Math 55 worksheet, February 11, 2009

1. Convert from decimal notation to binary notation: 321, 1023, 100632.
2. Use the Euclidean algorithm to find the values of $\gcd(12, 18)$, $\gcd(111, 201)$, and $\gcd(1001, 1331)$.
3. Use the modular exponentiation algorithm to find $123^{1001} \,\mathbf{mod}\, 101$.
4. Give a simple procedure for converting the binary (base 2) expansion of an integer to its octal (base 8) expansion.
5. Show that a positive integer is divisible by 11 if and only if the difference of the sum of its decimal digits in even-numbered positions and the sum of its decimal digits in odd-numbered positions is divisible by 11.