

Patching source files: look ma, no editing!

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Version A -> Version B How?

- Two users have identical text files
- User B changes his
- How to change A's identically:
 - B calls A on the phone and walks him thru vi (not)
 - B transmits the new file (not)
 - B transmits a file of “deltas” for A to apply

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Patch file: a file of “deltas”

- Generated by B with diff command
- Smaller than the version B file itself
- Applied by A to his copy of the original version with patch command
- Could apply to any text file(s)
- Used among linux programmers to update base versions of source files for large projects, including linux itself

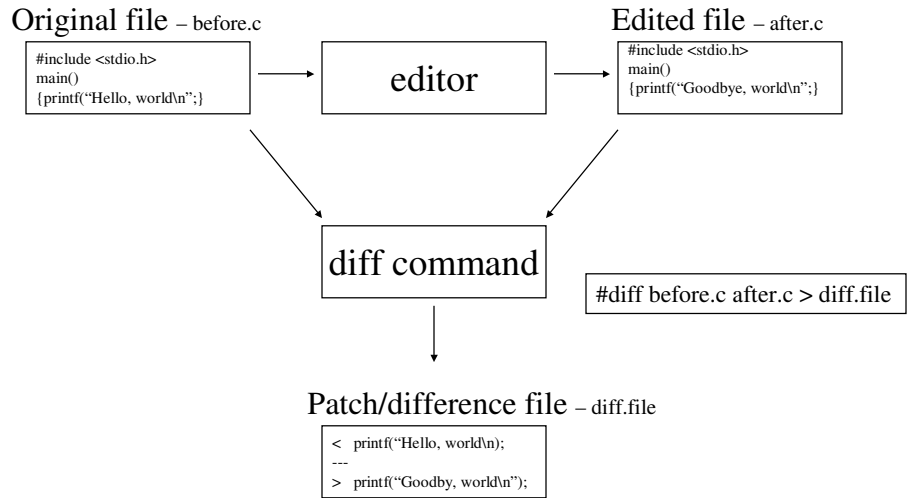
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Linux A -> Linux B How?

- The world has identical linux source files
- Linus Torvalds changes his
- How to change the world's:
 - He calls us all on the phone (not)
 - He emails us all new copies (not)
 - He makes a file of “deltas” for us to download and apply

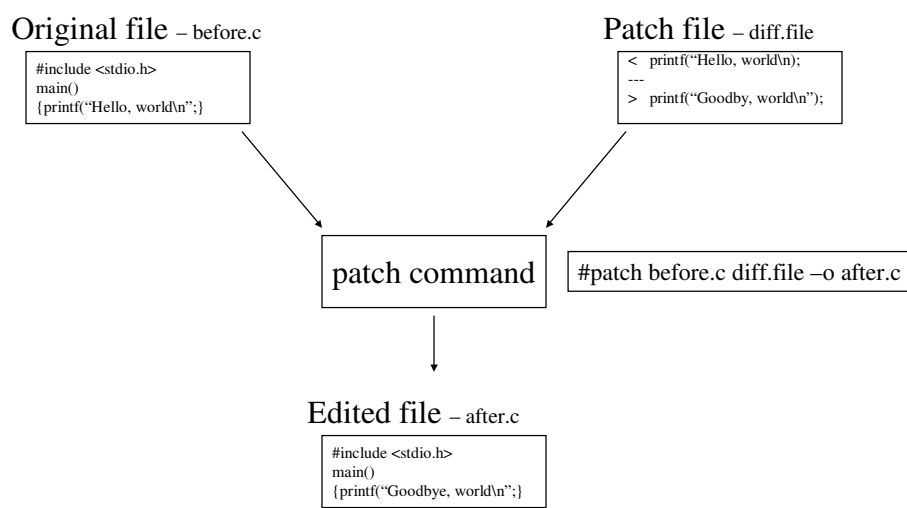
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Source code patching



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Patching: getting the edited file without editing



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diff's output format

File "initial"

```
1 World's best food is pizza.
2
3 "Food, clothing, shelter"
4 Clothing, or apparel.
5 Hats and vests and socks.
6
7 Then there's shelter.
```

File "final"

```
1 World's best food is ice cream.
2
3 "Food, clothing, shelter"
4
5 Then there's shelter.
6 Huts and palaces and tents.
```

```
[root@rh root]# diff initial final
```

```
1c1
< World's best food is pizza.
---
> World's best food is ice cream.
4,5d3
< Clothing, or apparel.
< Hats and vests and socks.
7a6
> Huts and palaces and tents.
```

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diff initial final

- Assumes you will convert "initial" into "final"
- Outputs instructions to do so
 - a to add
 - c to change
 - d to delete
- Outputs line numbers to add/change/delete
 - Line numbers left of instruction pertains to "initial"
 - Line numbers right of instruction pertains to "final"
- < precedes lines from "initial"
- > precedes lines from "final"
- 6 references line 6
- 6,8 references lines 6-8

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diff's output format

```
[root@rh root]# diff initial final
  C
< World's best food is pizza.
  ---
  > World's best food is ice cream.
  D
  5D
< Clothing, or apparel.
  > Hats and vests and socks.
  A
  6A
  > Huts and palaces and tents.
```

change line(s) →

delete line(s) →

append line(s) →

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diff's output format

```
[root@rh root]# diff initial final
  1D1
< World's best food is pizza.
  ---
  > World's best food is ice cream.
  4,5D3
< Clothing, or apparel.
  > Hats and vests and socks.
  7D6
  > Huts and palaces and tents.
```

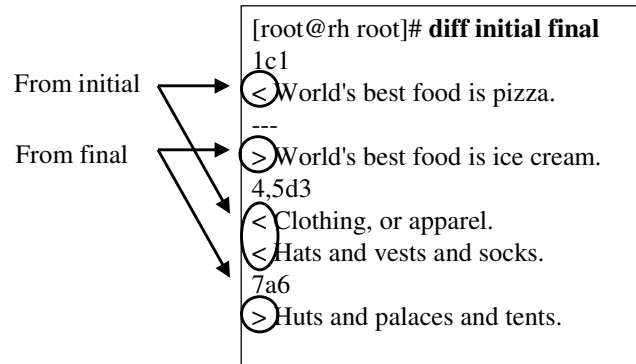
initial's line 1 →

initial's lines 4-5 →

initial's line 7 →

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diff's output format



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patch, and diff's output format

- Works with diff hand-in-hand
- Understands diff's output
- Applies it to "initial" to produce "final"

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