Tracy Michaels

System Level Programming Lab 8

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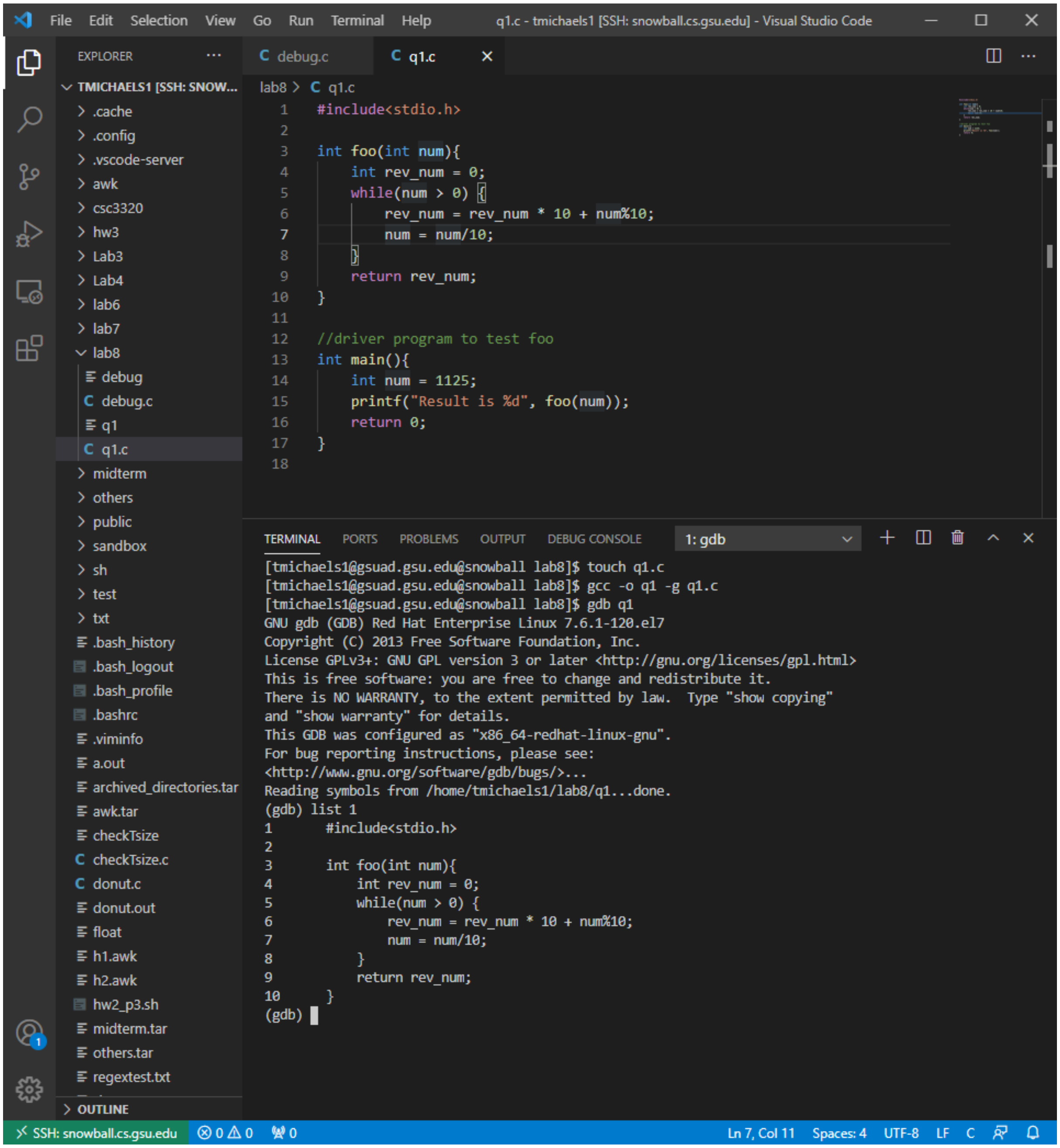
Part 1

1-3)



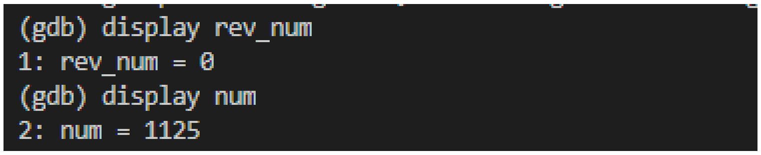
```c
#include<stdio.h>

int foo(int num){
    int rev_num = 0;
    while(num > 0) {
        rev_num = rev_num * 10 + num%10;
        num = num/10;
    }
    return rev_num;
}

//driver program to test foo
int main(){
    int num = 1125;
    printf("Result is %d", foo(num));
    return 0;
}
```

```
[tmichaels1@gsuad.gsu.edu@snowball lab8]$ touch q1.c
[tmichaels1@gsuad.gsu.edu@snowball lab8]$ gcc -o q1 -g q1.c
[tmichaels1@gsuad.gsu.edu@snowball lab8]$ gdb q1
GNU gdb (GDB) Red Hat Enterprise Linux 7.6.1-120.el7
Copyright (C) 2013 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.  Type "show copying"
and "show warranty" for details.
This GDB was configured as "x86_64-redhat-linux-gnu".
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>...
Reading symbols from /home/tmichaels1/lab8/q1...done.
(gdb) list 1
1       #include<stdio.h>
2
3       int foo(int num){
4           int rev_num = 0;
5           while(num > 0) {
6               rev_num = rev_num * 10 + num%10;
7               num = num/10;
8           }
9           return rev_num;
10      }
(gdb) 
```

4) (gdb) break 5

4-2) (gdb) r

5)



```
(gdb) display rev_num
1: rev_num = 0
(gdb) display num
2: num = 1125
```

