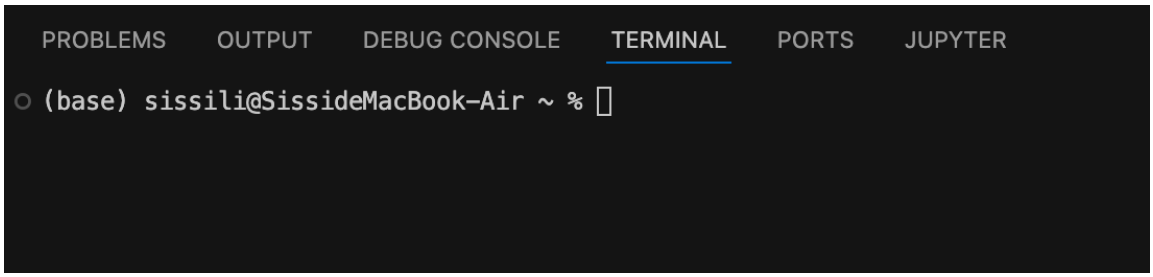
Q1.

Open your terminal or command prompt.

Answer:



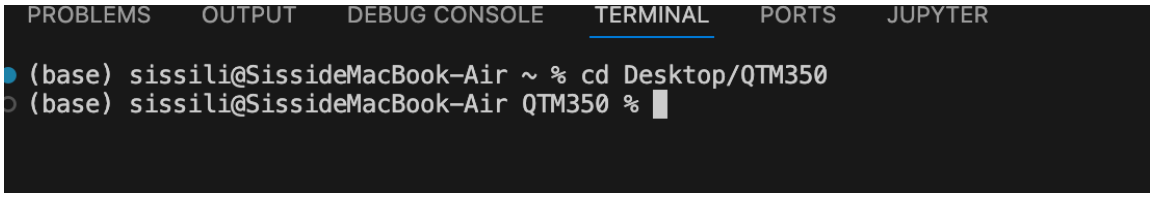
Q2.

Navigate to a directory where you want to create a new folder for this assignment using the `cd` command.

In [3]:
```
!cd Desktop/QTM350
```

```
28.02s - pydevd: Sending message related to process being replaced timed-out
after 5 seconds
zsh:cd:1: no such file or directory: Desktop/QTM350
```

Answer:



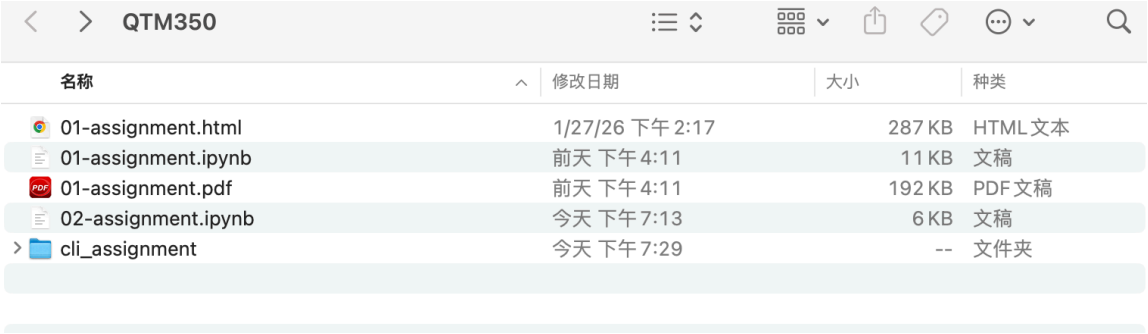
Q3.

Create a new directory called "cli_assignment" using the `mkdir` command.

In [4]:
```
!mkdir cli_assignment
```

```
170.77s - pydevd: Sending message related to process being replaced timed-ou
t after 5 seconds
```

Answer:

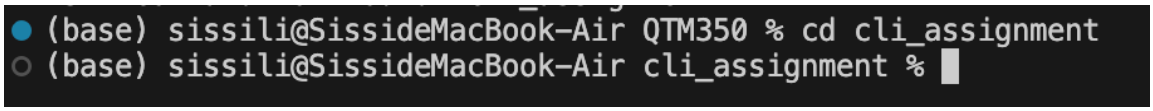


Q4.

