

Find file differences

```
$ cat file1
start
a
b
c
d
e
f
end
$ cat file2
a
b
c
d
E
f
end
more
$ diff file1 file2 # Output file differences
1d0
< start
6c5
< e
---
> E
8a8
> more
$
```

Control the output format

```
$ diff -c file1 file2 # List file differences in context
*** file1      2016-02-24 08:49:36.613883000 +0200
--- file2      2016-02-24 08:50:44.292754000 +0200
*****
*** 1,8 ****
- start
  a
  b
  c
  d
! e
  f
  end
--- 1,8 ----
  a
  b
  c
  d
! E
  f
  end
+ more
$ diff -u file1 file2 # List file differences in unified context
--- file1      2016-02-24 08:49:36.613883000 +0200
+++ file2      2016-02-24 08:50:44.292754000 +0200
@@ -1,8 +1,8 @@
-start
 a
 b
```

```

c
d
-e
+E
f
end
+more
$ diff -W 40 -y file1 file2 # List differences in two 40 character columns
start          <
a              a
b              b
c              c
d              d
e              | E
f              f
end            end
              > more
$

```

Generate patches

```

$ diff -e file1 file2 >diffs # Generate ed(1) script
$ cat diffs
8a
more
.
6c
E
.
1d
$ (cat diffs && echo w) | ed - file1 # Apply ed script
$ diff file1 file2
$

```

Patch files

```

$ cat mary.c
#include <stdio.h>

main()
{
    printf("hello, wold\n");
}
$ cat john.c # John introduced function prototype
#include <stdio.h>

int
main(void)
{
    printf("hello, wold\n");
}
$ cat mary2.c # Mary fixes typo
#include <stdio.h>

main()
{
    printf("hello, world\n");
}
$ diff -u mary.c mary2.c >mary.patch # Generate patch as a context diff
$ cat mary.patch
--- mary.c      2016-02-28 10:50:04.895325700 +0200
+++ mary2.c    2016-02-28 10:50:58.790408300 +0200

```

```
@@ -2,5 +2,5 @@
```

```
main()
{
-     printf("hello, wold\n");
+     printf("hello, world\n");
}
```

```
$ patch john.c <mary.patch # Patch John's copy with Mary's patch
patching file john.c
Hunk #1 succeeded at 3 with fuzz 2 (offset 1 line).
```

```
$ cat john.c
#include <stdio.h>
```

```
int
main(void)
{
    printf("hello, world\n");
}
$
```

Ignore whitespace

```
$ cat john.c
#include <stdio.h>
```

```
int
main(void)
{
    printf("hello, world\n");
}
```

```
$ cat mary.c # Mary performs functional and style changes
#include <stdio.h>
```

```
int
main( void )
{
    printf("hello, world\n");
    return 0;
}
```

```
$ diff john.c mary.c
```

```
4c4
< main(void)
---
> main( void )
6c6,7
<     printf("hello, world\n");
---
>     printf("hello, world\n");
>     return 0;
```

```
$ diff -b john.c mary.c # Ignore changes in number of blanks
```

```
4c4
< main(void)
---
> main( void )
6a7
>     return 0;
```

```
$ diff -w john.c mary.c # Ignore all whitespace changes
```

```
6a7
>     return 0;
$
```

Compare directories

```

$ mkdir -p a/1/2 b/1/3
$ echo this is a >a/README
$ echo this is b >b/README
$ echo this is a1 >a/1/README
$ echo this is b1 >b/1/README
$ diff a b # Default diff
Common subdirectories: a/1 and b/1
diff a/README b/README
1c1
< this is a
---
> this is b
$ diff -r a b # Recursive diff
Only in a/1: 2
Only in b/1: 3
diff -r a/1/README b/1/README
1c1
< this is a1
---
> this is b1
diff -r a/README b/README
1c1
< this is a
---
> this is b
$

```

Scripting

```

$ echo same >file1
$ echo same >file2
$ echo almost same >file3
$ diff -q file1 file2 >/dev/null && echo Same
Same
$ diff -q file1 file3 >/dev/null && echo Same
$ diff -q file1 file2 >/dev/null || echo Different
$ diff -q file1 file3 >/dev/null || echo Different
Different
$ cat makesame.sh
#!/bin/sh
# Make second file same as first, if needed
if diff "$1" "$2" >/dev/null ; then
    echo "Files $1 and $2 are the same; doing nothing"
else
    echo "Files $1 and $2 differ; copying $1 to $2"
    cp "$1" "$2"
fi
$ ./makesame.sh file1 file2
Files file1 and file2 are the same; doing nothing
$ ./makesame.sh file1 file3
Files file1 and file3 differ; copying file1 to file3
$

```