

Sample Solutions

November 13, 2015

1 Summing Matrix Elements

```
// Problem 1: Summing matrix elements

f = open("input1.txt");
main {
    a = malloc(9);
    a[0] = 0; a[1] = 1; a[2] = 2;
    a[3] = 3; a[4] = 4; a[5] = 5;
    a[6] = 6; a[7] = 7; a[8] = 8;
    sum = 0;
    i0 = read(f); i0 = i0 - '0';
    //=====
    //===== YOUR CODE HERE =====
    // Hint:
    // * Read the code above.
    // * To extract the value of an ASCII digit, subtract '0'.
    // * To access row i column j of the matrix, use index i*3+j.
    // * To increment integer variable x by one, use x=x+1.
    //=====
    j0 = read(f); j0 = j0 - '0';
    r = read(f); r = r - '0';
    c = read(f); c = c - '0';
    i = i0;
    while (i < i0 + r) {
        j = j0;
        while (j < j0 + c) {
            sum = sum + a[i*3+j];
            j = j + 1;
        }
        i = i + 1;
    }
    //=====
    print(sum);
    free(a);
    return 0;
}
```

2 Converting ASCII Integers

```
// Problem 2: Converting ASCII integers

f = open("input2.txt");

//=====
//===== YOUR CODE HERE =====
// Hint:
// * Note the mandatory curly braces for conditional statements and loops.
// * A possible algorithm to parse an ASCII number is as follows:
//     ...
//     num = 0;
//     while (...) {
//         ...
//         num = num * 10 + c - '0';
//         ...
//     }
//     ...
//=====

main {
    if (!valid(f)) {
        return -1;
    }
    while(!end(f)) {
        bad = 0;
        num = 0;
        c = read(f);
        while (c != ' ' && c != '\n') {
            if (c < '0' || c > '9') {
                bad = 1;
                break;
            }
            num = num * 10 + c - '0';
            c = read(f);
        }
        if (!bad && c == ' ') {
            print(num);
        }
        while (c != '\n' && !end(f)) {
            c = read(f);
        }
    }
    return 0;
}
//=====
```