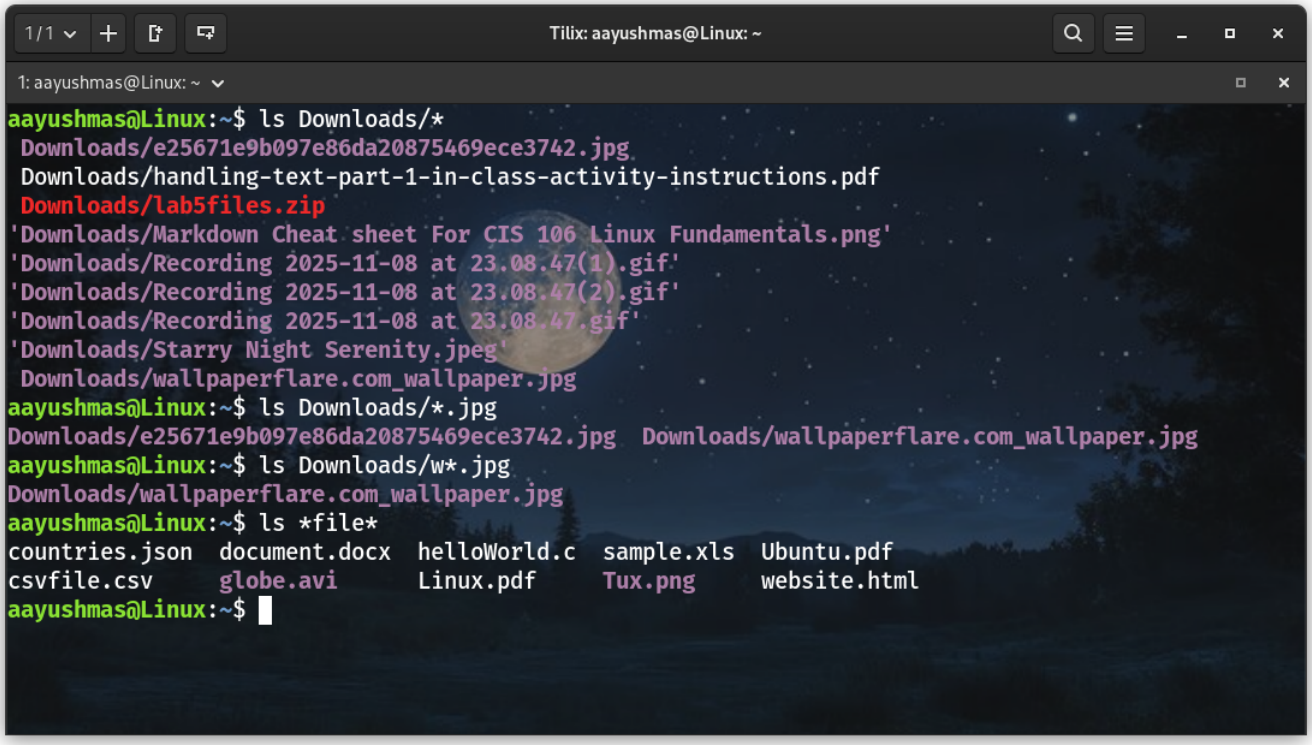
Notes 7

Wildcard

- **A wildcard** is a symbol used to replace or represent one or more characters in a file name.
- **There are 3 wildcards:**
    - `*` : matches zero to any number of characters
    - `?` : matches only 1 character
    - `[]` : matches 1 character from as given set

