

## **High School Coding**

### **January Challenge**

*For full credit, be sure to format input and output exactly as specified in the examples. DO NOT include "Input" and "Output" text in your solution – it is only noted below to let you know what the input line(s) are and the expected output line(s). All your code must read the input from a command line or prompt in order to be judged.*

#### **Problem 1: Decimal to Hexadecimal Converter**

Write a program that accepts a decimal input and outputs the hexadecimal equivalent. The sample input will not have a hexadecimal solution of more than 4 characters (i.e. the highest expected input is 0xFFFF).

##### **Example 1:**

*(Input)*

In decimal: 175

*(Output)*

Enter hexadecimal number: 0xAF

##### **Example 2:**

*(Input)*

In decimal: 4369

*(Output)*

Enter binary number: 0x1111

#### **Problem 2: Find Longest Common Substring**

Write a program that displays the longest common substring of two substrings. In some cases, there may be an empty string. You should break ties (i.e. there are multiple common substrings of length 1) by displaying the first common substring reading from left to right.

##### **Example 1:**

Input:

publicity

cityscape

Output:

city

##### **Example 2:**

Input:

abba

acdb

Output:

a

**Problem 3: Print all possible strings**

Given a set of characters and a positive integer k, print all possible strings of length k that can be formed from the given set. Assume the length of the set is greater than or equal to k.

**Example 1:**

*(Input)*

Set: a b

k: 3

*(Output)*

aaa

aab

aba

abb

baa

bab

bba

bbb

**Example 2:**

*(Input)*

Set: a b c d

K: 1

*(Output)*

a

b

c

d

