**CS 114 Assignment 2**

**Topic: Recursion (Total 4 points)**

**For each task, submit the source code with detail comments, test data and output result electronically (no hardcopy).**

**1: Write a java program that use the factorial recursive method to**

**(1 point)**

1. **Accept factorial number from keyboard.**
2. **Validate the input. Reject the invalid input until the input is accepted. (Reject input if it is character or string)**
3. **Use recursive call to calculate the factorial value.**
4. **Print the result**
5. **Accept the next number until terminated by user. (enter 0)**

**Write a class object to do the factorial calculation instead of method in**

**the main program.**

**2: Do the similar program for power function by using two recursive**

**methods. Compare two methods we addressed in the lecture.**

**1 point (display the CPU time for both methods)**

**3: Total 2 point**

**The “odd/even factorial” of a positive integer is represented as n!! and is defined non-recursively as: (n)(n-2)(n-4)…(4)(2) if n is even and is (n)(n-2)(n-4)…(5)(3)(1) if n is odd. For example 7!! Equals 7\*5\*3\*1 or 105 and 6!! Is 6\*4\*2 or 48. Write a method called oddevenfact that recursively calculates the odd/even factorial value of its single int parameter. The value returned by this method is a long. Validate the input.**

**Write a class object to do the Oddeven factorial calculation instead of method in the main program.**