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CSE 220

TEST CASES

Part 1: Arguments testing

1. –t
    1. Correct input (-t 2 –f foo.txt) Expected: should work normally
       Output:

```
-bash-3.2$ vi foo.txt
-bash-3.2$ make
make: `prog' is up to date.
-bash-3.2$ ./prog -t 2 -f foo.txt

Vehicle 1 at location 3.40, 5.40 moving with a velocity 3.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 2,
Vehicle 2 at location 12.40, 7.30 moving with a velocity 9.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 1,
Vehicle 3 at location 6.70, 14.20 moving with a velocity 17.20, it's neighbors are: Vehicle 4, Vehicle 2, Vehicle 1,
Vehicle 4 at location 43.30, 4.00 moving with a velocity 10.00, it's neighbors are: Vehicle 3, Vehicle 2, Vehicle 1,

Vehicle 1 at location 5.74, 10.92 moving with a velocity 3.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 2,
Vehicle 2 at location 25.13, 20.03 moving with a velocity 9.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 1,
Vehicle 3 at location 7.30, 48.59 moving with a velocity 17.20, it's neighbors are: Vehicle 4, Vehicle 2, Vehicle 1,
Vehicle 4 at location 61.71, 11.81 moving with a velocity 10.00, it's neighbors are: Vehicle 3, Vehicle 2, Vehicle 1,

-bash-3.2$
```

    2. Incorrect input (negative number) (-t -4 –f foo.txt) Expected: should give an error
       Output:

```
-bash-3.2$ ./prog -t -4 -f foo.txt
Error: Expecting argument following -t
-bash-3.2$
```

    3. Incorrect input (no ‘-t’ argument) (-f foo.txt) Expected: should give an error
       Output:

```
-bash-3.2$ ./prog -f foo.txt
Error: Expecting argument -t
-bash-3.2$
```

2. –f
    4. Invalid input file Expected: should give an error
       Output:

```
-bash-3.2$ ./prog -t 3 -f nonsense.txt
could not open nonsense.txt
-bash-3.2$
```

    1. No ‘-f’ option (-t 3)

Output:

```
-bash-3.2$ ./prog -t 3
Error: Expecting argument -f
-bash-3.2$
```

2. No input file (-t 4 –f)

   Output:

```
-bash-3.2$ ./prog -t 3 -f
expecting argument following -f
-bash-3.2$
```

3. –o

   1. –o option without any file name

   Output:

```
-bash-3.2$ ./prog -t 3 -f foo.txt -o
Error: Expecting argument following -o
-bash-3.2$
```

4. –b and –s

   1. Just –b selected

   Output:

```
-bash-3.2$ ./prog -t 3 -b -f foo.txt

Vehicle 1 at location 3.40, 5.40 moving with a velocity 3.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 2,
Vehicle 2 at location 12.40, 7.30 moving with a velocity 9.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 1,
Vehicle 3 at location 6.70, 14.20 moving with a velocity 17.20, it's neighbors are: Vehicle 4, Vehicle 2, Vehicle 1,
Vehicle 4 at location 43.30, 4.00 moving with a velocity 10.00, it's neighbors are: Vehicle 3, Vehicle 2, Vehicle 1,

Vehicle 1 at location 6.92, 13.68 moving with a velocity 3.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 2,
Vehicle 2 at location 31.49, 26.39 moving with a velocity 9.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 1,
Vehicle 3 at location 7.60, 65.79 moving with a velocity 17.20, it's neighbors are: Vehicle 4, Vehicle 2, Vehicle 1,
Vehicle 4 at location 70.92, 15.72 moving with a velocity 10.00, it's neighbors are: Vehicle 3, Vehicle 2, Vehicle 1,

-bash-3.2$
```

   2. Both –b and –s selected

   Output:

```
-bash-3.2$ ./prog -t 3 -b -s -f foo.txt
Error: Expecting argument either -b OR -s
-bash-3.2$
```

   3. –s option selected

Output:

```
-bash-3.2$ ./prog -t 3 -s -f foo.txt



-bash-3.2$
```

5. Boundary conditions

1. Empty file

Output:

```
-bash-3.2$ ./prog -t 3 -f empty.txt
Error: data file is empty!
-bash-3.2$
```

2. 1 Vehicle

Output:

```
-bash-3.2$ ./prog -t 3 -f oneCar.txt

Vehicle 1 at location 12.00, 15.00 moving with a velocity 23.00, it's neighbors are:

Vehicle 1 at location 78.33, 34.02 moving with a velocity 23.00, it's neighbors are:

-bash-3.2$
```

