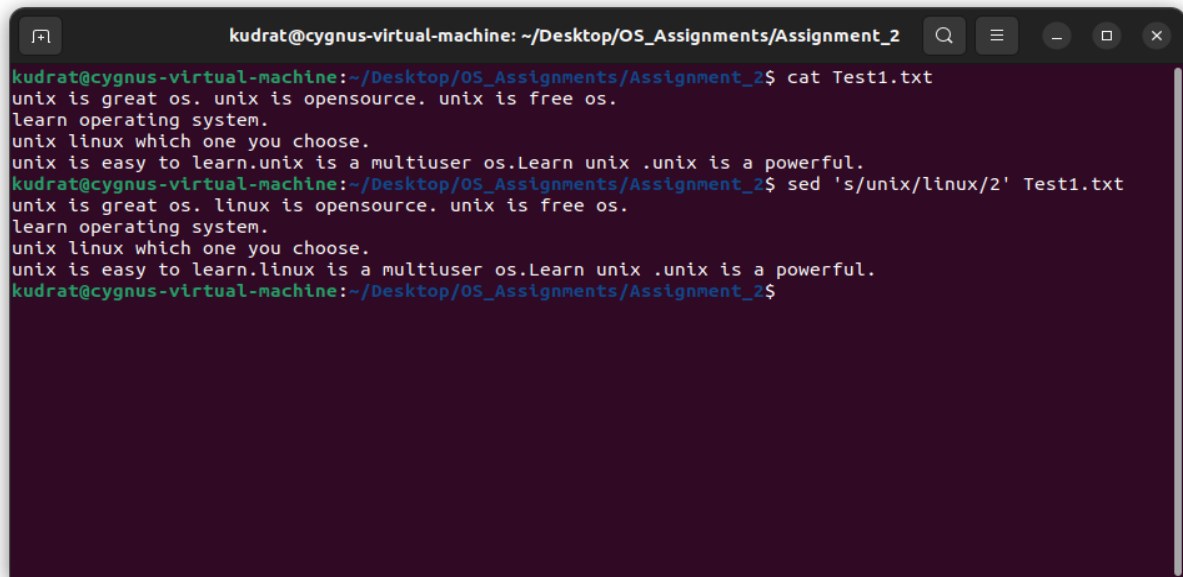


# Assignment 2 OS

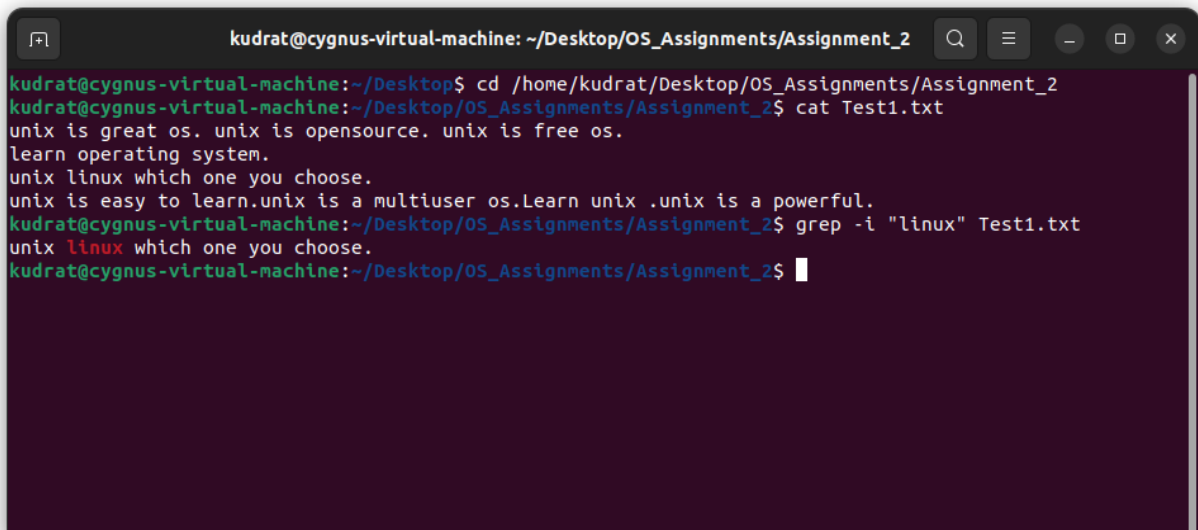
Name-Kudrat Noor Singh  
Roll No.-102015173  
Group- 3ENC8

