**Module 1 (Lectures 1-2) Program execution and Data Representation**

1. The `Hello World program' is a program that prints the string `Hello World' to the output. Write such a program in C and compile it to generate an executable file, a.out on a Linux system. What is the size of this a.out file? What do the first 16 Bytes in this a.out file contain?
2. Write a C program which checks whether the machine it is running on supports the IEEE Floating Point representation. Your program should also verify whether the machine handles special forms (such as infinity) correctly.
3. Show the following in hexadecimal (radix 16): (a) the 16 bit 2's complement representation of the signed integer decimal value -10,000, (b) 32 bit IEEE single precision floating point representation of the decimal value -15.325
4. Show the value in decimal corresponding to: (a) the 16 bit 2s complement value 0xED7E, (b) the 32 bit IEEE single precision floating point value 0xBDCCCCCC.
5. Recall that the Stack and the Heap of a program can grow and shrink during execution. In fact, it is possible for them to grow so much that they run into each other. Write 2 different programs which suffer from this problem – one in which the stack runs into the heap, and another in which the heap runs into the stack. Run each of these programs. How does their execution terminate?