CSE122 Computer Programming

Sheet 7: Recursion

1. Write a recursive function that returns the factorial of an input number.

2. Write a recursive function that returns the greatest common divisor of two numbers, using Euclidean algorithm.

3. Write a recursive function that returns the value of a Fibonacci number.

4. Consider the following recursive function:

```
void recFun(int x)
{
    if (x > 10)
    {
        recFun(x / 10);
        cout << x % 10 << endl;
    }
    else
        cout << x << endl;
}
```

What is the output of the following statements?

5. Consider the following function:

```
int test(int x, int y)
{
    if (x == y)
        return x;
    else if (x > y)
        return (x + y);
    else
        return test(x + 1, y - 1);
}
```

What is the output of the following statements?

a. cout << test(5, 10) << endl;
b. cout << test(3, 9) << endl;

6. Write a recursive function, vowels, that returns the number of vowels in a string. Also, write a program to test your function.

7. Write a recursive function, **power**, that takes as parameters two integers *x* and *y* such that x is nonzero and returns x^y, where *y* is a positive integer.

8. Write and implement a recursive version of the array sequential search algorithm.