

Beginning C Programming for Engineers

Homework Set 5

Name: _____

1. Arrays are a natural fit for matrix operations. This problem explores some of the issues with matrix addition. We will write a function with the following prototype:

```
void add3x3(float result[3][3], float a[3][3], float b[3][3]);
```

This will add the 3×3 matrices **a** and **b**, storing the result in **result**.

- (a) Devise an algorithm for this function. Your algorithm should use iteration. Show your algorithm with a flowchart.
- (b) Write the function. Use one or two iteration statements — either **for** or **while**, whichever is appropriate. State why your choice is the appropriate choice.
- (c) Write another function to print a 3×3 matrix passed to it as an argument.
- (d) Use these functions to write a program that will read in values for **a** and **b**, add them, and display the result.
- (e) Modify the functions to accept an additional parameter, **n**, indicating that they should operate on $n \times n$ matrices (for **n** less than some reasonable maximum value).