

Advanced Programming in the UNIX Environment

Week 05, Segment 4: Unix Development Tools: The Compiler Chain, Part II

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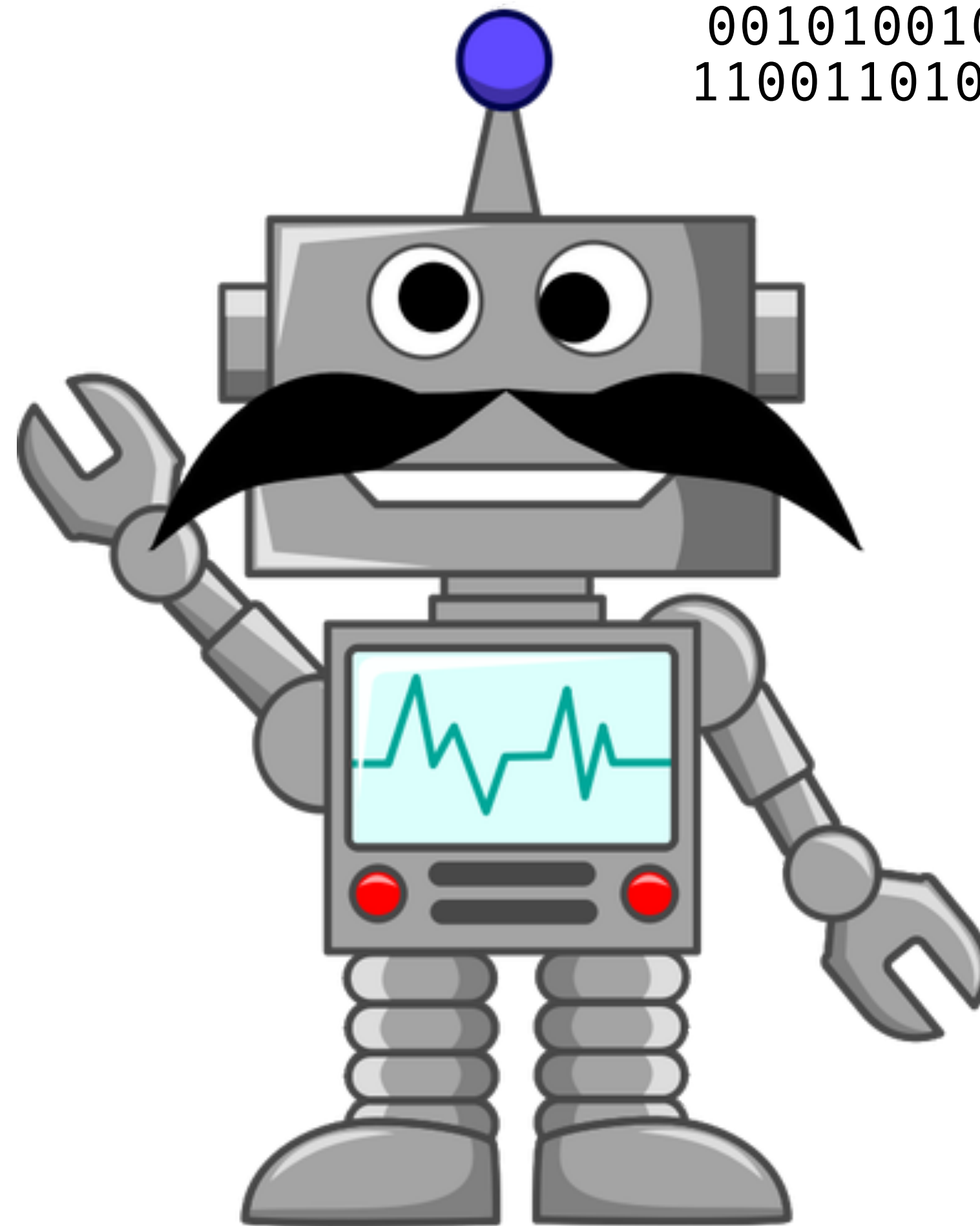
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Compilers

```
#include <stdio.h>

int
main(int argc, char **argv) {
    printf("Hello, World!\n");
}
```



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The GNU Compiler Collection

The compiler chain or driver usually performs **preprocessing** (e.g. via `cpp(1)`), compilation (`cc(1)`), assembly (`as(1)`) and linking (`ld(1)`).

```
#include <stdio.h>
#define NUM 42

int
main(int argc, char **argv) {
    printf("%d\n", NUM);
}
```

`/usr/include/stdio.h`

```
...
void perror(const char *);
int printf(const char * __restrict, ...)
    __printflike(1, 2);
int putc(int, FILE *);
int putchar(int);
...

int
main(int argc, char **argv) {
    printf("%d\n", 42);
}
```

```
void
func2(void) {
    printf("%s: great on anything.\n", "avocado");
}
void
func1(void) {
    func2();
}
int
main() {
    func1();
    return 0;
}
```

```
[apue$ file hello.c
```

```
hello.c: C source, ASCII text
```

```
[apue$ make cpp
```

```
cpp -P hello.c >hello.i
```

```
[apue$ file hello.i
```

```
hello.i: C source, ASCII text
```

```
[apue$ wc -l hello.[ci]
```

```
    39 hello.c
```

```
   342 hello.i
```

```
   381 total
```

```
[apue$ cat hello.i
```

The GNU Compiler Collection

The compiler chain or driver usually performs preprocessing (e.g. via `cpp(1)`), compilation (`cc(1)`), assembly (`as(1)`) and linking (`ld(1)`).

- use `cpp(1)` to manually preprocess `.c` files
- use “`-D`” to define macros on the command-line
- use “`cc -v`” to see the compilers stages and the commands it executes

To be continued...