

ECE 270 Test #2  
April 6, 1998  
Honor code in effect

(35) Write a C program called prog1.c that will calculate the average of a set of numbers entered by the user using the function calc\_average written by you. The following code fragment is an example of how it is to be used and may be used in your code if you wish:

```
double average, array[50];
int num;
/* Code goes here to read in data entered by the user (numpts, pt1, pt2, etc */
average = calc_average(num, array);
```

Here calc\_average finds the average of the num data points contained in array[]. Note that your program should consist of main and calc\_average. Note that main is to print the average value after calling the function.

2. (35) Write a function called digitcount that will count the number of digits in a character string and return that value. The function prototype for this function is:

```
int digitcount(char string[]);
```

Demonstrate that your function works by calling it from a program called prog2.c that will read in a text string using scanf in main. The number of uppercase characters should also be printed in main.

3. Briefly answer the following questions. Please save your answers as a comment at the end of prog2.c

- a. (5) Explain why function prototypes are useful.
- b. (5) Write a function prototype for the function calc\_average in problem 1.
- c. (5) How can a program be written so that function prototypes are not required but the benefits of function prototypes are retained?
- d. (5) How do int variables differ from double variables?
- e. (5) How do double variables differ from float variables?
- f. (5) When can a variable be declared in a C program?

**Note: You may only use the floppy disk that has been provided for this test.** Also, please call your first program prog1.c and your second program prog2.c. It would be a good idea to save backup copies of your programs using file names like prog1bu.c and prog2bu.c. Please return this sheet with your name on it when you return your tests and floppies. **Be sure to include your name as a comment in each program, put your name on your disk, and sign the honor code below.**

I have neither given nor received aid on this examination \_\_\_\_\_

Print your name: \_\_\_\_\_