2006 Paper 1 Question 3

Programming in Java

Suppose that you are forbidden from using `printf` or `Integer.toHexString`, or indeed any other existing library way of doing it, but you still need to display a Java integer in hexadecimal as one to eight digits. For instance, you are to display the number 19 (decimal) as the string "`13`", and −1 must come out as "`ffffffff`".

Write a Java method called `toHex` that takes an integer as its argument and returns the string form of the hexadecimal representation of that number. Explain clearly how your code works, commenting on how it avoids displaying unnecessary leading zeros and how negative numbers are handled. [10 marks]