435/SPRING 2016/PROJECT #1 (REVISED)/DUE 2/8/16
LZW DECODING

Write a program to perform LZW decoding. It should read and write (textual) lists of integers. For example, if the input is

```
256 45 258 258 65 259 66 257
```

the output should be

```
45 45 45 45 45 65 45 45 45 66
```

The decoder must maintain a table of integer sequences just like the encoder: however, the decoder never has to search. The table has at most 4096 slots. You do not have to worry about this because we are assuming the table is never full.

Slots 0–255 are used for single-integer sequences, slots 256 and 257 are unused. If the input code is `n`, the decoder works as follows:

- If `n` is 256 or 257, ignore it.
- If the table has more than 258 elements, append the first element of `table[n]` to the last table entry.
- Output `table[n]`.
- Make a new table entry consisting of a copy of `table[n]`.

Submission. Projects will be submitted through Blackboard. Detailed instructions and sample files will be posted on Blackboard. DO NOT email your project to me.

Date: February 1, 2016.

Program trace.

Input.

```
256 45 258 258 65 259 66 257
```

Output.

```
45 45 45 45 45 65 45 45 45 66
```

Trace.

```
decode 256->[256]
decode 45->[45]
emit   45->[45]
add    258->[45]
decode 258->[45]
append 258->[45, 45]
emit   258->[45, 45]
add    259->[45, 45]
decode 258->[45, 45]
append 259->[45, 45, 45]
emit   258->[45, 45]
add    260->[45, 45]
decode 65->[65]
append 260->[45, 45, 65]
emit   65->[65]
add    261->[65]
decode 259->[45, 45, 45]
append 261->[65, 45]
emit   259->[45, 45, 45]
add    262->[45, 45, 45]
decode 66->[66]
append 262->[45, 45, 45, 66]
emit   66->[66]
add    263->[66]
decode 257->[257]
```