Assignment #1 (Due Date: Sept. 25, 2014)

1. Write a C program to check whether the machine uses the IEEE 754 standards for double precision FP representation; Find the largest and smallest positive numbers that it can represent, with and without the normalized representation. Check the representation for NaN, and infinity; Also find the machine epsilon.
2. Write a C program to identify in which region the following types of variables are stored:

   (a) global (b) local; (c) static, and (d) dynamically allocated .
3. Write a simple C program and generate the corpg. assembly language program for two different processors (e.g., x86 and MIPS). Explain how the function call mechanism works, including how the parameters are passed, how the stack/function frames are allocated, how the return address is retrieved, and how the stack and frame pointers are restored.
4. Consider the Vector add program (Z[i] = X[i] + Y[i]) and compile it with and without optimization for your machine. See the differences in the assembly code generated with and without the opt. Study the loop unrolling gcc can do. Find the optimal unrolling factor for an array size of 16384.