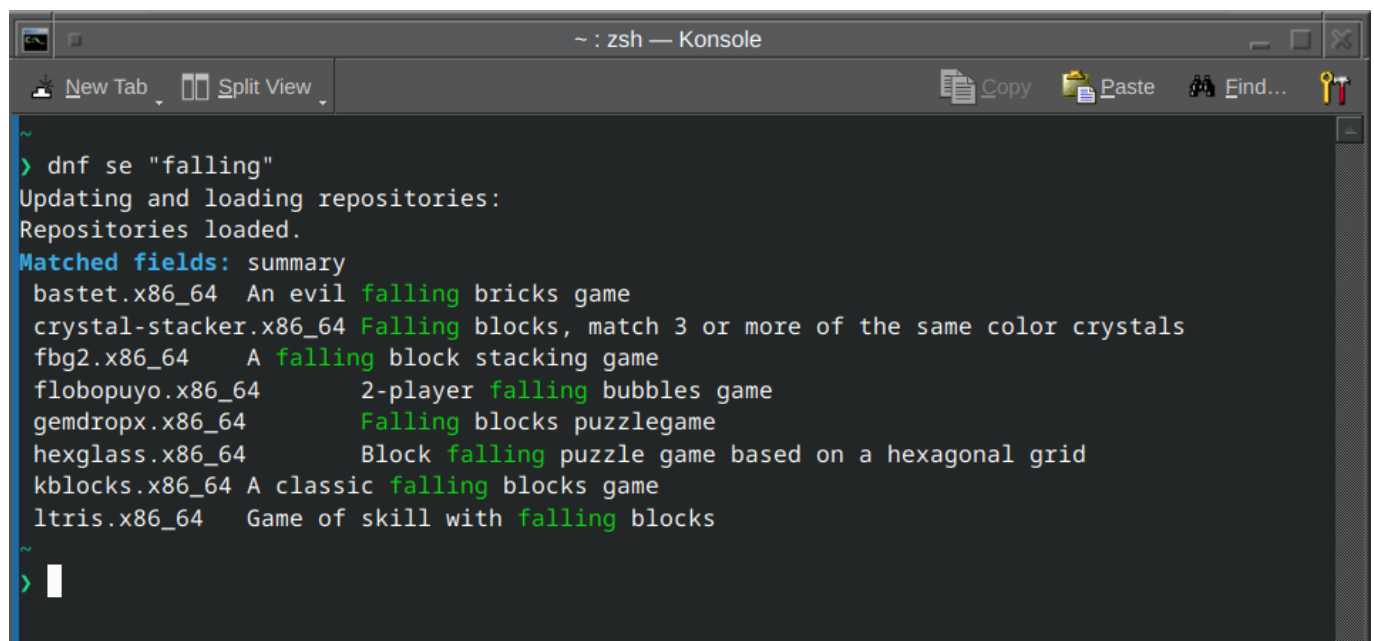# Lab 4 Submission

*This lab was completed in Fedora Linux using the DNF package manager instead of APT.*

## Using DNF

### q1.1

Searched for 'falling' games as Tetris-specific packages are limited in Fedora repos. Results demonstrate DNF search functionality.