Change into the "cli_assignment" directory using the `cd` command.

In [ ]:
```
!cd cli_assignment
```

Answer:



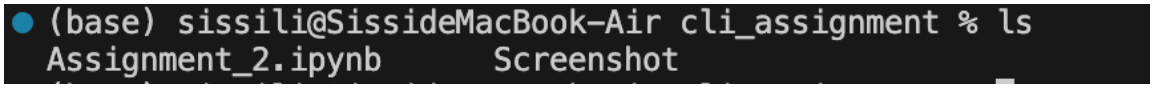
Q5a.

Use the `ls` command to list the contents of the current directory. Take a screenshot of the output.

In [5]:
```
!ls
```

```
414.04s - pydevd: Sending message related to process being replaced timed-ou
t after 5 seconds
Assignment_2.ipynb Screenshot
```

Answer:



Q5b.

Create a new file called "README.md" using the `touch` command. Use the `ls` command again to verify that the file was created. Take a screenshot of the output.

In [6]:
```
!touch README.md
!ls
```

```
527.54s - pydevd: Sending message related to process being replaced timed-ou
t after 5 seconds
532.90s - pydevd: Sending message related to process being replaced timed-ou
t after 5 seconds
Assignment_2.ipynb README.md          Screenshot
```

Answer:

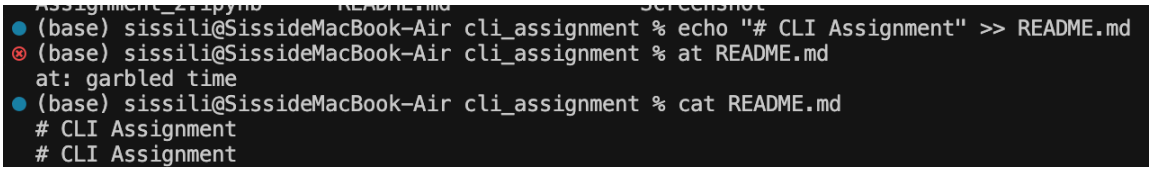
Q5c.

Use the `echo` command to append the text "# CLI Assignment" to the "README.md" file. Use the `cat` command to display the contents of the file. Take a screenshot of the output.

In [7]:
```
!echo "# CLI Assignment" >> README.md
!cat README.md
```

```
642.42s - pydevd: Sending message related to process being replaced timed-ou
t after 5 seconds
647.75s - pydevd: Sending message related to process being replaced timed-ou
t after 5 seconds
# CLI Assignment
# CLI Assignment
```

Answer:

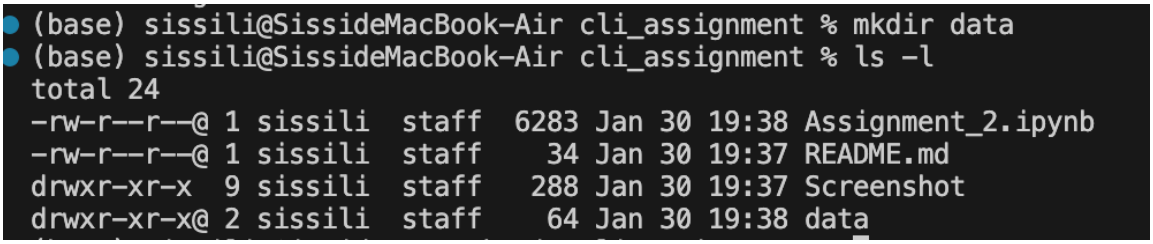


Q5d.

Create a new directory called "data" inside the "cli_assignment" directory using the `mkdir` command. Use the `ls` command with the `-l` flag to display the contents of the "cli_assignment" directory in long format. Take a screenshot of the output.

