

Lab 9

(Due date: Wednesday, 3/4/2009 in the Lab hours)

Your name:	Score:
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1. Write an application that inputs an integer containing only 0s and 1s (i.e., a binary integer) and prints its decimal equivalent. [Hint: Use the remainder and division operators to pick off the binary number's digits one at a time, from right to left. In the decimal number system, the rightmost digit has a positional value of 1 and the next digit to the left has a positional value of 10, then 100, then 1000, and so on. The decimal number 234 can be interpreted as $4 * 1 + 3 * 10 + 2 * 100$. In the binary number system, the rightmost digit has a positional value of 1, the next digit to the left has a positional value of 2, then 4, then 8, and so on. The decimal equivalent of binary 1101 is $1 * 1 + 0 * 2 + 1 * 4 + 1 * 8$, or $1 + 0 + 4 + 8$, 13.]

- **Show the results to the instructor.**
- **Print out your code and submit it to the instructor with this question sheet.**

2. A company wants to transmit data over the telephone but is concerned that its phones may be tapped. It has asked you to write a program that will encrypt the data so that it may be transmitted more securely. All the data is transmitted as four-digit integers. Your application should read a four-digit integer entered by the user and encrypt it as follows: Replace each digit with the result of adding 7 to the digit and getting the remainder after dividing the new value by 10. Then swap the first digit with the third, and swap the second digit with the fourth. Then print the encrypted integer.

- **Show the results to the instructor.**
- **Print out your code and submit it to the instructor with this question sheet.**