6)

	1st iteration	2nd iteration	3rd iteration	4th iteration
num	112	11	1	0
rev_num	5	52	521	5211

7) (gdb) quit

8) foo function reverses integers passed to it

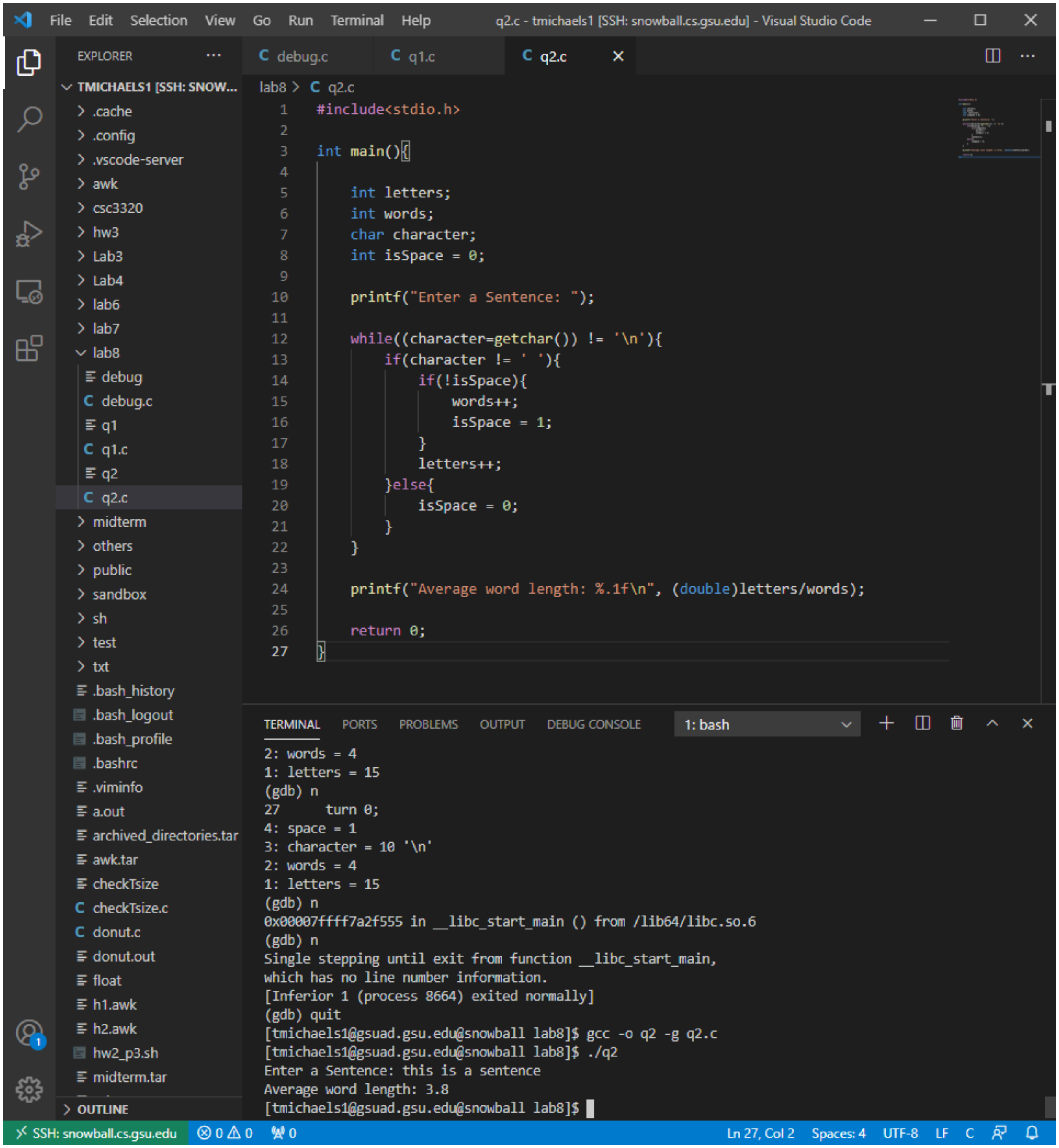
Part 2

Line 11: wrap \n in single quotes

Line 13, 15, 19: variable space not declared. Added declaration and initialization to 0 at beginning of main and changed to isSpace for better clarification on what it is

Line 20: else statement missing closing bracket

Line 22: cast integers to floating point numbers as to not improperly truncate during division.



```c
1   #include<stdio.h>
2
3   int main(){
4
5       int letters;
6       int words;
7       char character;
8       int isSpace = 0;
9
10      printf("Enter a Sentence: ");
11
12      while((character=getchar()) != '\n'){
13          if(character != ' '){
14              if(!isSpace){
15                  words++;
16                  isSpace = 1;
17              }
18              letters++;
19          }else{
20              isSpace = 0;
21          }
22      }
23
24      printf("Average word length: %.1f\n", (double)letters/words);
25
26      return 0;
27  }
```

```
2: words = 4
1: letters = 15
(gdb) n
27      turn 0;
4: space = 1
3: character = 10 '\n'
2: words = 4
1: letters = 15
(gdb) n
0x00007ffff7a2f555 in __libc_start_main () from /lib64/libc.so.6
(gdb) n
Single stepping until exit from function __libc_start_main,
which has no line number information.
[Inferior 1 (process 8664) exited normally]
(gdb) quit
[tmichaels1@gsuad.gsu.edu@snowball lab8]$ gcc -o q2 -g q2.c
[tmichaels1@gsuad.gsu.edu@snowball lab8]$ ./q2
Enter a Sentence: this is a sentence
Average word length: 3.8
[tmichaels1@gsuad.gsu.edu@snowball lab8]$
```