Wildcard expansion

```
$ touch storeone.a storetwo.b storethree.c storeplain anotherstore
$ echo *
anotherstore storeone.a storeplain storethree.c storetwo.b
$ echo store* # Match files beginning with store
storeone.a storeplain storethree.c storetwo.b
$ echo *.? # ... ending in . with a single character
storeone.a storethree.c storetwo.b
$ echo store*.[ab] # ... ending in .a or .b
storeone.a storetwo.b
$ echo store*.[a-z] # ... ending in . followed by a lowercase letter
storeone.a storethree.c storetwo.b
$ echo store*.[^b] # ... ending in . followed by anything but b
storeone.a storethree.c
$
```

Shell variables

```
$ name=John # Assign name to variable
$ surname=Smith
$ echo $name # Expand variable
John
$ echo $PATH # Built-in variable (executable file path)
/home/dds/bin:/usr/local/bin:/usr/bin:/bin
$ echo $HOME # Built-in variable (home directory path)
/home/dds
$ echo Keep up with the ${surname}s # Expand variable
Keep up with the Smiths
$ read a b c d # Read into variables four words
Live free or die!
$ echo $a:$b:$c:$d
Live:free:or:die!
$ echo This pen costs $4.99 # Unwanted expansion here
This pen costs .99
$
```

Escape expansion

```
$ echo 'This pen costs $4.99' # Protect content
This pen costs $4.99
$ echo The pen\'s cost is \$4.99 # Protect single characters
The pen's cost is $4.99
$ echo "*** Meet $name's father ****" # Expand variables
*** Meet John's father ****
$ echo "$name \"Fridge\" $surname received \$4.99" # Expand and protect
John "Fridge" Smith received $4.99
$ echo 'No backspaces (\) here. Go out of '\'' and use them.'
No backspaces (\) here. Go out of ' and use them.
$ echo 'A multi line string
> ends here.'
A multi line string
ends here.
$
```

Command expansion

```
$ echo "Today is $(date)" # Expand command
Today is Fri 21 Feb 2020 01:10:07 PM EET
$ start=$(date +%s) # Assign the result to a variable
$ echo $start
1449433299
```

```
$ sleep 5
$ end=$(date +%s)
$ echo "The process lasted $(expr $end - $start) seconds"
The process lasted 20 seconds
$
```

Here documents

```
$ cat -n <<\EOF
> Two roads diverged in a yellow wood,
> And sorry I could not travel both
> And be one traveler, long I stood
> And looked down one as far as I could
> To where it bent in the undergrowth;
> EOF
     1  Two roads diverged in a yellow wood,
     2  And sorry I could not travel both
     3  And be one traveler, long I stood
     4  And looked down one as far as I could
     5  To where it bent in the undergrowth;
$ cat <<end-of-message  # Expand variables and commands
> From: Darth Vader <Anakin.Skywalker@death-star.gov>
> To: Child Support Agency <info@csa.gov.uk>
> Date: $(date -R)
>
> Remove me from your distribution list. - D.
> end-of-message
From: Darth Vader <Anakin.Skywalker@death-star.imperial.gov>
To: Child Support Agency <info@csa.gov.uk>
Date: Fri, 21 Feb 2020 13:11:11 +0200

Remove me from your distribution list. - D.
$
```