

Princeton University

COS 217: Introduction to Programming Systems

Machine Language for the "detecta" Program

Machine Language from Assembler

```
$ gcc -c detecta.s
```

```
$ gdb detecta.o
```

```
(gdb) x/12i main
0x0 <main>:      push    %ebp
0x1 <main+1>:    mov     %esp,%ebp
0x3 <main+3>:    call   0x4 <main+4>
0x8 <main+8>:    cmp    $0x41,%eax
0xb <main+11>:   jne    0x1a <skip>
0xd <main+13>:   push   $0x0
0x12 <main+18>:  call   0x13 <main+19>
0x17 <main+23>:  add    $0x4,%esp
0x1a <skip>:     mov    $0x0,%eax
0x1f <skip+5>:   mov    %ebp,%esp
0x21 <skip+7>:   pop    %ebp
0x22 <skip+8>:   ret
```

```
(gdb) x/35b main
0x0 <main>:      0x55  0x89  0xe5  0xe8  0xfc  0xff  0xff  0xff
0x8 <main+8>:    0x83  0xf8  0x41  0x75  0x0d  0x68  0x00  0x00
0x10 <main+16>:  0x00  0x00  0xe8  0xfc  0xff  0xff  0xff  0x83
0x18 <main+24>:  0xc4  0x04  0xb8  0x00  0x00  0x00  0x00  0x89
0x20 <skip+6>:   0xec  0x5d  0xc3
```

```
(gdb) quit
```

Machine Language from Linker

```
$ gcc -o detecta detecta.o
```

```
$ gdb detecta
```

```
(gdb) x/12i main
0x80483a0 <main>:      push    %ebp
0x80483a1 <main+1>:    mov     %esp,%ebp
0x80483a3 <main+3>:    call   0x80482c8
0x80483a8 <main+8>:    cmp    $0x41,%eax
0x80483ab <main+11>:   jne    0x80483ba <skip>
0x80483ad <main+13>:   push   $0x80484a4
0x80483b2 <main+18>:   call   0x80482e8
0x80483b7 <main+23>:   add    $0x4,%esp
0x80483ba <skip>:     mov    $0x0,%eax
0x80483bf <skip+5>:     mov    %ebp,%esp
0x80483c1 <skip+7>:   pop    %ebp
0x80483c2 <skip+8>:   ret
```

```
(gdb) x/35b main
0x80483a0 <main>:      0x55  0x89  0xe5  0xe8  0x20  0xff  0xff  0xff
0x80483a8 <main+8>:    0x83  0xf8  0x41  0x75  0x0d  0x68  0xa4  0x84
0x80483b0 <main+16>:  0x04  0x08  0xe8  0x31  0xff  0xff  0xff  0x83
0x80483b8 <main+24>:  0xc4  0x04  0xb8  0x00  0x00  0x00  0x00  0x89
0x80483c0 <skip+6>:   0xec  0x5d  0xc3
```

```
(gdb) quit
```