

Decrement the Loop Counter

```
.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
ADD R1,R1,#-1
```

Decrement the loop counter.

Is there an LC-3 instruction for that?

Branch Backward Until We Finish Filling the Histogram

```
.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
ADD R1,R1,#-1
BRp HFLOOP
```

Branch backward until we have written 27 bins.

Is there an LC-3 instruction for that?

R1 started at #27.

We Still Have Initialization Work to Do

What about these other registers?

- R1** string pointer (moves)
- R2** current character from string
- R3, R4, R5** ASCII constants (to be chosen)
- R6** temporary

Let's initialize them now.
(No need to initialize **R2** nor **R6**.)

Initialize the Remaining Registers with LD

```
LD R3,NEG_AT
LD R4,AT_MIN_Z
LD R5,AT_MIN_BQ
LD R1,STR_START
```

Initialize the other registers using LD.

(and just before .END)

```
NEG_AT .FILL xFFC0
AT_MIN_Z .FILL xFFE6
AT_MIN_BQ .FILL xFFE0
STR_START .FILL STRING
```

Note use of label **STRING** as a .FILL value.