3. 2 Vehicles

Output:

```
-bash-3.2$ ./prog -t 3 -f oneCar.txt

Vehicle 1 at location 12.00, 15.00 moving with a velocity 23.00, it's neighbors are: Vehicle 2,
Vehicle 2 at location 13.00, 14.00 moving with a velocity 15.00, it's neighbors are: Vehicle 1,

Vehicle 1 at location 78.33, 34.02 moving with a velocity 23.00, it's neighbors are: Vehicle 2,
Vehicle 2 at location 56.26, 26.40 moving with a velocity 15.00, it's neighbors are: Vehicle 1,

-bash-3.2$
```

4. 49 Vehicles

Output: (neighbors taken out for this test case since it would be a big mess too look at!)

It works though if you want to see it run the program with that many cars!

```
Vehicle 1 at location 1.00, 2.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 2 at location 5.00, 6.00 moving with a velocity 7.00, it's neighbors are:
Vehicle 3 at location 9.00, 1.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 4 at location 5.00, 86.00 moving with a velocity 43.00, it's neighbors are:
Vehicle 5 at location 4.00, 7.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 6 at location 1.00, 7.00 moving with a velocity 8.00, it's neighbors are:
Vehicle 7 at location 6.00, 5.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 8 at location 8.00, 6.00 moving with a velocity 31.00, it's neighbors are:
Vehicle 9 at location 12.00, 56.00 moving with a velocity 23.00, it's neighbors are:
Vehicle 10 at location 34.00, 78.00 moving with a velocity 345.00, it's neighbors are:
Vehicle 11 at location 1.00, 2.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 12 at location 5.00, 6.00 moving with a velocity 7.00, it's neighbors are:
Vehicle 13 at location 9.00, 1.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 14 at location 5.00, 86.00 moving with a velocity 43.00, it's neighbors are:
Vehicle 15 at location 4.00, 7.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 16 at location 1.00, 7.00 moving with a velocity 8.00, it's neighbors are:
Vehicle 17 at location 6.00, 5.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 18 at location 8.00, 6.00 moving with a velocity 31.00, it's neighbors are:
Vehicle 19 at location 12.00, 56.00 moving with a velocity 23.00, it's neighbors are:
Vehicle 20 at location 34.00, 78.00 moving with a velocity 345.00, it's neighbors are:
Vehicle 21 at location 1.00, 2.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 22 at location 5.00, 6.00 moving with a velocity 7.00, it's neighbors are:
Vehicle 23 at location 9.00, 1.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 24 at location 5.00, 86.00 moving with a velocity 43.00, it's neighbors are:
Vehicle 25 at location 4.00, 7.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 26 at location 1.00, 7.00 moving with a velocity 8.00, it's neighbors are:
Vehicle 27 at location 6.00, 5.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 28 at location 8.00, 6.00 moving with a velocity 31.00, it's neighbors are:
Vehicle 29 at location 12.00, 56.00 moving with a velocity 23.00, it's neighbors are:
Vehicle 30 at location 34.00, 78.00 moving with a velocity 345.00, it's neighbors are:
Vehicle 31 at location 1.00, 2.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 32 at location 5.00, 6.00 moving with a velocity 7.00, it's neighbors are:
Vehicle 33 at location 9.00, 1.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 34 at location 5.00, 86.00 moving with a velocity 43.00, it's neighbors are:
Vehicle 35 at location 4.00, 7.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 36 at location 1.00, 7.00 moving with a velocity 8.00, it's neighbors are:
Vehicle 37 at location 6.00, 5.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 38 at location 8.00, 6.00 moving with a velocity 31.00, it's neighbors are:
Vehicle 39 at location 12.00, 56.00 moving with a velocity 23.00, it's neighbors are:
Vehicle 40 at location 34.00, 78.00 moving with a velocity 345.00, it's neighbors are:
Vehicle 41 at location 1.00, 2.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 42 at location 5.00, 6.00 moving with a velocity 7.00, it's neighbors are:
Vehicle 43 at location 9.00, 1.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 44 at location 5.00, 86.00 moving with a velocity 43.00, it's neighbors are:
Vehicle 45 at location 4.00, 7.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 46 at location 1.00, 7.00 moving with a velocity 8.00, it's neighbors are:
Vehicle 47 at location 6.00, 5.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 48 at location 8.00, 6.00 moving with a velocity 31.00, it's neighbors are:
Vehicle 49 at location 12.00, 56.00 moving with a velocity 23.00, it's neighbors are:
```

5. 50 cars *same output change as 49.