Q1 Substitution- Search and replace

A terminal window titled 'kudrat@cygnus-virtual-machine: ~/Desktop/OS\_Assignments/Assignment\_2'. The terminal shows the following commands and output:

```
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ cat Test1.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ sed 's/unix/linux/2' Test1.txt
unix is great os. linux is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.linux is a multiuser os.Learn unix .unix is a powerful.
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$
```

Q2 Searching for a pattern

A terminal window titled 'kudrat@cygnus-virtual-machine: ~/Desktop/OS\_Assignments/Assignment\_2'. The terminal shows the following commands and output:

```
kudrat@cygnus-virtual-machine:~/Desktop$ cd /home/kudrat/Desktop/OS_Assignments/Assignment_2
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ cat Test1.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ grep -i "linux" Test1.txt
unix linux which one you choose.
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$
```

Q3 touch command for modifying the access timings

```
kudrat@cygnus-virtual-machine: ~/Desktop/OS_Assignments/Assignment_2
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ touch -a Test2.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ stat Test2.txt
  File: Test2.txt
  Size: 0          Blocks: 0          IO Block: 4096   regular empty file
Device: 803h/2051d Inode: 1060855      Links: 1
Access: (0664/-rw-rw-r--)  Uid: ( 1001/  kudrat)   Gid: ( 1001/  kudrat)
Access: 2022-08-19 13:19:28.005665784 +0530
Modify: 2022-08-19 13:13:44.026571573 +0530
Change: 2022-08-19 13:19:28.005665784 +0530
 Birth: 2022-08-19 12:38:02.976776702 +0530
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ touch -m Test2.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ stat Test2.txt
  File: Test2.txt
  Size: 0          Blocks: 0          IO Block: 4096   regular empty file
Device: 803h/2051d Inode: 1060855      Links: 1
Access: (0664/-rw-rw-r--)  Uid: ( 1001/  kudrat)   Gid: ( 1001/  kudrat)
Access: 2022-08-19 13:19:28.005665784 +0530
Modify: 2022-08-19 13:19:35.969806463 +0530
Change: 2022-08-19 13:19:35.969806463 +0530
 Birth: 2022-08-19 12:38:02.976776702 +0530
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$
```

Q4 “find” command

```
kudrat@cygnus-virtual-machine: ~
kudrat@cygnus-virtual-machine:~$ find ./Desktop/OS_Assignments/Assignment_2 -name Test1.txt
./Desktop/OS_Assignments/Assignment_2/Test1.txt
kudrat@cygnus-virtual-machine:~$
```

## Q5 "umask" command

```
kudrat@cygnus-virtual-machine: ~/Desktop
kudrat@cygnus-virtual-machine:~/Desktop$ umask
0002
kudrat@cygnus-virtual-machine:~/Desktop$ umask 543
kudrat@cygnus-virtual-machine:~/Desktop$ umask
0543
kudrat@cygnus-virtual-machine:~/Desktop$
```

## Q6 Hard link

```
kudrat@cygnus-virtual-machine: ~/Desktop/OS_Assignments/Assignment_2
-rw-rw-r-- 2 kudrat kudrat 189 Aug 19 12:40 Hardlink.txt
-rw-rw-r-- 2 kudrat kudrat 189 Aug 19 12:40 Test1.txt
-rw-rw-r-- 1 kudrat kudrat  0 Aug 19 13:19 Test2.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ cat Test1.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ vi Hardlink.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ cat Test1.txt
unix is great os. unix is opensource. unix is free os.

kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ rm Test1.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ ls
Hardlink.txt  Test2.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$
```

