ESC101 : Fundamental of Computing

Lab 10 for 29 October 2008

Maximum Marks = 10

1. (4 marks)
   Ackermann function :
   Ackermann function is defined recursively as follows

$$A(m,n) = \begin{cases} n+1 & \text{if } m = 0 \\ A(m-1,1) & \text{if } m > 0 \text{ and } n = 0 \\ A(m-1, A(m,n-1)) & \text{if } m > 0 \text{ and } n > 0 \end{cases}$$

   Write a Java program to print a table on the terminal showing values of $A(i,j)$ for $1 \leq i,j \leq 5$.

2. (6 marks)
   Write recursive method printIntInNewBase to print an integer in any base from 2 through hexadecimal (base 16) without using an array. Input must be assumed to be in base 10 from command line. Use characters 'A', 'B', 'C', 'D', 'E', 'F' for 10, 11, 12, 13, 14, 15 respectively. For example, 512 in base 16 is 200, and 511 in base 16 is 1FF.