

Activity Solution (Learning about “Ones” and “Zeros”)

Notes:

- After completing the activity, students should have finished the following program to generate Morse code using the Basic Stamp.

```
' {$STAMP BS2}
' {$PBASIC 2.5}

address    VAR Byte
character  VAR Byte
n          VAR Nib
length     VAR Nib

'Morse codewords are aligned to the left of the byte
'dit' . is represented by 0
'dah' - is represented by 1

'Numbers 0 through 9 with length bits:
DATA @48, %11111101, %01111101, %00111101, %00011101, %00001101,
        %00000101, %10000101, %11000101, %11100101, %11110101

'Letters A through Z with length bits:
DATA @65, %01000010, %10000100, %10100100, %10000011, %00000001, %00100100,
        %11000011, %00000100, %00000010, %01110100, %10100011, %01000100,
        %11000010, %10000010, %11100011, %01100100, %11010100, %01000011,
        %00000011, %10000001, %00100011, %00010100, %01100011, %10010100,
        %10110100, %11000100

main:
```

```

SERIN 16, 84, [address]

READ address, character

DEBUG CR, DEC ? address, BIN ? character

GOTO morseout

GOTO main

morseout:

length = character.LOWNIB

length.BIT3 = %0

FOR n = 0 TO length-1

    SELECT character.BIT7

        CASE 0

            HIGH 0

            FREQOUT 10, 50, 3000

            LOW 0

            PAUSE 200

        CASE 1

            HIGH 0

            FREQOUT 10, 200, 3000

            LOW 0

            PAUSE 200

    ENDSELECT

    character = (character << 1)

NEXT

RETURN

```