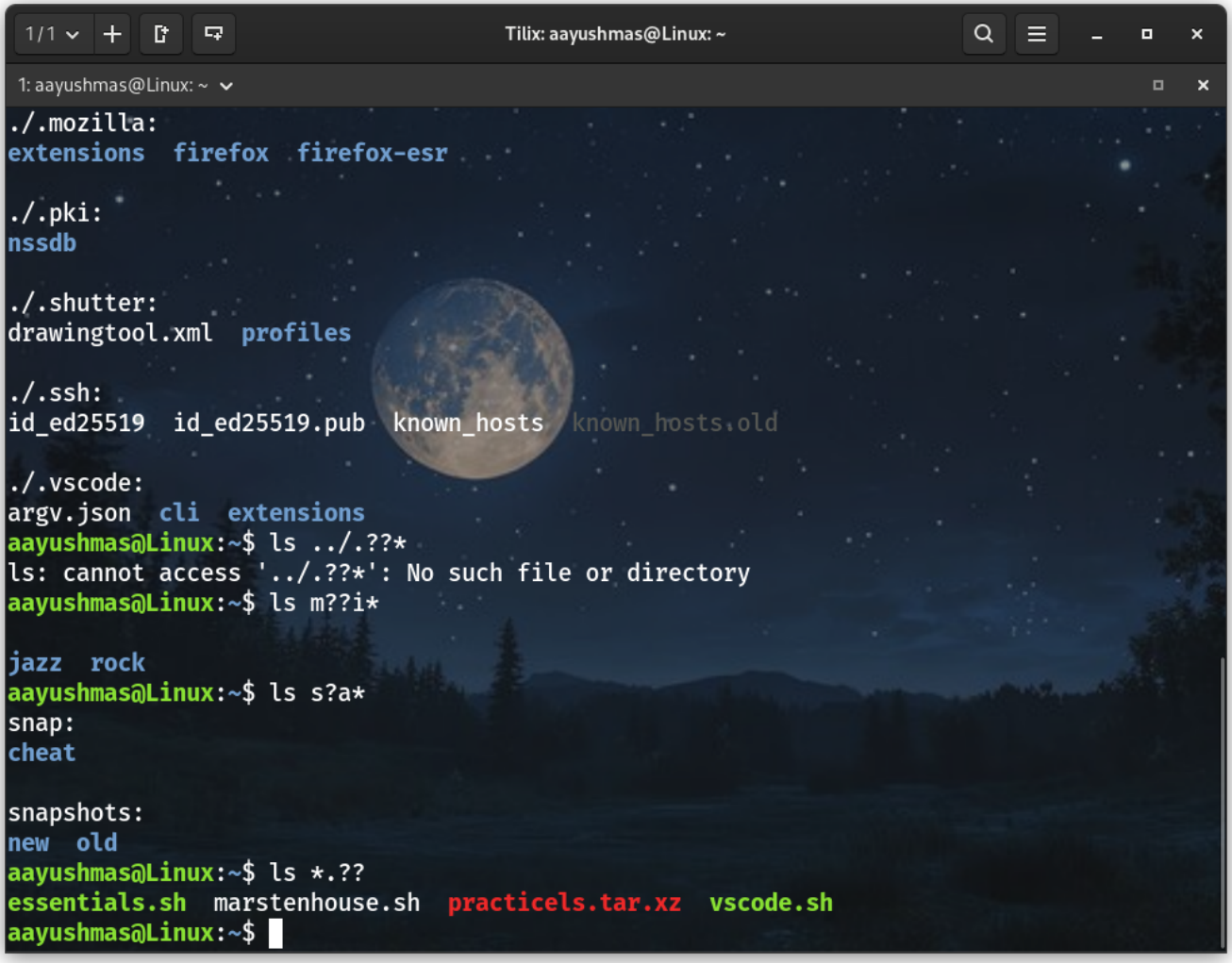
The asterisk (*) Wildcard

- The asterisk (*) matches **zero or more characters** in a filename.
- **Examples:**
    - List all the files in a given directory
        - `ls Downloads/*`
    - List all the text files in a gib=ven directory
        - `ls Downloads/*.jpg`
    - List all the text files in a given directory that start with letter f
        - `ls Downloads/w*.jpg`
    - List all the files that contain the word file in the name
        - `ls *file*`
    - Move all the files one directory to another
        - `mv ~/Downloads/Nature/* ~/Pictures/wallpapers/`
    - Copy specific files based solely on their file extension
        - `cp ~/Downloads/home/*.pdf ~/Documents/*.txt ~/Projects/school/`
    - Remove specific files
        - `rm ~/Downloads,demo*.exe ~/Videos/*music*.avi`
    - Move specific files from one directory to another
        - `mv Downloads/Movies/{*.png,*.gif} Downloads/Movies/MCU`



