

# Princeton University

## COS 217: Introduction to Programming Systems

### Machine Language for the "detecta" Program via gdb

#### Machine Language from Assembler

```
$ gcc -Wall -ansi -pedantic -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 -Wall -ansi -pedantic detecta.o -o detecta
$ 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
```