# Lab Quiz 3 Section B4

## Q1

**Q1** (25 points): Study the following code to answer the question below

```
class Date(var month: Int, var day: Int) {}


def q1(): Unit = {
 var dateList = List(
   new Date(1, 10),
   new Date(2, 30),
   new Date(2, 14),
   new Date(1, 9),
   new Date(3, 1)
 )

 val comparator: (Date, Date) => Boolean =
   (a: Date, b: Date) => {
   if (a.month < b.month) { -1 }
   else if (a.month > b.month { 1 }
   else if (a.day < b.day) { -1 }
   else if (a.day > b.day) { 1 }
   0
 }

 aList = aList.sortWith(comparator)

 println(dateList)
}
```

In what order are the elements of the inventory list printed at the end of the q1() method call?

# Q2

**Q2** (25 points): Study the following code to answer the question below

```
def f(n: Int): Int = {
 if (n >= 10) {
   5
 } else {
   -n + funRecursion(n + 4)
 }
}
```

What is returned by the method call `f(-5)`?

# Q3

**Q3** (25 points): Study the following code to answer the question below

```
def f(n: Int): Int = {
 if (n <= 10) {
   -2
 } else {
   n + -funRecursion(n-4) - funRecursion(n-2)
 }
}
```

What is returned by the method call `f(16)`?

# Q4

**Q4** (25 points): Study the following code to answer the question below

```
class Date(var month: Int, var date: Int) {}

def q4(): Int = {
 var myList: LinkedListNode[Date] = new LinkedListNode[Date](
   new Date(arg1, arg2), null
 )
 myList = myList.prepend(new Date(1, 0))
 myList = myList.prepend(new Date(2, 2))
 myList = myList.prepend(new Date(3, 15))
 myList = myList.prepend(new Date(4, 16))
 myList = myList.prepend(new Date(5, 20))

 val doubleDay: Date => Date = (x: Date) => new Date(x.month, x.date*2)
 myList = myList.map(doubleDay)

 val validDay: Date => Int = (x: Date) => {
   if (x.day <= 31 && x.day > 0) {
     1
   } else {
     0
   }
 }

 myList.sumValidDates(validDay)
}


class LinkedListNode[Date](var value: Date, var next: LinkedListNode[Date]) {

 def sumValidDates(f: Date => Int): Int = {
   if (this.next == null) {
     f(this.value)
   }else{
     f(this.value) + this.next.sumValidDates(f)
   }
 }

 def prepend(a: A): LinkedListNode[A] = {
   new LinkedListNode[A](a, this)
 }

 def map[B](f: A => B): LinkedListNode[B] = {
   val newValue = f(this.value)
   if (this.next == null) {
     new LinkedListNode[B](newValue, null)
```

```
    } else {
      new LinkedListNode[B](newValue, this.next.map(f))
    }
  }

}
```

What does a call to q4() return?