In [ ]:
```
!mkdir data
!ls -l
```

Answer:



Q5e.

Use the `man` command to display the manual page for the `ls` command. Scroll through the manual page and find the flag that allows you to display hidden files. Use the `ls` command with this flag to display all files, including hidden files, in the current directory. Take a screenshot of the output.

In [8]:
```
!man ls
!ls -a
```

```
1033.12s - pydevd: Sending message related to process being replaced timed-o
ut after 5 seconds
Unknown locale, assuming C
LS(1)                       General Commands Manual                       LS
(1)

NAME
     ls — list directory contents

SYNOPSIS
     ls [-@ABCFGHILOPRSTUWabcdefghiklmnopqrstuvwxy1%,] [--color=when]
        [-D format] [file ...]

DESCRIPTION
     For each operand that names a file of a type other than directory, ls
     displays its name as well as any requested, associated information.  Fo
r
     each operand that names a file of type directory, ls displays the names
     of files contained within that directory, as well as any requested,
     associated information.

     If no operands are given, the contents of the current directory are
     displayed.  If more than one operand is given, non-directory operands a
re
     displayed first; directory and non-directory operands are sorted
     separately and in lexicographical order.

     The following options are available:

     -@      Display extended attribute keys and sizes in long (-l) output.

     -A      Include directory entries whose names begin with a dot (‘.’)
             except for . and ...  Automatically set for the super-user unle
ss
             -I is specified.

     -B      Force printing of non-printable characters (as defined by
             ctype(3) and current locale settings) in file names as \xxx,
             where xxx is the numeric value of the character in octal.  This
             option is not defined in IEEE Std 1003.1-2008 (“POSIX.1”).

     -C      Force multi-column output; this is the default when output is t
o
             a terminal.

     -D format
             When printing in the long (-l) format, use format to format the
             date and time output.  The argument format is a string used by
             strftime(3).  Depending on the choice of format string, this ma
y
             result in a different number of columns in the output.  This
             option overrides the -T option.  This option is not defined in
             IEEE Std 1003.1-2008 (“POSIX.1”).

     -F      Display a slash (‘/’) immediately after each pathname that is a
             directory, an asterisk (‘*’) after each that is executable, an
```

```
at
                sign (‘@’) after each symbolic link, an equals sign (‘=’) after
                each socket, a percent sign (‘%’) after each whiteout, and a
                vertical bar (‘|’) after each that is a FIFO.

        -G      Enable colorized output.  This option is equivalent to defining
                CLICOLOR or COLORTERM in the environment and setting
                --color=auto.  (See below.)  This functionality can be compiled
                out by removing the definition of COLORLS.  This option is not
                defined in IEEE Std 1003.1-2008 (“POSIX.1”).

        -H      Symbolic links on the command line are followed.  This option i
s
                assumed if none of the -F, -d, or -l options are specified.

        -I      Prevent -A from being automatically set for the super-user.  Th
is
                option is not defined in IEEE Std 1003.1-2008 (“POSIX.1”).

        -L      Follow all symbolic links to final target and list the file or
                directory the link references rather than the link itself.  Thi
s
                option cancels the -P option.

        -O      Include the file flags in a long (-l) output.  This option is
                incompatible with IEEE Std 1003.1-2008 (“POSIX.1”).  See
                chflags(1) for a list of file flags and their meanings.

        -P      If argument is a symbolic link, list the link itself rather tha
n
                the object the link references.  This option cancels the -H and
                -L options.

        -R      Recursively list subdirectories encountered.

        -S      Sort by size (largest file first) before sorting the operands i
n
                lexicographical order.

        -T      When printing in the long (-l) format, display complete time
                information for the file, including month, day, hour, minute,
                second, and year.  The -D option gives even more control over t
he
                output format.  This option is not defined in IEEE Std
                1003.1-2008 (“POSIX.1”).

        -U      Use time when file was created for sorting or printing.  This
                option is not defined in IEEE Std 1003.1-2008 (“POSIX.1”).

        -W      Display whiteouts when scanning directories.  This option is no
t