The ? Wildcard

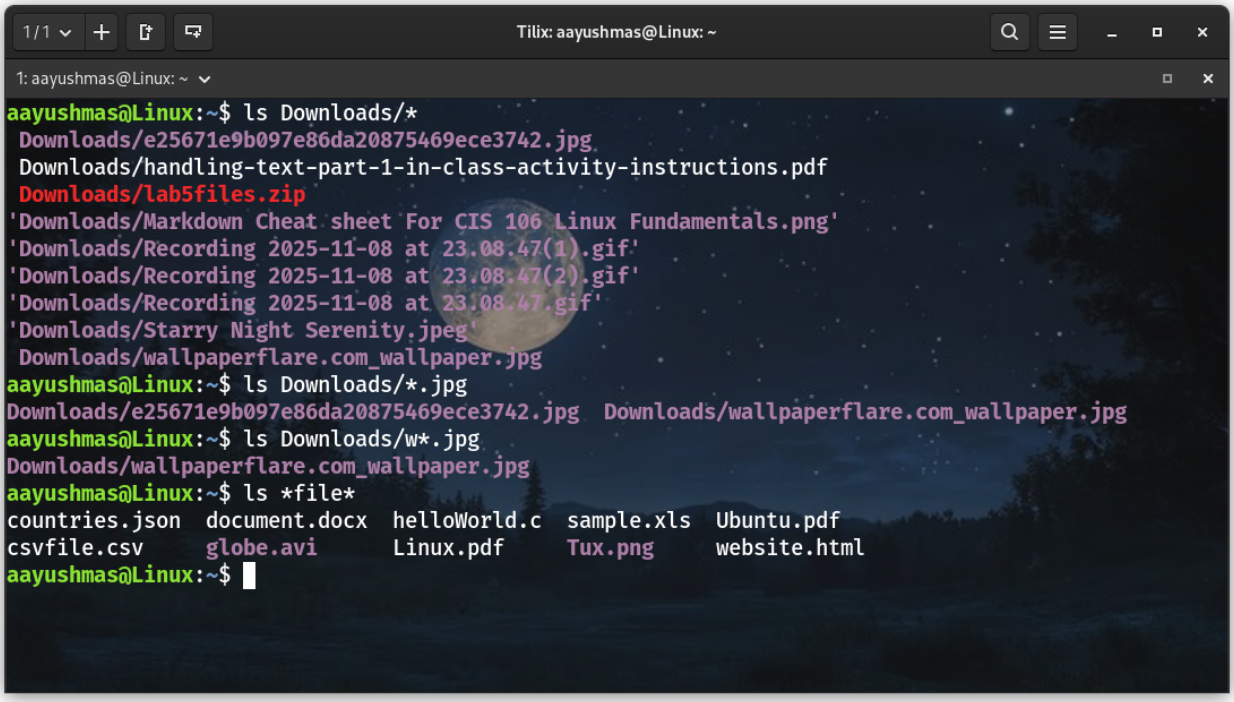
- The ? wildcard meta-character matches **precisely one character.**
- The ? wildcard proves very useful when working with hidden files(dot files).
- To list all hidden files use: ls.??* which witxtll match all files that start with a. or .. and have any character after it.
- **Examples:**
  - List all the hidden files in the current working directory
    - `ls ./.??*`
  - List all the hidden files in the parent directory
    - `ls ../.??*`
  - List all the files that have 2 characters in the file name between letters
- To list all hidden files use: ls.??* which witxtll match all files that start with a. or .. and have any character after it.
- **Examples:** m and i
  - `ls m??i*`
  - List all the files that have a single character between letters s and a
    - `ls s?a*`
  - List all the files with a 2 letter file extension
    - `ls *.??`