Output:

```
Vehicle 1 at location 1.00, 2.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 2 at location 5.00, 6.00 moving with a velocity 7.00, it's neighbors are:
Vehicle 3 at location 9.00, 1.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 4 at location 5.00, 86.00 moving with a velocity 43.00, it's neighbors are:
Vehicle 5 at location 4.00, 7.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 6 at location 1.00, 7.00 moving with a velocity 8.00, it's neighbors are:
Vehicle 7 at location 6.00, 5.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 8 at location 8.00, 6.00 moving with a velocity 31.00, it's neighbors are:
Vehicle 9 at location 12.00, 56.00 moving with a velocity 23.00, it's neighbors are:
Vehicle 10 at location 34.00, 78.00 moving with a velocity 345.00, it's neighbors are:
Vehicle 11 at location 1.00, 2.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 12 at location 5.00, 6.00 moving with a velocity 7.00, it's neighbors are:
Vehicle 13 at location 9.00, 1.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 14 at location 5.00, 86.00 moving with a velocity 43.00, it's neighbors are:
Vehicle 15 at location 4.00, 7.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 16 at location 1.00, 7.00 moving with a velocity 8.00, it's neighbors are:
Vehicle 17 at location 6.00, 5.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 18 at location 8.00, 6.00 moving with a velocity 31.00, it's neighbors are:
Vehicle 19 at location 12.00, 56.00 moving with a velocity 23.00, it's neighbors are:
Vehicle 20 at location 34.00, 78.00 moving with a velocity 345.00, it's neighbors are:
Vehicle 21 at location 1.00, 2.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 22 at location 5.00, 6.00 moving with a velocity 7.00, it's neighbors are:
Vehicle 23 at location 9.00, 1.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 24 at location 5.00, 86.00 moving with a velocity 43.00, it's neighbors are:
Vehicle 25 at location 4.00, 7.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 26 at location 1.00, 7.00 moving with a velocity 8.00, it's neighbors are:
Vehicle 27 at location 6.00, 5.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 28 at location 8.00, 6.00 moving with a velocity 31.00, it's neighbors are:
Vehicle 29 at location 12.00, 56.00 moving with a velocity 23.00, it's neighbors are:
Vehicle 30 at location 34.00, 78.00 moving with a velocity 345.00, it's neighbors are:
Vehicle 31 at location 1.00, 2.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 32 at location 5.00, 6.00 moving with a velocity 7.00, it's neighbors are:
Vehicle 33 at location 9.00, 1.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 34 at location 5.00, 86.00 moving with a velocity 43.00, it's neighbors are:
Vehicle 35 at location 4.00, 7.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 36 at location 1.00, 7.00 moving with a velocity 8.00, it's neighbors are:
Vehicle 37 at location 6.00, 5.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 38 at location 8.00, 6.00 moving with a velocity 31.00, it's neighbors are:
Vehicle 39 at location 12.00, 56.00 moving with a velocity 23.00, it's neighbors are:
Vehicle 40 at location 34.00, 78.00 moving with a velocity 345.00, it's neighbors are:
Vehicle 41 at location 1.00, 2.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 42 at location 5.00, 6.00 moving with a velocity 7.00, it's neighbors are:
Vehicle 43 at location 9.00, 1.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 44 at location 5.00, 86.00 moving with a velocity 43.00, it's neighbors are:
Vehicle 45 at location 4.00, 7.00 moving with a velocity 3.00, it's neighbors are:
Vehicle 46 at location 1.00, 7.00 moving with a velocity 8.00, it's neighbors are:
Vehicle 47 at location 6.00, 5.00 moving with a velocity 2.00, it's neighbors are:
Vehicle 48 at location 8.00, 6.00 moving with a velocity 31.00, it's neighbors are:
Vehicle 49 at location 12.00, 56.00 moving with a velocity 23.00, it's neighbors are:
Vehicle 50 at location 23.00, 12.00 moving with a velocity 13.00, it's neighbors are:
```

6. 51 cars

Output:

```
-bash-3.2$ ./prog -t 3 -f 49Car.txt
Error: Too many cars!
-bash-3.2$
```

7. Bad values on input file too many numbers on a line

Program will tell you which file has too many lines

Output:

```
-bash-3.2$ ./prog -t 3 -f test.txt
Error: Too many values on line: 2
-bash-3.2$
```

And same with when there are not enough values on a line

```
-bash-3.2$ ./prog -t 3 -f test.txt
Error: Not enough values on line: 2
-bash-3.2$
```

