

Character translation

```
$ echo 'This is a test' | tr ' ' -
This-is-a-test
$ echo 'This is a test' | tr a-z A-Z
THIS IS A TEST
$ echo 'meet me by the entrance at midnight' >message
$ tr a-z l-za-k <message | # Simple substitution cipher
> tee secret # Keep a copy of the secret message
xppe xp mj esp pyeclynp le xtoytrse
$ tr l-za-k a-z <secret
meet me by the entrance at midnight
$ tr -d aeiouy <message
mt m b th ntrnc t mdnght
$ tr -c -d 'aeiouy\n' <message
eeeyeeaeaii
$
```

Spell checking

```
$ curl -s --compressed https://www.gutenberg.org/cache/epub/1342/pg1342.txt >pride-and-prejudice.txt
$ tr -c a-zA-Z '\n' <pride-and-prejudice.txt | # Convert non-word characters to newlines
> head
```

```
The
Project
Gutenberg
EBook
of
Pride
and
```

```
$ tr -c a-zA-Z '\n' <pride-and-prejudice.txt | # Convert non-word characters to newlines
> tr A-Z a-z | # Convert uppercase to lowercase
> head
```

```
the
project
gutenberg
ebook
of
pride
and
```

```
$ tr -c a-zA-Z '\n' <pride-and-prejudice.txt | # Convert non-word characters to newlines
> tr A-Z a-z | # Convert uppercase to lowercase
> sort | # Sort text's words
> uniq | # Remove duplicates
> head
```

```
a
abatement
abhorrence
abhorrent
abide
abiding
abilities
able
ablution
$ sort /usr/share/dict/british-english-huge >words # Sort dictionary
$ tr -c a-zA-Z '\n' <pride-and-prejudice.txt | # Convert non-word characters to newlines
> tr A-Z a-z | # Convert uppercase to lowercase
> sort | # Sort words
> uniq | # Remove duplicates
> comm -23 - words | # Show words not in the dictionary
> head
```

```
ak
anne
```

annesley
annum
april
ascii
ashworth
austen
authorized

```
$ tr -c a-zA-Z '\n' <pride-and-prejudice.txt | # Convert non-word characters to newlines  
> tr A-Z a-z | # Convert uppercase to lowercase  
> sort | # Sort words  
> uniq | # Remove duplicates  
> comm -23 - words | # Show words not in the dictionary  
> sed 's/^\./\u&/' | # Capitalize first letter  
> comm -23 - words | # Look again in the dictionary  
> sed 's/^\./\l&/' |  
> head
```

ak
annesley
annum
ascii
ashworth
authorized
bingley
bingleys
bourgh
\$

Map character encodings

```
$ cat faust-1.txt  
Der â€œpfelchen begehrt Ihr sehr,  
Und schon vom Paradiese her.  
Von Freuden fâ€œhl ich mich bewegt,  
Dass auch mein Garten solche trâ€œgt.  
$ file faust-1.txt  
faust-1.txt: ISO-8859 text, with CRLF line terminators  
$ od -c faust-1.txt | head -1  
0000000  D e r   304  p f e l c h e n   b e  
$ recode ISO-8859-1..UTF-8 <faust-1.txt >faust-utf8.txt  
$ file faust-utf8.txt  
faust-utf8.txt: UTF-8 Unicode text, with CRLF line terminators  
$ od -c faust-utf8.txt | head -1  
0000000  D e r   303 204  p f e l c h e n   b  
$ cat faust-utf8.txt  
Der Ã„pfelchen begehrt Ihr sehr,  
Und schon vom Paradiese her.  
Von Freuden fÃ„hl ich mich bewegt,  
Dass auch mein Garten solche trÃ„gt.  
$ recode UTF-8..ASCII <faust-utf8.txt  
Der "Apfelchen begehrt Ihr sehr,  
Und schon vom Paradiese her.  
Von Freuden f"uhl ich mich bewegt,  
Dass auch mein Garten solche tr"agt.  
$ recode UTF-8..UTF-16 <faust-utf8.txt >faust-utf16.txt  
$ file faust-utf16.txt  
faust-utf16.txt: Big-endian UTF-16 Unicode text, with CRLF line terminators  
$ od -c faust-utf16.txt | head -1  
0000000  376 377  \0  D  \0  e  \0  r  \0  \0 304  \0  p  \0  f  
$
```

Encryption

```
$ tr a-z l-za-k <pride-and-prejudice.txt >secret  
$ head secret  
Tsp Pczupne GfepymPCR EBzzv zq Pctop lyo Pcpufotnp, mj Jlyp Afdepy
```

```
Tstd pBzzv td qzc esp fdp zq lyjzyp lyjhspcp le yz nzde lyo htes  
lwzde yz cpdectnetzyd hsledzpgpc. Yzf xlj nzaj te, rtgp te lhlj zc  
cp-fdp te fyopc esp epcxd zq esp Pczupne GfepymPCR Ltncpyd tynwfopo  
htes estd pBzzv zc zywtyp le hhh.rfepymPCR.zcr
```

```

Ttewp: Pctop lyo Pcpufotnp
$ freq()
> {
> # Put each letter on a separate line
> sed 's/./&\
> /g' $1 |
> sort |
> uniq -c | # Count frequencies
> sort -rn | # Order by frequency
> head
> }
$ wget -q -O karamazov.txt https://www.gutenberg.org/files/28054/28054-0.txt
$ freq karamazov.txt
326094
179662 e
135591 t
119653 o
118778 a
100838 n
95854 h
94224 i
88808 s
79674 r
$ freq secret
113924
70342 p
47281 e
42154 l
41137 z
38428 y
36272 t
33881 s
33292 c
33291 d
$ openssl enc -e -aes-256-cbc -pbkdf2 <pride-and-prejudice.txt >real-secret
enter aes-256-cbc encryption password:
Verifying - enter aes-256-cbc encryption password:
$ freq real-secret
2946 s
2939 |
2936 ]
2924 -
2916 X
2916 J
2914
2912 -
2912
2911 >
$ openssl enc -d -aes-256-cbc -pbkdf2 <real-secret | head
enter aes-256-cbc decryption password:
The Project Gutenberg EBook of Pride and Prejudice, by Jane Austen

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Title: Pride and Prejudice
$

```