**Tutorial - Week 7**

**Objectives:** To practice with

* Recursive functions
* User Defined Data Types

1. **Consider the following recursive function that calculates xy:**

**where** x = base; y = exponent

int power(int base, int exponent)

{

if (exponent == 0)

return 1;

else

return base \* power(base, exponent-1);

}

1. **Where is the Base Case?**
2. **Where is the General Case?**
3. **What is the returned value of this function call: result = power( 2, 3);**
4. **Draw a diagram explaining all stages that follow this function call.**

1. **Write a recursive function count\_digits that counts all the digits in a string.**
2. **What is the output of the following program? What does function strange compute when called with a positive integer?**

#include <stdio.h>

int strange(int n);

int

main(void)

{

printf("%d\n", strange(7));

}

int

strange(int n)

{

int ans;

if (n == 1)

ans = 0;

else

ans = 1 + strange(n / 2);

return (ans);

}

1. **Write a recursive function find\_sum that calculates the sum of successive integers starting at 1 and ending at n (i.e., find\_sum(n) = (1 + 2 + . . . + ( n − 1) + n ).**