## Q7 Symbolic links

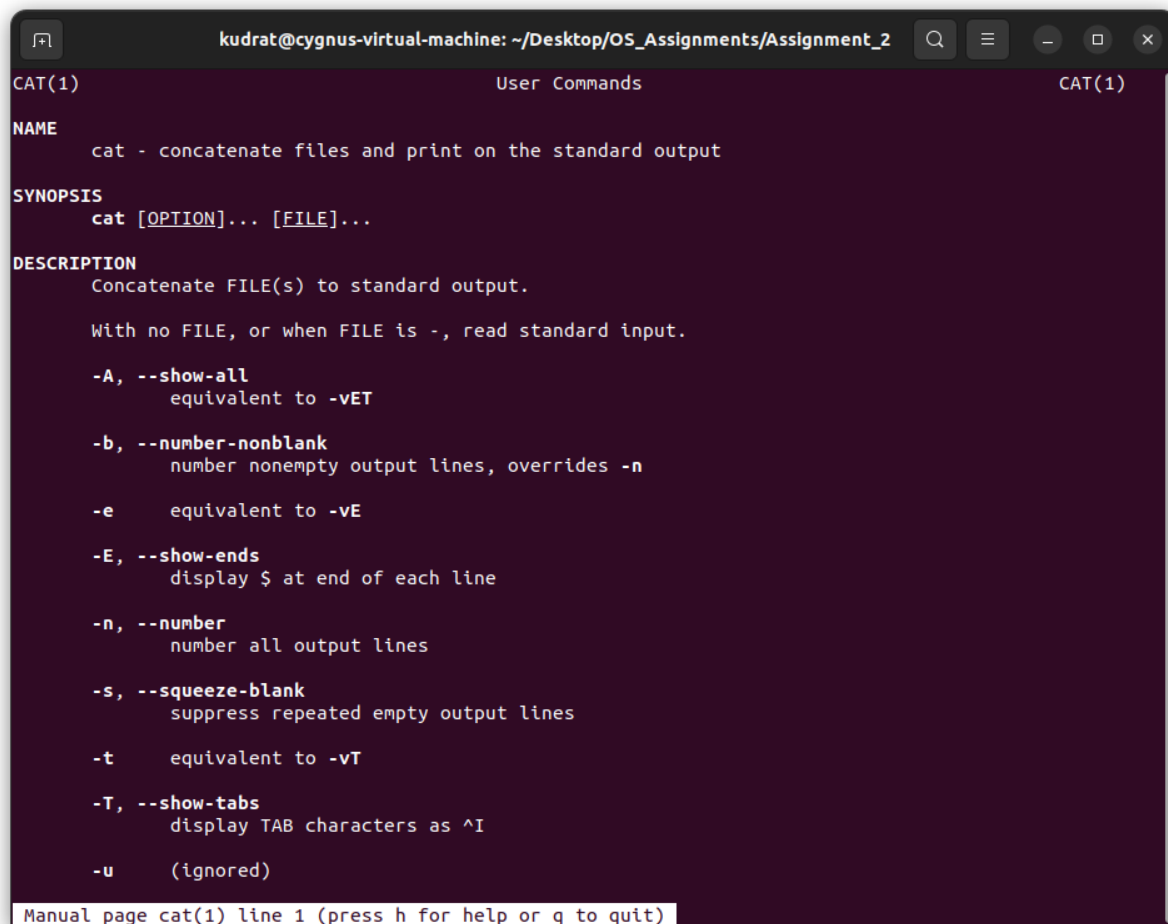
```
kudrat@cygnus-virtual-machine: ~/Desktop/OS_Assignments/Assignment_2
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ ls
Hardlink.txt  Test2.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ ln -s Hardlink.txt softlink.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ ls -l
total 4
-rw-rw-r-- 1 kudrat kudrat 58 Aug 19 13:43 Hardlink.txt
lrwxrwxrwx 1 kudrat kudrat 12 Aug 19 14:00 softlink.txt -> Hardlink.txt
-rw-rw-r-- 1 kudrat kudrat  0 Aug 19 13:19 Test2.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ cat softlink.txt
unix is great os. unix is opensource. unix is free os.

kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ rm Hardlink.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ ls -l
total 0
lrwxrwxrwx 1 kudrat kudrat 12 Aug 19 14:00 softlink.txt -> Hardlink.txt
-rw-rw-r-- 1 kudrat kudrat  0 Aug 19 13:19 Test2.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ cat softlink.txt
cat: softlink.txt: No such file or directory
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$
```

## Q8 r/w/x permissions for the directory.

```
kudrat@cygnus-virtual-machine: ~/Desktop/OS_Assignments/Assignment_2
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ chmod -w Test2.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ chmod -x Test2.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ ./Test2.txt
bash: ./Test2.txt: Permission denied
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ chmod +x Test2.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ ./Test2.txt
bash: ./Test2.txt: Permission denied
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ chmod -r Test2.txt
chmod: Test2.txt: new permissions are r--r-x---, not -----x---
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$
```