### q1.2

```
 ~ : zsh — Konsole                                                    _ □ ✕
  New Tab    Split View                          Copy   Paste   Find...
~
> sudo dnf remove bastet && sudo dnf install ltris kblocks
Package                    Arch      Version                Repository          Size
Removing:
 bastet                    x86_64    0.43.2-11.fc42          fedora          231.8 KiB

Transaction Summary:
 Removing:            1 package

After this operation, 232 KiB will be freed (install 0 B, remove 232 KiB).
Is this ok [y/N]: y
Running transaction
[1/2] Prepare transaction                           100% |   3.0   B/s |   1.0   B | 00m00s
[2/2] Removing bastet-0:0.43.2-11.fc42.x86_64       100% |  31.0   B/s |  13.0   B | 00m00s
Complete!
Updating and loading repositories:
Repositories loaded.
Package                    Arch      Version                Repository          Size
Installing:
 kblocks                   x86_64    25.08.2-1.fc42          updates          2.8 MiB
 ltris                     x86_64    1.3.2-2.fc42            rpmfusion-free   5.2 MiB
Installing dependencies:
 SDL_mixer                 x86_64    1.2.12-34.fc42          fedora         203.4 KiB
 libmikmod                 x86_64    3.3.13-1.fc42           updates        400.8 KiB

Transaction Summary:
 Installing:          4 packages

Total size of inbound packages is 4 MiB. Need to download 4 MiB.
After this operation, 9 MiB extra will be used (install 9 MiB, remove 0 B).
Is this ok [y/N]: y
[1/4] SDL_mixer-0:1.2.12-34.fc42.x86_64          100% | 211.7 KiB/s |  85.3 KiB | 00m00s
[2/4] libmikmod-0:3.3.13-1.fc42.x86_64           100% | 160.9 KiB/s | 166.8 KiB | 00m01s
[3/4] kblocks-0:25.08.2-1.fc42.x86_64            100% |   1.5 MiB/s |   2.3 MiB | 00m02s
[4/4] ltris-0:1.3.2-2.fc42.x86_64               100% | 791.6 KiB/s |   1.2 MiB | 00m02s
--------------------------------------------------------------------------------
[4/4] Total                                      100% |   1.8 MiB/s |   3.7 MiB | 00m02s
Running transaction
[1/6] Verify package files                       100% | 333.0   B/s |   4.0   B | 00m00s
[2/6] Prepare transaction                        100% |   9.0   B/s |   4.0   B | 00m00s
[3/6] Installing libmikmod-0:3.3.13-1.fc42.x86_64  100% |  49.2 MiB/s | 402.8 KiB | 00m00s
[4/6] Installing SDL_mixer-0:1.2.12-34.fc42.x86_64 100% |  14.4 MiB/s | 205.8 KiB | 00m00s
```

Used ltris and kblocks as available block-game alternatives to demonstrate install/remove operations, since tetris was not found in any matched fields.

q1.3

```
~ : zsh — Konsole                                          _ □ ✕
   New Tab    Split View                        Copy    Paste    Find...   

~
❯ sudo dnf remove ltris
Package                       Arch    Version                    Repository              Size
Removing:
 ltris                        x86_64  1.3.2-2.fc42               rpmfusion-free       5.2 MiB
Removing unused dependencies:
 SDL_mixer                    x86_64  1.2.12-34.fc42             fedora             203.4 KiB
 libmikmod                    x86_64  3.3.13-1.fc42              updates            400.8 KiB

Transaction Summary:
 Removing:            3 packages

After this operation, 6 MiB will be freed (install 0 B, remove 6 MiB).
Is this ok [y/N]: y
Running transaction
[1/4] Prepare transaction                           100% |   9.0   B/s |   3.0   B |  00m00s
[2/4] Removing ltris-0:1.3.2-2.fc42.x86_64          100% |   1.8 KiB/s |  47.0   B |  00m00s
[3/4] Removing SDL_mixer-0:1.2.12-34.fc42.x86_64    100% |   1.2 KiB/s |  16.0   B |  00m00s
[4/4] Removing libmikmod-0:3.3.13-1.fc42.x86_64     100% |  33.0   B/s |  13.0   B |  00m00s
Complete!
~ took 4s
```

