

```
unsigned int x;
int r = 0;
```

```
int main(int argc, char *argv[])
{
```

```
    if (argc != 2) { fprintf(stderr, "usage: popc <num>\n"); exit(1); }
    x = atoi(argv[1]);
```

```
while (x) {
    r += (x & 0x1);
    x >>= 1;
}
```

```
80484d1: mov    %eax,0x8049798    # x -> 0x804 9798
80484d6: test  %eax,%eax        #
80484d8: je    80484fd <main+0x99> #
80484da: mov    0x804979c,%ecx   # 0x804979c -> ecx
80484e0: mov    %eax,%edx       # eax -> edx (x)
80484e2: mov    %edx,%eax       # edx -> eax (x)
80484e4: and   $0x1,%eax        # eax & 0x1 -> eax
80484e7: add   %eax,%ecx        # ecx = ecx + eax
80484e9: shr   %edx             # shift edx right 1
80484eb: jne   80484e2 <main+0x7e> # jump: which CCs?
80484ed: movl  $0x0,0x8049798
80484f7: mov   %ecx,0x804979c
80484fd: ...
```

```
printf("result: %d\n", r);
```

```
return r;
```

```
}
```

CHALLENGE

Trace through the code when:

- 1) x = 2
- 2) x = 3

What is the sequence of PC (%eip) values that occur?
What value is in the registers at each step?