## Q9 “Cat” command options



```
kudrat@cygnus-virtual-machine: ~/Desktop/OS_Assignments/Assignment_2
CAT(1) User Commands CAT(1)

NAME
    cat - concatenate files and print on the standard output

SYNOPSIS
    cat [OPTION]... [FILE]...

DESCRIPTION
    Concatenate FILE(s) to standard output.

    With no FILE, or when FILE is -, read standard input.

    -A, --show-all
        equivalent to -vET

    -b, --number-nonblank
        number nonempty output lines, overrides -n

    -e
        equivalent to -vE

    -E, --show-ends
        display $ at end of each line

    -n, --number
        number all output lines

    -s, --squeeze-blank
        suppress repeated empty output lines

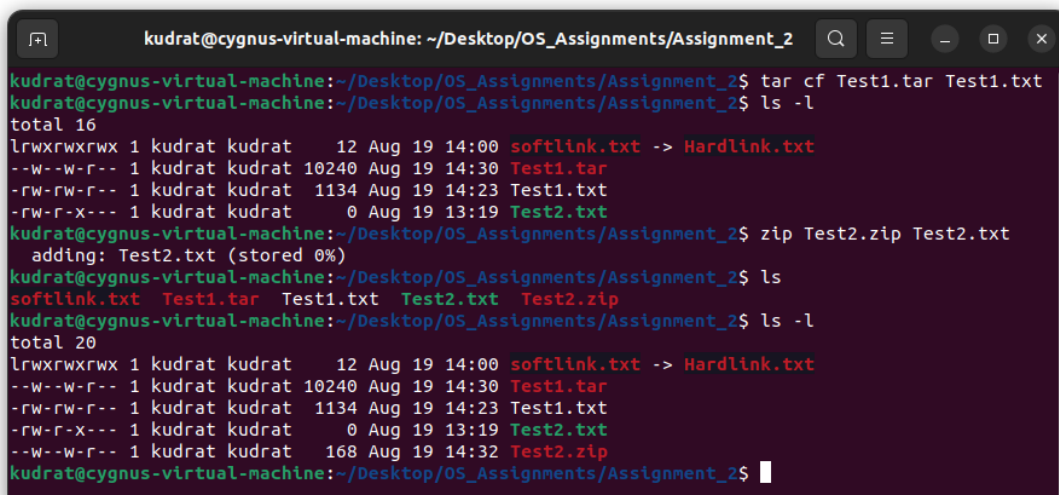
    -t
        equivalent to -vT

    -T, --show-tabs
        display TAB characters as ^I

    -u
        (ignored)

Manual page cat(1) line 1 (press h for help or q to quit)
```

## Q10 “zip” and “tar” commands



```
kudrat@cygnus-virtual-machine: ~/Desktop/OS_Assignments/Assignment_2
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ tar cf Test1.tar Test1.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ ls -l
total 16
lrwxrwxrwx 1 kudrat kudrat 12 Aug 19 14:00 softlink.txt -> Hardlink.txt
--w--w-r-- 1 kudrat kudrat 10240 Aug 19 14:30 Test1.tar
-rw-rw-r-- 1 kudrat kudrat 1134 Aug 19 14:23 Test1.txt
-rw-r-x--- 1 kudrat kudrat 0 Aug 19 13:19 Test2.txt
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ zip Test2.zip Test2.txt
adding: Test2.txt (stored 0%)
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ ls
softlink.txt Test1.tar Test1.txt Test2.txt Test2.zip
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ ls -l
total 20
lrwxrwxrwx 1 kudrat kudrat 12 Aug 19 14:00 softlink.txt -> Hardlink.txt
--w--w-r-- 1 kudrat kudrat 10240 Aug 19 14:30 Test1.tar
-rw-rw-r-- 1 kudrat kudrat 1134 Aug 19 14:23 Test1.txt
-rw-r-x--- 1 kudrat kudrat 0 Aug 19 13:19 Test2.txt
--w--w-r-- 1 kudrat kudrat 168 Aug 19 14:32 Test2.zip
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$
```

## Q11 expr – Computational and String handling

```
kudrat@cygnus-virtual-machine: ~/Desktop/OS_Assignments/Assignm...
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ chmod +x Test.sh
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$ ./Test.sh
9
3
kyd
kudrat@cygnus-virtual-machine:~/Desktop/OS_Assignments/Assignment_2$
```