                defined in IEEE Std 1003.1-2008 (“POSIX.1”).

        -a      Include directory entries whose names begin with a dot (‘.’).

        -b      As -B, but use C escape codes whenever possible.  This option i
```

```
s
              not defined in IEEE Std 1003.1-2008 (“POSIX.1”).

       -c     Use time when file status was last changed for sorting or
              printing.

       --color=when
              Output colored escape sequences based on when, which may be set
              to either always, auto, or never.

              always will make ls always output color.  If TERM is unset or s
et
              to an invalid terminal, then ls will fall back to explicit ANSI
              escape sequences without the help of termcap(5).  always is the
              default if --color is specified without an argument.

              auto will make ls output escape sequences based on termcap(5),
              but only if stdout is a tty and either the -G flag is specified
              or the COLORTERM environment variable is set and not empty.

              never will disable color regardless of environment variables.
              never is the default when neither --color nor -G is specified.

              For compatibility with GNU coreutils, ls supports yes or force
as
              equivalent to always, no or none as equivalent to never, and tt
y
              or if-tty as equivalent to auto.

       -d     Directories are listed as plain files (not searched recursivel
y).

       -e     Print the Access Control List (ACL) associated with the file, i
f
              present, in long (-l) output.

       -f     Output is not sorted.  This option turns on -a.  It also negate
s
              the effect of the -r, -S and -t options.  As allowed by IEEE St
d
              1003.1-2008 (“POSIX.1”), this option has no effect on the -d, -
l,
              -R and -s options.

       -g     This option has no effect.  It is only available for
              compatibility with 4.3BSD, where it was used to display the gro
up
              name in the long (-l) format output.  This option is incompatib
le
              with IEEE Std 1003.1-2008 (“POSIX.1”).

       -h     When used with the -l option, use unit suffixes: Byte, Kilobyt
e,
              Megabyte, Gigabyte, Terabyte and Petabyte in order to reduce th
e
              number of digits to four or fewer using base 2 for sizes.  This
```

```
option is not defined in IEEE Std 1003.1-2008 (“POSIX.1”).

     -i      For each file, print the file's file serial number (inode
             number).

     -k      This has the same effect as setting environment variable
             BLOCKSIZE to 1024, except that it also nullifies any -h options
             to its left.

     -l      (The lowercase letter “ell”.) List files in the long format, as
             described in the The Long Format subsection below.

     -m      Stream output format; list files across the page, separated by
             commas.

     -n      Display user and group IDs numerically rather than converting t
o
             a user or group name in a long (-l) output.  This option turns
on
             the -l option.

     -o      List in long format, but omit the group id.

     -p      Write a slash (‘/’) after each filename if that file is a
             directory.

     -q      Force printing of non-graphic characters in file names as the
             character ‘?’; this is the default when output is to a termina
l.

     -r      Reverse the order of the sort.

     -s      Display the number of blocks used in the file system by each
             file.  Block sizes and directory totals are handled as describe
d
             in The Long Format subsection below, except (if the long format
             is not also requested) the directory totals are not output when
             the output is in a single column, even if multi-column output i
s
             requested.  (-l) format, display complete time information for
             the file, including month, day, hour, minute, second, and year.
             The -D option gives even more control over the output format.
             This option is not defined in IEEE Std 1003.1-2008 (“POSIX.1”).

     -t      Sort by descending time modified (most recently modified firs
t).
             If two files have the same modification timestamp, sort their
             names in ascending lexicographical order.  The -r option revers
es
             both of these sort orders.

             Note that these sort orders are contradictory: the time sequenc
e
             is in descending order, the lexicographical sort is in ascendin
g
             order.  This behavior is mandated by IEEE Std 1003.2 (“POSIX.
```

```
2”).
              This feature can cause problems listing files stored with
              sequential names on FAT file systems, such as from digital
              cameras, where it is possible to have more than one image with
