

## 4.9 Exercises

1. Potential values have variable size. The PC has an appropriated byte size designated by the type of value the user enters. bipush therefore has a different size than irem, etc.
2. Structured programming concepts can be implemented in assembly language by using if/else statements, labels, and blocks. Each of these correspond with a separate function that an OOP (java) would parallel.
3. No branch exits for  $(x > 0 \text{ or } x < 0)$ . Using if\_cmp??, I would load a constant value 0 (iconst\_0) and the stored value x (iload\_2; from local variable 2) and compare the two.

```
iload_2      ; variable x
iconst_0     ; value 0
if_cmpgt GoSomeWhere
```

If the comparison returned true, branch to "GoSomeWhere". If the comparison returned false, go to the next conditional series of commands

```
iload_2
iconst_0
if_cmplt GoSomeWhere
```

4. Depends on the instruction used. If fcmpg is used and NaN is value, 1 is pushed. if fcmpl is used, NaN results in -1.

5. Usually designated by a series of labels.

```
LoopEntry:
    load values
    compares
    if_cmp?? GoSomeWhere
Else:
    do something else.
```