

# Beginning C Programming for Engineers

In-class exercise, lesson 4

Name: \_\_\_\_\_

Write a function, `Power`, that uses this prototype:

```
int Power(int b, int e);
```

This should compute, strangely enough,  $b^e$  for  $e \geq 0$ . Your function is to do this without calling other C functions like `pow`, `log`, or `exp`. You may implement your function either with a loop, as you have done before, or with recursion. (If you use a loop, you might be able to adapt the program you wrote for our last class.) *Your `Power` function must not contain a `printf` call!*

Write a short main program that calls `Power`, so we can verify that your `Power` function really works. Some example runs might look like this:

```
Enter the base (b): 5
Enter the exponent (e): 3
b^e = 125
```

```
Enter the base (b): 2
Enter the exponent (e): 0
b^e = 1
```

If you already understand recursion, and think this problem is too easy, you might want to try to solve it with recursion. The following identities can be used to find a recursive solution when  $e \geq 0$ . Can you satisfy yourself that they are true?

$$\begin{aligned} b^0 &= 1 \\ b^e &= b^{e-1}b \end{aligned}$$