

CS 12 - Lab 3

Recursion

In this lab you will use recursion to solve some problems. Be sure to include all necessary information at the top of the program and use good commenting and style throughout your program.

1. 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);
```

2. Write a recursive function that prints the equivalent number using a different base. It should be passed an decimal integer (base 10) and should be passed the new base. This is calculated by the following approach:

```
    0   Remainder 1
    -
  2|1   Remainder 1
    -
  2|3   Remainder 0
    -
  2|6   Remainder 1
  --
 2|13   Remainder 0
  --
 2|26
```

Thus, $26 = 11010(\text{base } 2)$. The function should take the form:

```
void convert_base(int num, int base);
```