              the same timestamp.  In such a case, the photos cannot be liste
d
              in the sequence in which they were taken.  To ensure the same
              sort order for time and for lexicographical sorting, set the
              environment variable LS_SAMESORT or use the -y option.  This
              causes ls to reverse the lexicographical sort order when sortin
g
              files with the same modification timestamp.

      -u      Use time of last access, instead of time of last modification o
f
              the file for sorting (-t) or long printing (-l).

      -v      Force unedited printing of non-graphic characters; this is the
              default when output is not to a terminal.

      -w      Force raw printing of non-printable characters.  This is the
              default when output is not to a terminal.  This option is not
              defined in IEEE Std 1003.1-2001 (“POSIX.1”).

      -x      The same as -C, except that the multi-column output is produced
              with entries sorted across, rather than down, the columns.

      -y      When the -t option is set, sort the alphabetical output in the
              same order as the time output.  This has the same effect as
              setting LS_SAMESORT.  See the description of the -t option for
              more details.  This option is not defined in IEEE Std 1003.1-20
01
              (“POSIX.1”).

      -%      Distinguish dataless files and directories with a '%' character
              in long (-l) output, and don't materialize dataless directories
              when listing them.

      -1      (The numeric digit “one”.) Force output to be one entry per lin
e.
              This is the default when output is not to a terminal.

      -,      (Comma) When the -l option is set, print file sizes grouped and
              separated by thousands using the non-monetary separator returne
d
              by localeconv(3), typically a comma or period.  If no locale is
              set, or the locale does not have a non-monetary separator, this
              option has no effect.  This option is not defined in IEEE Std
              1003.1-2001 (“POSIX.1”).

      The -1, -C, -x, and -l options all override each other; the last one
      specified determines the format used.

      The -c, -u, and -U options all override each other; the last one
      specified determines the file time used.
```

```
     The -S and -t options override each other; the last one specified
     determines the sort order used.

     The -B, -b, -w, and -q options all override each other; the last one
     specified determines the format used for non-printable characters.

     The -H, -L and -P options all override each other (either partially or
     fully); they are applied in the order specified.

     By default, ls lists one entry per line to standard output; the
     exceptions are to terminals or when the -C or -x options are specified.

     File information is displayed with one or more (blank)s separating the
     information associated with the -i, -s, and -l options.

   The Long Format
     If the -l option is given, the following information is displayed for
     each file: file mode, number of links, owner name, group name, number o
f
     bytes in the file, abbreviated month, day-of-month file was last
     modified, hour file last modified, minute file last modified, and the
     pathname.  If the file or directory has extended attributes, the
     permissions field printed by the -l option is followed by a '@'
     character.  Otherwise, if the file or directory has extended security
     information (such as an access control list), the permissions field
     printed by the -l option is followed by a '+' character.  If the -%
     option is given, a '%' character follows the permissions field for
     dataless files and directories, possibly replacing the '@' or '+'
     character.

     If the modification time of the file is more than 6 months in the past
or
     future, and the -D or -T are not specified, then the year of the last
     modification is displayed in place of the hour and minute fields.

     If the owner or group names are not a known user or group name, or the
-n
     option is given, the numeric ID's are displayed.

     If the file is a character special or block special file, the device
     number for the file is displayed in the size field.  If the file is a
     symbolic link the pathname of the linked-to file is preceded by “->”.

     The listing of a directory's contents is preceded by a labeled total
     number of blocks used in the file system by the files which are listed
as
     the directory's contents (which may or may not include . and .. and oth
er
     files which start with a dot, depending on other options).

     The default block size is 512 bytes.  The block size may be set with
     option -k or environment variable BLOCKSIZE.  Numbers of blocks in the
