
update-alternatives: using /usr/bin/traceroute.db to provide /usr/bin/traceroute (traceroute) in auto mode
update-alternatives: using /usr/bin/traceroute6.db to provide /usr/bin/traceroute6 (traceroute6) in auto mode
update-alternatives: using /usr/bin/lft.db to provide /usr/bin/lft (lft) in auto mode
update-alternatives: using /usr/bin/traceproto.db to provide /usr/bin/traceproto (traceproto) in auto mode
update-alternatives: using /usr/sbin/tcptraceroute.db to provide /usr/sbin/tcptraceroute (tcptraceroute) in auto mode
Processing triggers for man-db (2.12.0-4build2) ...
```

```
douda@Douda: $ lspci
00:00.0 Host bridge: Intel Corporation 440FX - 82441FX PMC [Natoma] (rev 02)
00:01.0 ISA bridge: Intel Corporation 82371SB PIIX3 ISA [Natoma/Triton II]
00:01.1 IDE interface: Intel Corporation 82371AB/EB/MB PIIX4 IDE (rev 01)
00:02.0 VGA compatible controller: VMware SVGA II Adapter
00:03.0 Ethernet controller: Intel Corporation 82540EM Gigabit Ethernet Controller (rev 02)
00:04.0 System peripheral: InnoTek Systemberatung GmbH VirtualBox Guest Service
00:05.0 Multimedia audio controller: Intel Corporation 82801AA AC'97 Audio Controller (rev 01)
00:06.0 USB controller: Apple Inc. KeyLargo/Intrepid USB
00:07.0 Bridge: Intel Corporation 82371AB/EB/MB PIIX4 ACPI (rev 08)
00:0b.0 USB controller: Intel Corporation 82801FB/FBM/FR/FW/FRW (ICH6 Family) USB2 EHCI Controller
00:0d.0 SATA controller: Intel Corporation 82801HM/HEM (ICH8M/ICH8M-E) SATA Controller [AHCI mode] (rev 02)
```

```
douda@Douda:~$ ps aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.1  0.1  23248 14284 ?        Ss   06:44   0:20 /sbin/init splash
root           2  0.0  0.0      0     0 ?        S    06:44   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?        S    06:44   0:00 [pool_workqueue_release]
root           4  0.0  0.0      0     0 ?        I<   06:44   0:00 [kworker/R-rcu_g]
root           5  0.0  0.0      0     0 ?        I<   06:44   0:00 [kworker/R-rcu_p]
root           6  0.0  0.0      0     0 ?        I<   06:44   0:00 [kworker/R-slub_]
root           7  0.0  0.0      0     0 ?        I<   06:44   0:00 [kworker/R-netns]
root          12  0.0  0.0      0     0 ?        I<   06:44   0:00 [kworker/R-mm_pe]
root          13  0.0  0.0      0     0 ?        I    06:44   0:00 [rcu_tasks_kthread]
root          14  0.0  0.0      0     0 ?        I    06:44   0:00 [rcu_tasks_rude_kthread]
root          15  0.0  0.0      0     0 ?        I    06:44   0:00 [rcu_tasks_trace_kthread]
root          16  0.0  0.0      0     0 ?        S    06:44   0:14 [ksoftirqd/0]
root          17  0.1  0.0      0     0 ?        I    06:44   0:31 [rcu_preempt]
root          18  0.0  0.0      0     0 ?        S    06:44   0:01 [migration/0]
root          19  0.0  0.0      0     0 ?        S    06:44   0:00 [idle_inject/0]
root          20  0.0  0.0      0     0 ?        S    06:44   0:00 [cpuhp/0]
root          21  0.0  0.0      0     0 ?        S    06:44   0:00 [cpuhp/1]
root          22  0.0  0.0      0     0 ?        S    06:44   0:00 [idle_inject/1]
root          23  0.0  0.0      0     0 ?        S    06:44   0:02 [migration/1]
```

```
douda@Douda:~$ free -h
               total        used        free      shared  buff/cache   available
Mem:            10Gi       2.4Gi       6.4Gi        62Mi       2.4Gi       8.5Gi
Swap:             0B          0B          0B
```



En conclusion, ce TD me permet d'apprendre et de comprendre les concepts avancés de programmation en bash, tels que les fonctions, les opérations logiques, les graphes et les bases de données.