

CS 12 - Assignment 3

Recursion

Due Thursday, April 30

In this assignment you will be using recursion to solve a few basic problems. Be sure to include all necessary information at the top of your program and use good commenting and style throughout.

1. Write a recursive function that computes x raised to the power n . You only need to deal with nonnegative exponents. Thus you can just print out an error message if a negative exponent is passed. Remember that anything raised to the power of 0 is 1. The function should be of the form:

```
double power(double x, int n);
```

2. Write a recursive function that returns the number of digits in a nonnegative integer. For example, it should return 4 if passed the integer 1126 and should return 1 if passed the integer 0. It should take the form:

```
int num_digits(int num);
```

3. Write a recursive function that searches for an item in an array of integers. It should return the index of the first occurrence of the item if found and should return -1 otherwise. Your function should not have any input or output. Your function should not make any assumptions about the size of the array.

Write a short main program that demonstrates the use and correctness of these functions.