     output will have been rounded up so the numbers of bytes is at least as
     many as used by the corresponding file system blocks (which might have
a
     different size).
```

```
     The file mode printed under the -l option consists of the entry type an
d
     the permissions.  The entry type character describes the type of file,
as
     follows:

          -     Regular file.
          b     Block special file.
          c     Character special file.
          d     Directory.
          l     Symbolic link.
          p     FIFO.
          s     Socket.
          w     Whiteout.

     The next three fields are three characters each: owner permissions, gro
up
     permissions, and other permissions.  Each field has three character
     positions:

          1.   If r, the file is readable; if -, it is not readable.

          2.   If w, the file is writable; if -, it is not writable.

          3.   The first of the following that applies:

                    S     If in the owner permissions, the file is not
                          executable and set-user-ID mode is set.  If in t
he
                          group permissions, the file is not executable an
d
                          set-group-ID mode is set.

                    s     If in the owner permissions, the file is
                          executable and set-user-ID mode is set.  If in t
he
                          group permissions, the file is executable and
                          setgroup-ID mode is set.

                    x     The file is executable or the directory is
                          searchable.

                    -     The file is neither readable, writable,
                          executable, nor set-user-ID nor set-group-ID mod
e,
                          nor sticky.  (See below.)

               These next two apply only to the third character in the last
               group (other permissions).

                    T     The sticky bit is set (mode 1000), but not execu
te
                          or search permission.  (See chmod(1) or
                          sticky(7).)
```

```
                        t     The sticky bit is set (mode 1000), and is
                              searchable or executable.  (See chmod(1) or
                              sticky(7).)

     The next field contains a plus (‘+’) character if the file has an ACL,
or
     a space (‘ ’) if it does not.  The ls utility does not show the actual
     ACL unless the -e option is used in conjunction with the -l option.

ENVIRONMENT
     The following environment variables affect the execution of ls:

     BLOCKSIZE           If this is set, its value, rounded up to 512 or dow
n
                         to a multiple of 512, will be used as the block siz
e
                         in bytes by the -l and -s options.  See The Long
                         Format subsection for more information.

     CLICOLOR            Use ANSI color sequences to distinguish file types.
                         See LSCOLORS below.  In addition to the file types
                         mentioned in the -F option some extra attributes
                         (setuid bit set, etc.) are also displayed.  The
                         colorization is dependent on a terminal type with t
he
                         proper termcap(5) capabilities.  The default “cons2
5”
                         console has the proper capabilities, but to display
                         the colors in an xterm(1), for example, the TERM
                         variable must be set to “xterm-color”.  Other
                         terminal types may require similar adjustments.
                         Colorization is silently disabled if the output is
                         not directed to a terminal unless the CLICOLOR_FORC
E
                         variable is defined or --color is set to “always”.

     CLICOLOR_FORCE      Color sequences are normally disabled if the output
                         is not directed to a terminal.  This can be
                         overridden by setting this variable.  The TERM
                         variable still needs to reference a color capable
                         terminal however otherwise it is not possible to
                         determine which color sequences to use.

     COLORTERM           See description for CLICOLOR above.

     COLUMNS             If this variable contains a string representing a
                         decimal integer, it is used as the column position
                         width for displaying multiple-text-column output.
                         The ls utility calculates how many pathname text
                         columns to display based on the width provided.  (S
ee
                         -C and -x.)

     LANG                The locale to use when determining the order of day
                         and month in the long -l format output.  See
                         environ(7) for more information.
```

