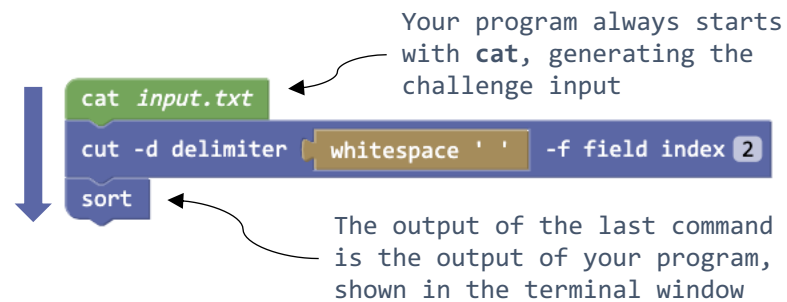


The Game

Programmer's Manual

unixgame.io

Programs as pipes — the output of each command is fed as input to the next command (top to bottom)



cat — concatenate and print files

Origin: v1 AT&T UNIX

```
cat input.txt
```

Read the input file as lines of text



grep — file pattern searcher

v4 AT&T UNIX

```
grep pattern '[0-9]'
```

Retain only lines that match the text pattern



```
grep -v pattern '[0-9]'
```

Retain only lines that do not match the pattern



cut — cut out selected portions of each line of a file AT&T System III UNIX

```
cut -c start 1 -end 1
```

Select characters from start to end index (inclusive)



```
cut -f word index 1
```

Select the *n*th field (separated by TAB) per line



```
cut -d delimiter period '.' -f field index 1
```

Select the *n*th field (separated by the delimiter) per line



tr — translate characters

v4 AT&T UNIX

```
tr find comma ',' replace whitespace ' '
```

Find and replace matching characters in all lines



```
tr -c find '[0-9]' replace whitespace ' '
```

Find and replace non-matching characters in all lines



```
tr -d '\n'
```

Concatenate all lines into a single line



Parameter blocks — use as parameter of another block

Punctuation — non-alphanumeric characters

period '.'	Period (dot)
whitespace ' '	Whitespace
newline '\n'	Newline (line separator)
comma ','	Comma
double-quote '"'	Double-quote
TAB '\t'	Tab (column separator)

Patterns — match sets of characters

'[0-9]'	Match digits 0 through 9
'[a-z]'	Match all lowercase letters
'[A-Z]'	Match all uppercase letters
'[a-z][A-Z]'	Match lowercase and uppercase letters
'[KQRBN]'	Match letters K, Q, R, B and N

Text — strings of characters (problem-specific)

'P'	'print'	'AT&T'	'UNIX'
'x'	'0s'	'1969'	'Bell'

Idioms — common ways of using commands

Replace all uppercase letters by lowercase letters

```
tr find '[A-Z]' replace '[a-z]'
```

Remove all duplicate lines in a file

```
sort  
uniq
```

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sort — sort or merge records (lines) of files *v1 AT&T UNIX*

sort

Sort lines alphabetically

```
b
a
c
```



```
a
b
c
```

sort -r

Sort lines in reverse-alphabetical order

```
b
a
c
```




```
c
b
a
```

sort -n

Sort lines in increasing numerical order

```
31
12
11
```



```
11
12
31
```

sort -nr

Sort lines in decreasing numerical order

```
31
11
12
```



```
31
12
11
```

wc — word, line, character, and byte count *v1 AT&T UNIX*

wc -l

Count the total number of lines

```
hello
world
```



```
2
```

uniq — report or filter out repeated lines in a file *v3 AT&T UNIX*

uniq

Remove adjacent duplicate lines

```
hello
hello
world
```



```
hello
world
```

uniq -c

Count and remove adjacent duplicate lines

```
hello
hello
world
```



```
2 hello
1 world
```

head and **tail** — display first/last lines of a file *PWB UNIX*

head -n line count 1

Select the first n lines

```
hello
world
```



```
hello
```

tail -n line count 1

Select the last n lines

```
hello
world
```



```
world
```

sed — stream editor *v7 AT&T UNIX*

sed line number 1 d

Delete the n th line

```
hello
world
```



```
world
```

sed line number 1 p

Duplicate the n th line

```
hello
world
```



```
hello
hello
world
```

awk — pattern scanning and processing language *v7 AT&T UNIX*

awk 'length == line length 6 '

Retain only lines with exactly n characters

```
hello
unix
world!
```



```
world!
```

awk 'length >= line length 5 '

Retain only lines with at least n characters

```
hello
unix
world!
```



```
hello
world!
```

awk 'length <= line length 5 '

Retain only lines with at most n characters

```
hello
unix
world!
```



```
hello
unix
```

awk '{print length, \$0}'

Prefix each line with its count of characters

```
hello
unix
world!
```



```
5 hello
4 unix
6 world!
```

rev — reverse lines of a file *util-linux*

rev

Reverse (mirror) all characters in each line

```
hello
world!
```



```
olleh
!dlrow
```

fmt — simple text formatter *3BSD*

fmt -w1

Put each word on a separate line

```
hi unix
world
```



```
hi
unix
world
```