

ECE 270 Test #2

Dec. 14, 1998

Honor code in effect

1. (35) Write a function that will calculate the roots of the quadratic and return the largest root. Assume that complex roots will not occur but check for the condition and print an error message. The function prototype is:

```
double quad_root(double a, double b, double c,);
```

Demonstrate that the function works properly by calling it from main in your program called prog1.c using values for a, b, and c given on the command line. Hint: Roots of the quadratic can be found using the formula:

$$\text{root} = (-b \pm \sqrt{b^2 - 4ac}) / (2a)$$

2. (35) Write a function called digitconvert that will return the value of the digits in a character string. This function may not call any standard C functions such as atoi. Assume that all character strings will always contain exactly 3 digits and no other characters except for the terminating null character. Typical examples would be "203", "041" and "987". The function prototype for this function is:

```
int digitconvert(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.

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) Why is the function strcmp useful?

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) Why should global variables be avoided?

e. (5) What is meant by the scope of a variable? This can be answered in a very short simple sentence!

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:\_\_\_\_\_