q1.4

```
~ : zsh — Konsole                                          _ □ ✕
   New Tab    Split View                        Copy    Paste    Find...   

~
❯ sudo dnf clean all && sudo dnf autoremove
Removed 68 files, 48 directories (total of 98 MiB). 0 errors occurred.
Package                       Arch    Version                    Repository              Size
Removing:
 intel-media-driver           x86_64  25.2.6-1.fc42              rpmfusion-nonfree-upd  37.4 MiB
 libfreeaptx                  x86_64  0.2.2-1.fc42               rpmfusion-free         53.2 KiB
 libva-intel-driver           x86_64  2.4.1^20241027gitd30e013-1 rpmfusion-free          7.9 MiB
 pipewire-codec-aptx          x86_64  1.4.8-1.fc42               rpmfusion-free-update  45.1 KiB

Transaction Summary:
 Removing:            4 packages

After this operation, 45 MiB will be freed (install 0 B, remove 45 MiB).
Is this ok [y/N]: y
Running transaction
[1/5] Prepare transaction                           100% |  12.0   B/s |   4.0   B |  00m00s
[2/5] Removing pipewire-codec-aptx-0:1.4.8-1.fc42.x 100% | 750.0   B/s |   6.0   B |  00m00s
[3/5] Removing libfreeaptx-0:0.2.2-1.fc42.x86_64    100% |   3.4 KiB/s |   7.0   B |  00m00s
