

CS270 Recitation 1

“C Programming Exercise”

Goals

To modify, compile, and run a C program that solves quadratic equations.

The Assignment

Start by making a directory called cs270 in your home directory

```
%> mkdir cs270
%> cd cs270
```

Make a subdirectory called R1 (inside cs270) for the recitation assignment, all files should reside in this subdirectory.

```
%> mkdir R1
```

We have provided the framework of the C program to get you started. Open up `gedit` and copy the code shown below and save it into a file called `r1.c` in your R1 subdirectory.

```
#include <math.h>
#include <stdio.h>

// Function declaration
float quadratic(float a, float b, float c);

// Function: quadratic
// Description: Implements the quadratic equation.
// Parameters: float, float, float: coefficients
// Return: float: root of the equation
// Error: Return 0.0 if division by zero would occur.
float quadratic(float a, float b, float c)
{
    // Avoid division by zero
    if (a == 0) return 0.0;

    // Implement quadratic equation
    float result = 0.0;
    return result;
}

// Program entry point
int main()
{
    float a, b, c, r;

    printf ("Quadratic Program\n");
    printf("Enter a: ");
    scanf("%f", &a);
    printf("Enter b: ");
    scanf("%f", &b);
    printf("Enter c: ");
    scanf("%f", &c);
    r = quadratic(a, b, c);
    printf("Root is %3.2f\n", r);
}
```

Compile the program into an executable called r1, as shown below.

```
%> gcc -g -std=c99 -Wall -lm r1.c -o r1
```

To run the compiled program, type the following command:

```
%> ./r1
```

Verify that the program always returns zero for the root, since the quadratic function is not implemented. Edit the program (using `gedit`) and implement the quadratic equation in `r1.c`. Recompile and run the program with the following test sets:

$a = 1, b = 0, c = -25$, should return root of 5.00

$a = 1, b = 1, c = -6$, should return root of 2.00

$a = 1, b = -5, c = 4$, should return root of 4.00