

## Some ASM Examples

```
int sum(int a, int b)
{
    a += b;
    return a;
}
```

```
08048404 <sum>:
8048404: 55                push   %ebp
8048405: 89 e5             mov    %esp,%ebp
8048407: 8b 45 0c          mov    0xc(%ebp),%eax

804840a: 03 45 08          -----
804840d: 5d                pop    %ebp
804840e: c3                ret
```

```
void swap(int *a, int *b)
{
    int temp;

    temp = *a;
    *a = *b;
    *b = temp;
}
```

```
0804840f <swap>:
804840f: 55                push   %ebp
8048410: 89 e5             mov    %esp,%ebp
8048412: 53                push   %ebx
8048413: 8b 55 08          mov    0x8(%ebp),%edx
8048416: 8b 4d 0c          mov    0xc(%ebp),%ecx
8048419: 8b 1a             mov    (%edx),%ebx

804841b: 8b 01             mov    -----
804841d: 89 02             mov    %eax,(%edx)
804841f: 89 19             mov    %ebx,(%ecx)
8048421: 5b                pop    %ebx
8048422: 5d                pop    %ebp
8048423: c3                ret
```

```
int max(int a, int b)
{
    if (a > b) {
        return a;
    } else {
        return b;
    }
}
```

```
08048424 <max>:
8048424: 55          push   %ebp
8048425: 89 e5      mov    %esp,%ebp
8048427: 8b 45 08   mov    0x8(%ebp),%eax
804842a: 8b 4d 0c   mov    0xc(%ebp),%ecx
804842d: 89 c2      mov    %eax,%edx

804842f: 39 c8      -----
8048431: 7f 02     jg     8048435 <max+0x11>
8048433: 89 ca     mov    %ecx,%edx
8048435: 89 d0     mov    %edx,%eax
8048437: 5d        pop    %ebp
8048438: c3        ret
```

```
int mult(int a, int b)
{
    int result = 0;

    while (b > 0) {
        result += a;
        b--;
    }

    return result;
}
```

```
08048439 <mult>:
8048439: 55          push   %ebp
804843a: 89 e5      mov    %esp,%ebp
804843c: 8b 4d 08   mov    0x8(%ebp),%ecx
804843f: 8b 55 0c   mov    0xc(%ebp),%edx
8048442: b8 00 00 00 00 mov    $0x0,%eax
8048447: 85 d2      test   %edx,%edx
8048449: 7e 07     jle   8048452 <mult+0x19>
804844b: 01 c8      -----

804844d: 4a        dec    ----
804844e: 85 d2     test   %edx,%edx
8048450: 7f f9     jg     804844b <mult+0x12>
8048452: 5d        pop    %ebp
8048453: c3        ret
```

```
0804834e <loop2>:
804834e: 55          push   %ebp
804834f: 89 e5      mov    %esp,%ebp
8048351: 57          push   %edi
8048352: 56          push   %esi
8048353: 53          push   %ebx
8048354: 8b 7d 08   mov    0x8(%ebp),%edi
8048357: bb 00 00 00 00 mov    $0x0,%ebx
804835c: be 00 00 00 00 mov    $0x0,%esi
8048361: 39 fb      cmp    %edi,%ebx
8048363: 7d 22      jge    8048387 <loop2+0x39>
8048365: ba 00 00 00 00 mov    $0x0,%edx
804836a: 39 f2      cmp    %esi,%edx
804836c: 7d 14      jge    8048382 <loop2+0x34>
804836e: 8d 0c b5 00 00 00 00 lea    0x0(,%esi,4),%ecx
8048375: 8d 04 52   lea    (%edx,%edx,2),%eax
8048378: 8d 04 08   lea    (%eax,%ecx,1),%eax
804837b: 01 c3      add    %eax,%ebx
804837d: 42          inc    %edx
804837e: 39 f2      cmp    %esi,%edx
8048380: 7c f3      jl     8048375 <loop2+0x27>
8048382: 46          inc    %esi
8048383: 39 fe      cmp    %edi,%esi
8048385: 7c de      jl     8048365 <loop2+0x17>
8048387: 89 d8      mov    %ebx,%eax
8048389: 5b          pop    %ebx
804838a: 5e          pop    %esi
804838b: 5f          pop    %edi
804838c: 5d          pop    %ebp
804838d: c3          ret
```

```
int loop2(int n)
{
    int total = 0;
    int i, j;

    for (i = 0; i < n; i++)
    {
        for (j = 0; _____; j++)
        {
            total += _____;
        }
    }

    return total;
}
```