

## Prepare Our Registers to Initialize the Histogram

```
.ORIG x3000
LEA R0,HIST
AND R6,R6,#0
LD R1,NUM_BINS
ADD R2,R0,#0
```

Now, we need to initialize R6 to 0, R1 to #27, and R2 to HIST.

And what about R2?

Remember that R0 already has the value HIST!

## We're Ready to Fill the Histogram with 0s

Remember our register contents:

**R1** a loop counter (27 iterations)  
**R2** current histogram bin to fill  
**R6** the number 0 (to store)

In our loop body, we write one 0 (from **R6**) to a bin at the memory location pointed to by **R2**.

Then we point to the next bin (increment **R2**).

Then we decrement our loop counter (**R1**).

Finally, we loop until the counter reaches 0.

## Fill One Histogram Bin with 0

```
.ORIG x3000
LEA R0,HIST
AND R6,R6,#0
LD R1,NUM_BINS
ADD R2,R0,#0
HFLOOP ; (hist fill loop)
STR R6,R2,#0
```

Write one 0 (from R6) to the histogram bin to which R2 points.

Is there an LC-3 instruction for that?

## Point to the Next Histogram Bin

```
.ORIG x3000
LEA R0,HIST
AND R6,R6,#0
LD R1,NUM_BINS
ADD R2,R0,#0
HFLOOP ; (hist fill loop)
STR R6,R2,#0
ADD R2,R2,#1
```

Point R2 to the next bin.

Is there an LC-3 instruction for that?