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Linux and Unix join command tutorial with examples

Tutorial on using join, a UNIX and Linux command to join lines of two files on a common field. Examples of joining two files, sorting before joining, specifying a field separator and specifying the output format.

Estimated reading time: 3 minutes

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        join  -  join  lines  of  two
        files on a common field
```

What is the join command in UNIX?

The `join` command in UNIX is a command line utility for joining lines of two files on a common field. It can be used to join two files by selecting fields within the line and joining the files on them. The result is written to standard output.

How to join two files

To join two files using the `join` command files must have identical join fields. The default join field is the first field delimited by blanks. For the following example there are two files `foodtypes.txt` and `foods.txt`.

```
cat foodtypes.txt
1 Protein
2 Carbohydrate
3 Fat

cat foods.txt
1 Cheese
2 Potato
3 Butter
```

These files share a join field as the first field and can be joined.

```
join foodtypes foods.txt
1 Protein Cheese
2 Carbohydrate Potato
3 Fat Butter
```

How to join two files on different fields

To join files using different fields the `-1` and `-2` options can be passed to `join`. In the following example there are two files `wine.txt` and `reviews.txt`.

```
cat wine.txt
Red Beaunes France
White Reisling Germany
Red Riocha Spain

cat reviews.txt
Beaunes Great!
Reisling Terrible!
Riocha Meh
```

These files can be joined by specifying the fields that should be used to join the files. Common to both files is the name of the wine. In `wine.txt` this is the second field. In `reviews.txt` this is the first field. The files can be joined using `-1` and `-2` by specifying these fields.

```
join -1 2 -2 1 wine.txt reviews.txt
Beaunes Red France Great!
Reisling White Germany Terrible!
Riocha Red Spain Meh
```

How to sort before joining

Join expects that files will be sorted before joining. For this example suppose there are two files from the previous example are not sorted.

```
cat wine.txt
White Reisling Germany
Red Riocha Spain
Red Beaunes France

cat reviews.txt
Riocha Meh
Beaunes Great!
Reisling Terrible!
```

Running `join` on these files results in an error becuase the files are not sorted.

```
join -1 2 -2 1 wine.txt reviews.txt
join: wine.txt:3: is not sorted: Red Beaunes France
join: reviews.txt:2: is not sorted: Beaunes Great!
Riocha Red Spain Meh
Beaunes Red France Great!
```

The sort (/unix-sort/) command can sort the files before passing to join.

```
join -1 2 -2 1 <(sort -k 2 wine.txt) <(sort reviews.txt)
Beaunes Red France Great!
Reisling White Germany Terrible!
Riocha Red Spain Meh
```