

CS558 Programming Languages – Fall 2023 – Suggested Study Question Solutions for Lecture 2a

1. (a)

```
    br test
top:  s
test: evaluate e into t
      cmp t, true
      breq top
```

(b)

```
top:  s
test: evaluate e into t
      cmp t, true
      brneq top
```

2. Here is one solution.

```
t := e
u := t - 13
ifsign u
  <: w := t - 4
    ifsign w
      <: x := t - 2
        ifsign x
          <: br def
          =: s2
          >: br def
        =: s4
      >: x := t - 12
        ifsign x
          <: br def
          =: s12
          >: br def
    =: s13
  >: w := t - 88
    ifsign w
      <: x := t - 17
        ifsign x
          <: br def
          =: s17
          >: br def
```

```
    =: s88
  >: x := t - 99
    ifsign x
      <: br def
        =: s99
      >: br def
  br done
def: sd
done:
```

3. Here is one solution. (This code actually compiles in Scala; yours need not.)

```
class RangeIterator(val r: Range) extends Iterator[Int] {
  var n = r.start
  def hasNext() : Boolean = n <= r.end
  def next() : Int = {
    val v = n
    n += 1
    v
  }
}
```