8. File contains values that are not numbers

Output (file that is tested contains random alphabet chars)

```
-bash-3.2$ ./prog -t 3 -f test.txt
Error: input file error
-bash-3.2$
```

9. Test case of valid input

Input file

3.4,5.4,3.0,67

12.4,7.3,9.0,45

6.7,14.2,17.2,89

43.3,4,10,23

Output: (-t 5 –f foo.txt)

```
gcc main.o vehicles.o parseArgs.o -o prog -lm
-bash-3.2$ ./prog -t 5 -f foo.txt

Vehicle 1 at location 3.40, 54.00 moving with a velocity 3.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 2,
Vehicle 2 at location 12.40, 7.30 moving with a velocity 9.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 1,
Vehicle 3 at location 6.70, 14.20 moving with a velocity 17.20, it's neighbors are: Vehicle 4, Vehicle 2, Vehicle 1,
Vehicle 4 at location 43.30, 4.00 moving with a velocity 10.00, it's neighbors are: Vehicle 3, Vehicle 2, Vehicle 1,

Vehicle 1 at location 9.26, 67.81 moving with a velocity 3.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 2,
Vehicle 2 at location 44.22, 39.12 moving with a velocity 9.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 1,
Vehicle 3 at location 8.20, 100.19 moving with a velocity 17.20, it's neighbors are: Vehicle 4, Vehicle 2, Vehicle 1,
Vehicle 4 at location 89.33, 23.54 moving with a velocity 10.00, it's neighbors are: Vehicle 3, Vehicle 2, Vehicle 1,

Vehicle 1 at location 15.12, 81.62 moving with a velocity 3.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 2,
Vehicle 2 at location 76.04, 70.94 moving with a velocity 9.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 1,
Vehicle 3 at location 9.70, 186.17 moving with a velocity 17.20, it's neighbors are: Vehicle 4, Vehicle 2, Vehicle 1,
Vehicle 4 at location 135.35, 43.07 moving with a velocity 10.00, it's neighbors are: Vehicle 3, Vehicle 2, Vehicle 1,

Vehicle 1 at location 20.98, 95.42 moving with a velocity 3.00, it's neighbors are: Vehicle 4, Vehicle 3, Vehicle 2,
Vehicle 2 at location 107.86, 102.76 moving with a velocity 9.00, it's neighbors are: Vehicle 1,
Vehicle 3 at location 11.20, 272.16 moving with a velocity 17.20, it's neighbors are: Vehicle 4, Vehicle 1,
Vehicle 4 at location 181.38, 62.61 moving with a velocity 10.00, it's neighbors are: Vehicle 3, Vehicle 1,

Vehicle 1 at location 26.84, 109.23 moving with a velocity 3.00, it's neighbors are: Vehicle 4, Vehicle 3,
Vehicle 2 at location 139.68, 134.58 moving with a velocity 9.00, it's neighbors are:
Vehicle 3 at location 12.70, 358.15 moving with a velocity 17.20, it's neighbors are: Vehicle 4, Vehicle 1,
Vehicle 4 at location 227.40, 82.15 moving with a velocity 10.00, it's neighbors are: Vehicle 3, Vehicle 1,

Vehicle 1 at location 32.70, 123.04 moving with a velocity 3.00, it's neighbors are: Vehicle 4, Vehicle 3,
Vehicle 2 at location 171.50, 166.40 moving with a velocity 9.00, it's neighbors are:
Vehicle 3 at location 14.20, 444.13 moving with a velocity 17.20, it's neighbors are: Vehicle 1,
Vehicle 4 at location 273.43, 101.68 moving with a velocity 10.00, it's neighbors are: Vehicle 1,

Vehicle 1 at location 38.57, 136.85 moving with a velocity 3.00, it's neighbors are: Vehicle 3,
Vehicle 2 at location 203.32, 198.22 moving with a velocity 9.00, it's neighbors are:
Vehicle 3 at location 15.71, 530.12 moving with a velocity 17.20, it's neighbors are: Vehicle 1,
Vehicle 4 at location 319.45, 121.22 moving with a velocity 10.00, it's neighbors are:

Vehicle 1 at location 44.43, 150.65 moving with a velocity 3.00, it's neighbors are: Vehicle 3,
Vehicle 2 at location 235.14, 230.04 moving with a velocity 9.00, it's neighbors are:
Vehicle 3 at location 17.21, 616.11 moving with a velocity 17.20, it's neighbors are: Vehicle 1,
Vehicle 4 at location 365.48, 140.76 moving with a velocity 10.00, it's neighbors are:
```