The [] Wildcard

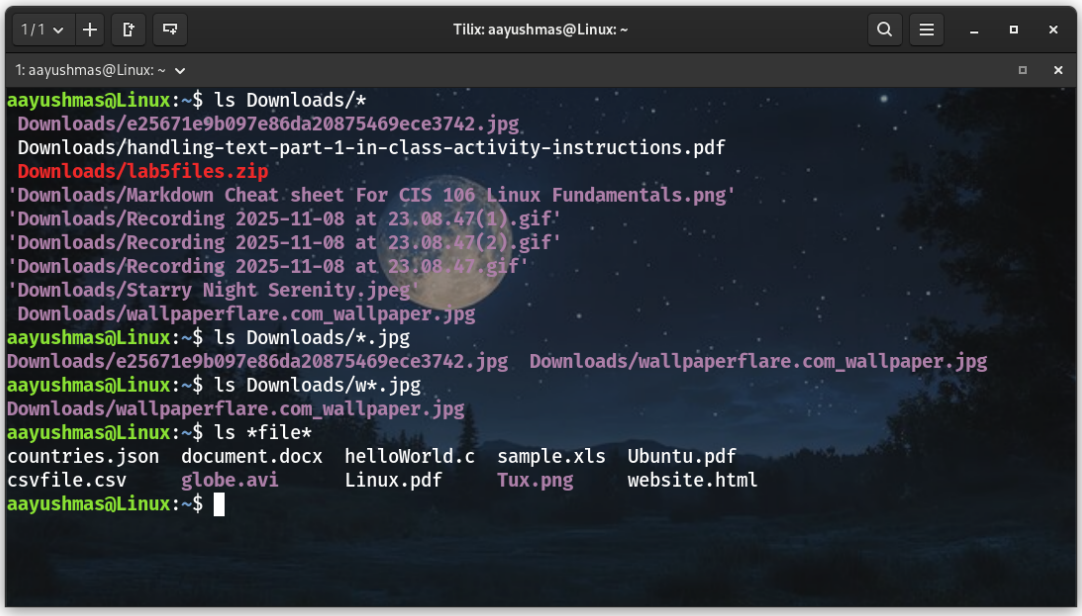
- The brackets wildcard matches a **single character in a range.**
- The brackets wildcard use the exclamation mark to reverse the match.

- For example: match everything except vowels[!aeoiu] or any character



  except numbers[!0-9]
- **Examples:**
  - To match all files that have a vowel after letter m:
    - `ls m[aeiou]*`
  - To match all files that do not have a vowel after letter m:
    - `ls m[!aeiou]*`
  - To match all files that have a range of letters after l:
    - `ls l[a-z]*`
  - To match all files whose name has at least one number:
    - `ls *[0-9]*`
  - To match all the files whose name does not have a number in their file name:
    - `ls *[!0-9].*`
  - To match all files whose name begins with a letter from a-p or start with letter s or c:
    - `ls [a-psc]*`
  - To match all files whose name begins with any of these two sets of characters: letters from a-f or p-z:
    - `ls [a-fp-z]*`
  - To match all files whose name begins with any 3 combination of numbers and the current user's username:

- `ls [0-9][0-9][0-9]$USER`



Brace Expansion

- **Brace expansion** is a feature of the bash shell that generates argument strings.
- Those strings can be used by commands to operate on files.
- They does not make calls to the operating system like wildcards do.
- They simply generate file names based on a given pattern.

How to use Brace Expansion to create entire directory structures.

- Start with an open brace
- With no spaces, type your string separating entries by command
- Close the brace
- **Examples:**
  - Create 3 different files with the same name but different file extensions
    - `touch file.{md,txt,rtf}`
  - Create 10 files in a range from 0 to 9
    - `touch file{0..9}.txt`
  - Remove specific files that start with a given keyword
    - `rm image_*{01..08}*_camera.{png,jpg}`
  - Create an entire directory tree in a single command(1 level deep)
    - `mkdir -pv project_venus/{code,source,dataset}/new`
  - Create an entire directory tree in a single command(2 level deep)
    - `mkdir -pv project_jupiter/site/{old,new}/{code/{scripts,markup},assets/{imgs,mp3,mp4}}`