## Q12 man and help command

```
kudrat@cygnus-virtual-machine: ~/Desktop/OS_Assignments/Assignm...
MAN(1)                                Manual pager utils                                MAN(1)
NAME
    man - an interface to the system reference manuals

SYNOPSIS
    man [man options] [[section] page ...] ...
    man -k [apropos options] regexp ...
    man -K [man options] [section] term ...
    man -f [whatIs options] page ...
    man -l [man options] file ...
    man -w|-W [man options] page ...

DESCRIPTION
    man is the system's manual pager. Each page argument given to man is normally
    the name of a program, utility or function. The manual page associated with
    each of these arguments is then found and displayed. A section, if provided,
    will direct man to look only in that section of the manual. The default ac-
    tion is to search in all of the available sections following a pre-defined or-
    der (see DEFAULTS), and to show only the first page found, even if page exists
    in several sections.

    The table below shows the section numbers of the manual followed by the types
    of pages they contain.

    1 Executable programs or shell commands
    2 System calls (functions provided by the kernel)
    3 Library calls (functions within program libraries)
    4 Special files (usually found in /dev)
    5 File formats and conventions, e.g. /etc/passwd
    6 Games
    7 Miscellaneous (including macro packages and conventions), e.g. man(7),
      groff(7), man-pages(7)
    8 System administration commands (usually only for root)
    9 Kernel routines [Non standard]

Manual page man(1) line 1 (press h for help or q to quit)
```



kudrat@cygnus-virtual-machine: ~/Desktop/OS\_Assignments/Assignm...



kudrat@cygnus-virtual-machine:~/Desktop/OS\_Assignments/Assignment\_2\$ help

GNU bash, version 5.1.16(1)-release (x86\_64-pc-linux-gnu)

These shell commands are defined internally. Type 'help' to see this list.

Type 'help name' to find out more about the function 'name'.

Use 'info bash' to find out more about the shell in general.

Use 'man -k' or 'info' to find out more about commands not in this list.

A star (\*) next to a name means that the command is disabled.

```
job_spec [&]
(( expression ))
. filename [arguments]
:
[ arg... ]
[[ expression ]]
alias [-p] [name[=value] ... ]
bg [job_spec ...]
bind [-lpsvPSVX] [-m keymap] [-f filename]
break [n]
builtin [shell-builtin [arg ...]]
caller [expr]
case WORD in [PATTERN [| PATTERN]...) COM>
cd [-L|[-P [-e]] [-@]] [dir]
command [-pVv] command [arg ...]
compgen [-abdefghjksuv] [-o option] [-A a>
complete [-abdefghjksuv] [-pr] [-DEI] [-o>
compopt [-o|+o option] [-DEI] [name ...]
continue [n]
coproc [NAME] command [redirections]
declare [-aAfFgiIlNrtux] [-p] [name[=valu>
dirs [-clpv] [+N] [-N]
disown [-h] [-ar] [jobspec ... | pid ...>
echo [-neE] [arg ...]
enable [-a] [-dnps] [-f filename] [name .>
eval [arg ...]
exec [-cl] [-a name] [command [argument .>
exit [n]
export [-fn] [name[=value] ...] or export>
false
fc [-e ename] [-lnr] [first] [last] or fc>

history [-c] [-d offset] [n] or history >
if COMMANDS; then COMMANDS; [ elif COMMA>
jobs [-lnprs] [jobspec ...] or jobs -x c>
kill [-s sigspec | -n signum | -sigspec]>
let arg [arg ...]
local [option] name[=value] ...
logout [n]
mapfile [-d delim] [-n count] [-O origin>
popd [-n] [+N | -N]
printf [-v var] format [arguments]
pushd [-n] [+N | -N | dir]
pwd [-LP]
read [-ers] [-a array] [-d delim] [-i te>
readarray [-d delim] [-n count] [-O orig>
readonly [-aAf] [name[=value] ...] or re>
return [n]
select NAME [in WORDS ... ;] do COMMANDS>
set [-abefhkmnptuvxBCHP] [-o option-name>
shift [n]
shopt [-pqsu] [-o] [optname ...]
source filename [arguments]
suspend [-f]
test [expr]
time [-p] pipeline
times
trap [-lp] [[arg] signal_spec ...]
true
type [-afptP] name [name ...]
typeset [-aAfFgiIlNrtux] [-p] name[=valu>
ulimit [-SHabcefkilmnpqrstuvXPT] [limi>
umask [-p] [-S] [mode]
```