

The directories mentioned below should be ready starting early on Sat., 31 August.

Lab Exercises. (Due Tue., 10 Sept. in lab) This week, there are no classes on Monday. Those with Monday labs should make an effort to attend a Tuesday lab, even at the expense of overcrowding. As you can see, the lab exercise does not have to be finished until a week from Tuesday. But do it this week anyway! Yes, you do have to go to lab at least long enough to show your the TA that you've done substantial work on it.

Copy the directory `$master/hw/lab1` to a directory of your own, using commands such as

```
mkdir lab1
cp $master/hw/lab1/* lab1
```

or simply

```
cp -r $master/hw/lab1 .
```

(Sometimes we are tardy getting these directories set up. If you are working on this before lab and get messages such as "Permission denied" or "cannot access," it means we're not quite ready yet, or you misspelled something.)

In this directory, you should find a file called README, with directions about what to do during the scheduled lab.

Homework Exercises. (Due Fri., 6 September, at midnight) Create a directory to hold your answers to this homework set. Copy all the files from `$master/hw/hw1` into this directory. Use the command `submit hw1` to submit your solutions to the problems below. Place your answers to all these problems in the file named `Progs.java` (the `hw1` directory has a skeleton file for you to use).

1. Complete the following Java functions so that they perform as indicated in their comments. You may add any additional auxiliary functions and definitions you want. Definitions: A *sociable pair* consists of two different positive integers such that the sum of all distinct divisors of either one of them is equal to the other. For example, 220 is evenly divisible by 1, 2, 4, 5, 10, 11, 20, 22, 44, 55, and 110, which add to 284. 284 is divisible by 1, 2, 4, 71, and 142, which add up to 220.

```
a. /** The sum of all integers, k, such that 1 <= k < N and
    * N is evenly divisible by k. */
    static int factorSum (int N) {
        /* *Fill in here* */
    }
```

continued

```
b. /** Print the set of all sociable pairs whose members are all
    * between 1 and N>=0 (inclusive) on the standard output (one pair per
    * line, smallest member of each pair first, with no repetitions). */
static void printSociablePairs (int N) {
    /* *Fill in here* */
}
```

2. Complete the following Java functions so that they perform as indicated in their comments. You may add any additional auxiliary functions and definitions you want.

```
a. /** A list consisting of the elements of A followed by the
    * the elements of B. May modify items of A.
    * Don't use 'new'. */
static IntList dcatenate(IntList A, IntList B) {
    /* *Fill in here* */
}

b. /** The sublist consisting of LEN items from list L,
    * beginning with item #START (where the first item is #0).
    * Does not modify the original list elements.
    * It is an error if the desired items don't exist. */
static IntList sublist (IntList L, int start, int len) {
    /* *Fill in here* */
}

c. /** The sublist consisting of LEN items from list L,
    * beginning with item #START (where the first item is #0).
    * May modify the original list elements. Don't use 'new'.
    * It is an error if the desired items don't exist. */
static IntList dsublist (IntList L, int start, int len) {
    /* *Fill in here* */
}
```