[4/5] Removing libva-intel-driver-0:2.4.1^20241027g 100% |   2.1 KiB/s |  11.0   B |  00m00s
[5/5] Removing intel-media-driver-0:25.2.6-1.fc42.x 100% |  25.0   B/s |   9.0   B |  00m00s
Complete!
~ took 16s
❯ 
```
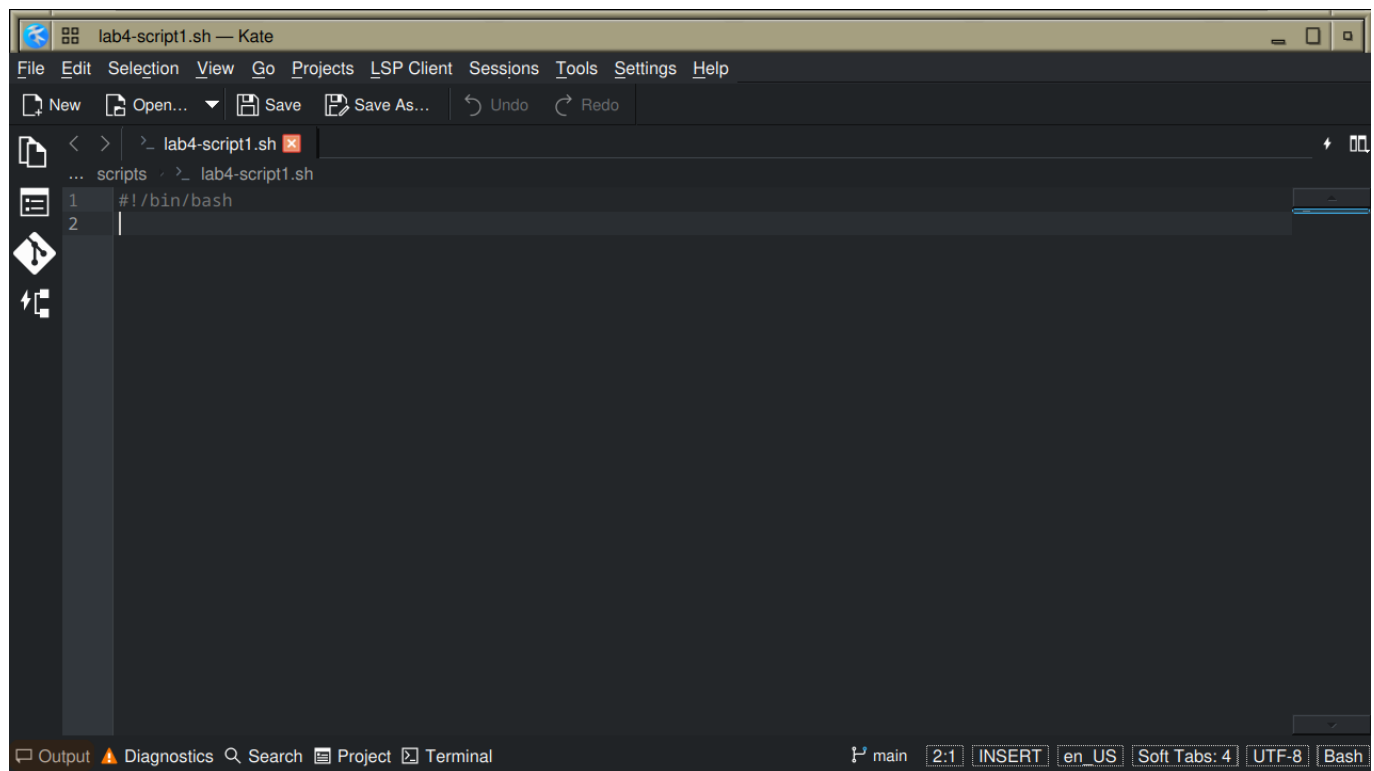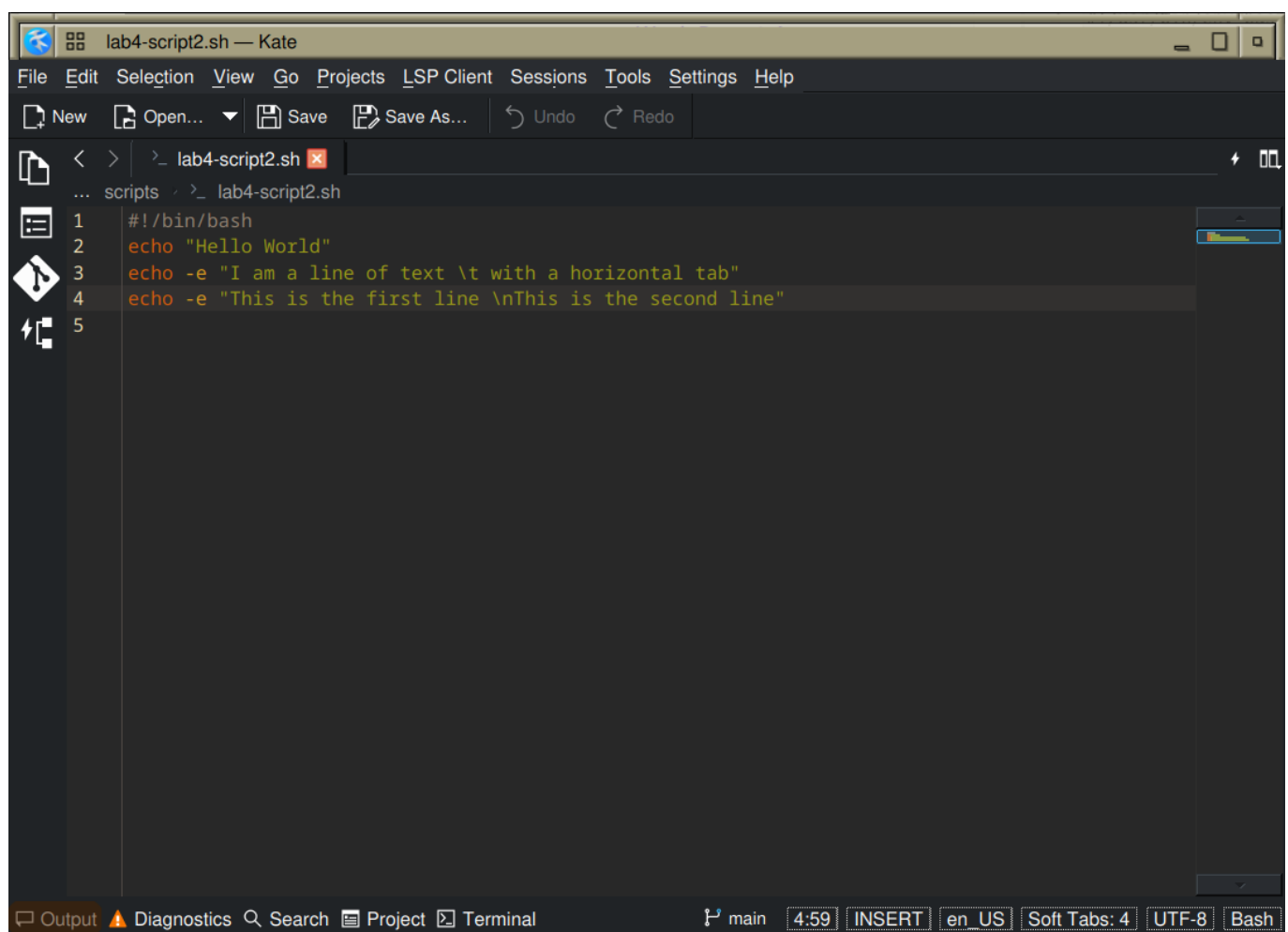
dnf does not ship with autoclean and autopurge
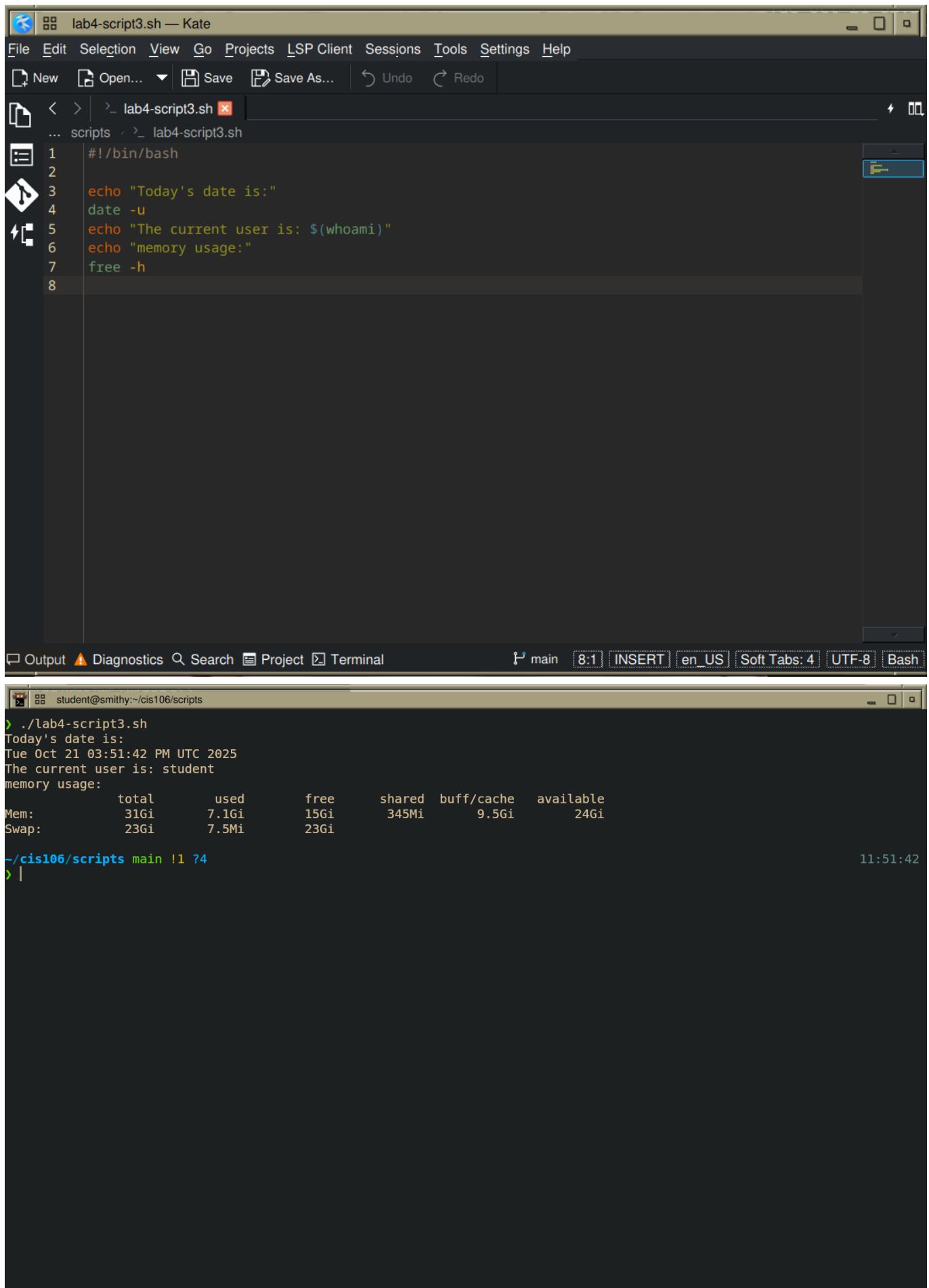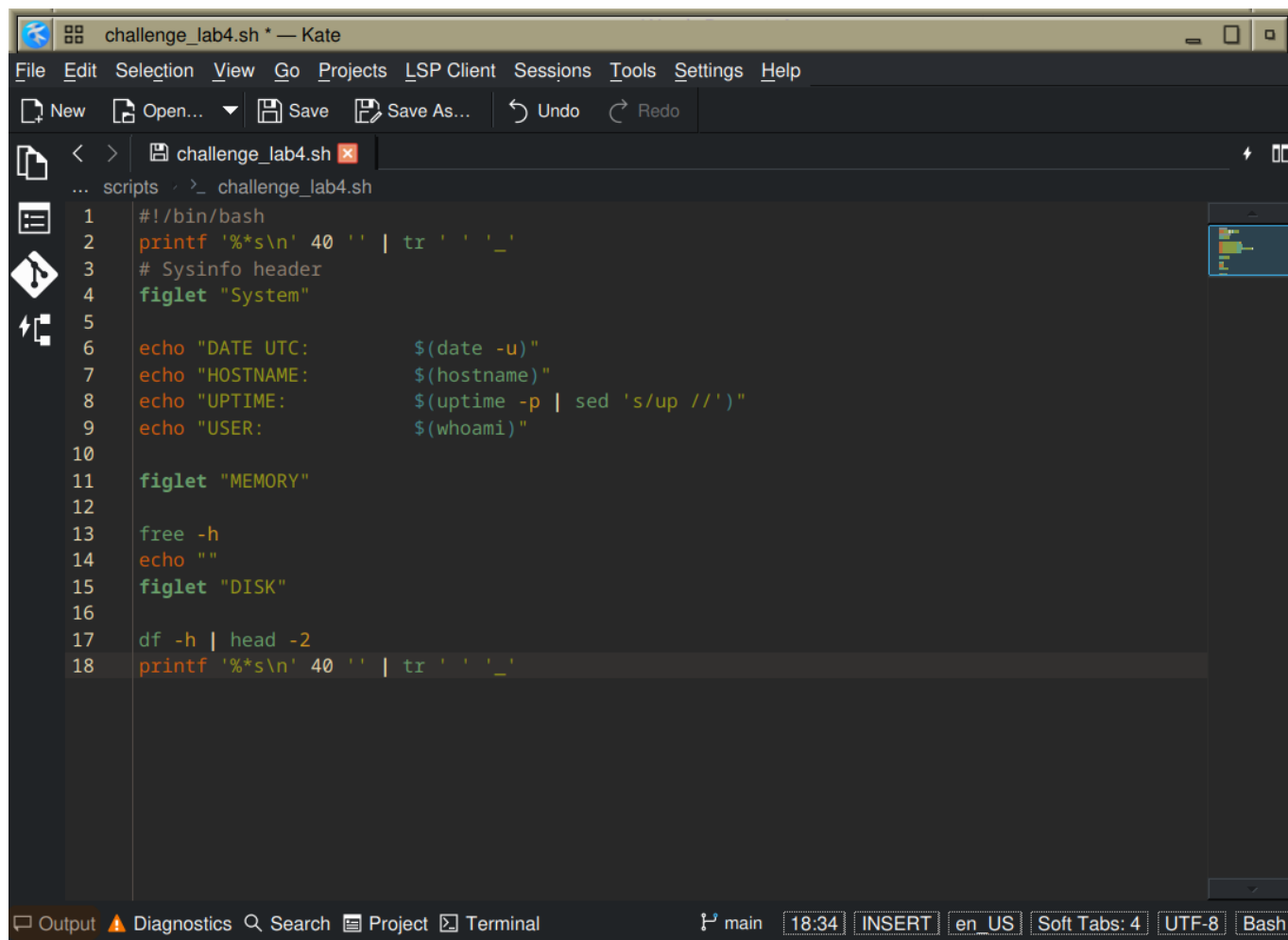
dnf clean all cleans the cache.

