

# CS344 Lab 6 – Square Root

**Due: 9/30/09**

**Points: 20**

## Purpose

The purpose of the lab is to learn how to compute the square root of a number using the Babylonian method and a variation of it.

## Process

Implement the Babylonian method:

$$x_{n+1} = \frac{1}{2} \left( x_n + \frac{S}{x_n} \right)$$

Prompt the user for a number and an initial guess. Iterate through the equation 10 times to determine the square root of 2 with an initial guess of 1.4 and 1.42 displaying the intermediate values.

Your output will look something like for an initial guess of 1.4:

```
Enter number:
2
Enter initial guess
1.4
1.41428566
1.41421354
1.41421354
1.41421354
1.41421354
1.41421354
1.41421354
1.41421354
1.41421354
1.41421354
1.41421354
1.41421354
```

Implement the following fixed point iteration that attempts to compute the square root:

$$x_{n+1} = (x_n^2 - S)^2 + x_n$$

Iterate through the equation 100 times to determine the square root of 2 with an initial guess of 1.4 and 1.42 displaying the intermediate values.

Turn in your work as you did for the previous labs.