cis1.5-spring2007-sklar, lab II, part 2

instructions

- This is the second part of the lab/homework assignment for unit II.
- The entire assignment will be worth 9 points.
- The first part is worth 4 points and was distributed and worked on in class on Wednesday February 28.
- The second part is worth 5 points and will be distributed and worked on in class on Wednesday March 7.
- **Both parts together are due on Monday March 12** and must be submitted by email (as below).
- **Follow these emailing instructions:**
  1. Create a mail message addressed to *sklar@sci.brooklyn.cuny.edu* with the subject line **cis1.5 hw2**.
  2. Attach ONLY the **.cpp** files for each part, as outlined below.
     DO NOT ATTACH THE **.cbp** (CodeBlocks Project) files!
  3. Failure to follow these instructions will result in points being taken away from your grade. The number of points will be in proportion to the extent to which you did not follow instructions... (which can make it a lot harder for me to grade your work — grrrr!)

1 writing to an output file.

(2 points)

- Recall your **roomba3.cpp** program from the first assignment in which you entered commands from the keyboard (N,S,E,W,n,s,e,w,q) and controlled the roomba's actions.
- Create a new project in CodeBlocks and copy the **roomba3.cpp** code into the new project.
- Compile, build and run it to make sure it works as it did before.
- Then modify the program so that it generates a data file containing a record of the roomba's behavior, as follows:
  1. Open a file for output (writing).
  2. Write the roomba's initial location into the file.
  3. Using a `while` loop, ask the user to enter commands for the roomba, exiting the loop when the user enters '`q`'.
  4. With each command entered by the user, write the command letter into the file.
  5. When you exit the `while` loop, write the roomba's final location into the file.
  6. Close the file.
- Make sure the program compiles, builds and runs as expected.
- An example data file, after the program runs, might look like this:

```
8 2
n n s e e s w
9 2
```

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2 reading from an input file.

(3 points)

- Get the sample *data file* `lab2.dat` from Prof Sklar, or create one yourself using a *text editor* like Notepad or TextEdit and put the following characters into the file:
  `0 0 0 0 0 1 0 0 0 1 0 1 0 0 0 1 0 0 0`
- Create a new project and a new, empty C++ file.
- Pretend that the data file contains a series of characters that will be vacuumed up, one after the other, by your roomba. A `0` represents a clean place and a `1` represents a spot of dirt. Your task is to write a program that counts how many spots of dirt are in the file.
- The C++ file should do the following:
  1. Create a variable for counting dirt spots and initialize it to 0.
  2. Open the data file for reading.
  3. Read the file, one number at time, as long as there is data to read in the file (i.e., `while eof` has not been found).
  4. Every time you read a 1 from the file, increment your dirt spot counting variable.
  5. When you have read to the end of the file, exit the loop.
  6. Close the file.
  7. Output to the screen a message telling how many dirt spots you counted.
- Make sure the program compiles, builds and runs as expected.
- If you finish, try creating other data files and running your program to read those files. Try creating a data file for a friend and exchanging data files to see if your program can count how many dirt spots are in your friend's data file.