LSCOLORS The value of this variable describes what color to use for which attribute when colors are enabled wit
h
CLICOLOR or COLORTERM. This string is a concatenation of pairs of the format fb, where f is the foreground color and b is the background color.

The color designators are as follows:

- a black
- b red
- c green
- d brown
- e blue
- f magenta
- g cyan
- h light grey
- A bold black, usually shows up as dark gr
ey
- B bold red
- C bold green
- D bold brown, usually shows up as yellow
- E bold blue
- F bold magenta
- G bold cyan
- H bold light grey; looks like bright whit
e
- x default foreground or background

Note that the above are standard ANSI colors. The actual display may differ depending on the color capabilities of the terminal in use.

The order of the attributes are as follows:

1. directory
2. symbolic link
3. socket
4. pipe
5. executable
6. block special
7. character special
8. executable with setuid bit set
9. executable with setgid bit set
10. directory writable to others, with stick
y
bit
11. directory writable to others, without sticky bit

The default is "exfxcxdxbxegedabagacad", i.e., blue foreground and default background for regular directories, black foreground and red background fo
r
setuid executables, etc.

```
     LS_COLWIDTHS        If this variable is set, it is considered to be a
                         colon-delimited list of minimum column widths.
                         Unreasonable and insufficient widths are ignored
                         (thus zero signifies a dynamically sized column).
                        Not all columns have changeable widths.  The fields
                         are, in order: inode, block count, number of links,
                         user name, group name, flags, file size, file name.

     LS_SAMESORT         If this variable is set, the -t option sorts the
                         names of files with the same modification timestamp
                         in the same sense as the time sort.  See the
                         description of the -t option for more details.

     TERM                The CLICOLOR and COLORTERM functionality depends on
a
                         terminal type with color capabilities.

     TZ                  The timezone to use when displaying dates.  See
                         environ(7) for more information.

EXIT STATUS
     The ls utility exits 0 on success, and >0 if an error occurs.

EXAMPLES
     List the contents of the current working directory in long format:

           $ ls -l

     In addition to listing the contents of the current working directory in
     long format, show inode numbers, file flags (see chflags(1)), and suffi
x
     each filename with a symbol representing its file type:

           $ ls -lioF

     List the files in /var/log, sorting the output such that the most
     recently modified entries are printed first:

           $ ls -lt /var/log

COMPATIBILITY
     The group field is now automatically included in the long listing for
     files in order to be compatible with the IEEE Std 1003.2 (“POSIX.2”)
     specification.

LEGACY DESCRIPTION
     In legacy mode, the -f option does not turn on the -a option and the -
g,
     -n, and -o options do not turn on the -l option.

     Also, the -o option causes the file flags to be included in a long (-l)
     output; there is no -O option.

     When -H is specified (and not overridden by -L or -P) and a file argume
nt
```

```
     is a symlink that resolves to a non-directory file, the output will
     reflect the nature of the link, rather than that of the file.  In legac
y
     operation, the output will describe the file.

     For more information about legacy mode, see compat(5).

SEE ALSO
     chflags(1), chmod(1), sort(1), xterm(1), localeconv(3), strftime(3),
     strmode(3), compat(5), termcap(5), sticky(7), symlink(7)

STANDARDS
     With the exception of options -g, -n and -o, the ls utility conforms to
     IEEE Std 1003.1-2001 (“POSIX.1”) and IEEE Std 1003.1-2008 (“POSIX.1”).
     The options -B, -D, -G, -I, -T, -U, -W, -Z, -b, -h, -w, -y and -, are
     non-standard extensions.

     The ACL support is compatible with IEEE Std 1003.2c (“POSIX.2c”) Draf
t 17
     (withdrawn).

HISTORY
     An ls command appeared in Version 1 AT&T UNIX.

BUGS
     To maintain backward compatibility, the relationships between the many
     options are quite complex.

     The exception mentioned in the -s option description might be a feature
     that was based on the fact that single-column output usually goes to
     something other than a terminal.  It is debatable whether this is a
     design bug.

     IEEE Std 1003.2 (“POSIX.2”) mandates opposite sort orders for files wit
h
     the same timestamp when sorting with the -t option.

macOS 14.2                      August 31, 2020                      macOS 1
4.2
1038.55s - pydevd: Sending message related to process being replaced timed-o
ut after 5 seconds
.                  .DS_Store          Assignment_2.ipynb Screenshot
..                 .ipynb_checkpoints README.md          data
```

Answer:

```
(base) sissili@SissideMacBook-Air cli_assignment % ls -a
.                       .DS_Store               Assignment_2.ipynb      Screenshot
..                      .ipynb_checkpoints      README.md               data
(base) sissili@SissideMacBook-Air cli_assignment %
```