q2.1

q2.2



q2.3

```
#!/bin/bash

echo "Today's date is:"
date -u
echo "The current user is: $(whoami)"
echo "memory usage:"
free -h
```

```
> ./lab4-script3.sh
Today's date is:
Tue Oct 21 03:51:42 PM UTC 2025
The current user is: student
memory usage:
               total        used        free      shared  buff/cache   available
Mem:            31Gi       7.1Gi        15Gi       345Mi       9.5Gi        24Gi
Swap:           23Gi       7.5Mi        23Gi
~/cis106/scripts main !1 ?4                                                  11:51:42
>
```
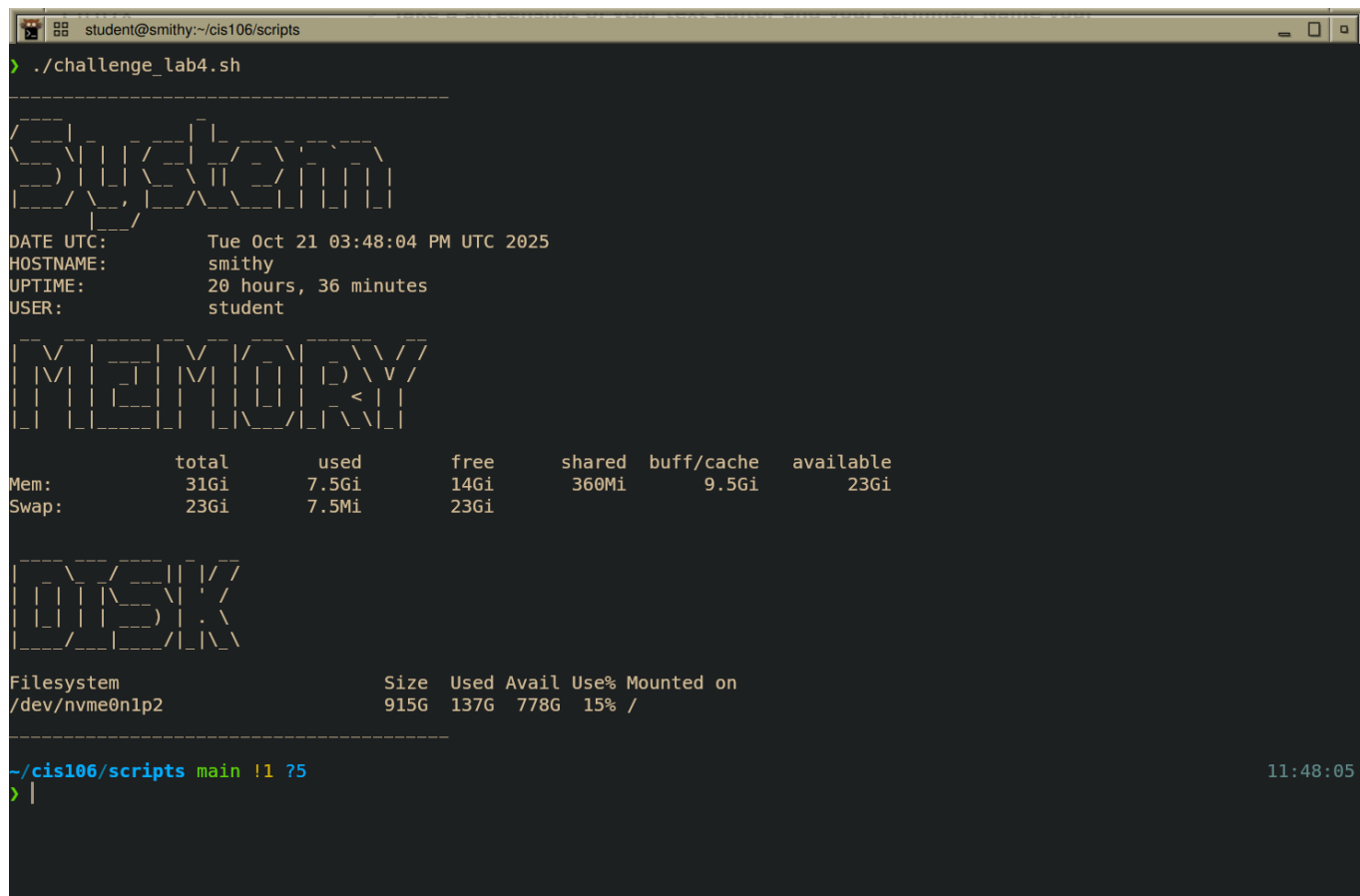
Challenge Question

```bash
#!/bin/bash
printf '%*s\n' 40 '' | tr ' ' '_'
# Sysinfo header
figlet "System"

echo "DATE UTC:        $(date -u)"
echo "HOSTNAME:        $(hostname)"
echo "UPTIME:          $(uptime -p | sed 's/up //')"
echo "USER:            $(whoami)"

figlet "MEMORY"

free -h
echo ""
figlet "DISK"

df -h | head -2
printf '%*s\n' 40 '' | tr ' ' '_'
```

Kate editor: challenge_lab4.sh *
main  18:34  INSERT  en_US  Soft Tabs: 4  UTF-8  Bash

Terminal — student@smithy:~/cis106/scripts

```
> ./challenge_lab4.sh
_____

  ____            _
 / ___| _   _ ___| |_ ___ _ __ ___
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  ___) | |_| \__ \ ||  __/ | | | | |
 |____/ \__, |___/\__\___|_| |_| |_|
        |___/
DATE UTC:        Tue Oct 21 03:48:04 PM UTC 2025
HOSTNAME:        smithy
UPTIME:          20 hours, 36 minutes
USER:            student

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|_|  |_|_____|_|  |_|\___/|_| \_\|_|

            total     used     free   shared  buff/cache  available
Mem:         31Gi    7.5Gi    14Gi    360Mi       9.5Gi        23Gi
Swap:        23Gi    7.5Mi    23Gi

  ____ ___ ____ _  __
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Filesystem              Size  Used Avail Use% Mounted on
/dev/nvme0n1p2          915G  137G  778G  15% /
_____

~/cis106/scripts main !1 ?5                                          11:48:05
>
```