

00.07 Exercises for Chapter 00

Consider the binary numbers of [Figure 00.5](#).

```
0100 1011
1001 1000
0001 0001
1111 0110
```

Figure 00.5: four 8-bit binary numbers.

Unsigned binary

In [Exercises 00.1](#) to [00.9](#), interpret these values as *unsigned* binary numbers.

Exercise 00.1 *Landing gear finite state machine*

Convert the binary numbers of [Figure 00.5](#) to octal.

Exercise 00.2

Convert the binary numbers of [Figure 00.5](#) to hexadecimal.

Exercise 00.3

Convert the binary numbers of [Figure 00.5](#) to decimal.

Exercise 00.4

As a check on your calculations, convert the octal numbers from [Exercise 00.1](#) to decimal.

Exercise 00.5

As a check on your calculations, convert the hexadecimal numbers from [Exercise 00.2](#) to decimal.

Exercise 00.6

As a check on your calculations, convert the decimal numbers from [Exercise 00.3](#) to octal.

Exercise 00.7

As a check on your calculations, convert the decimal numbers from [Exercise 00.3](#) to hexadecimal.

Exercise 00.8

Add the first and second binary numbers of [Figure 00.5](#). Convert the sum to decimal, and compare to the sum of the decimal numbers obtained in [Exercise 00.3](#).

Exercise 00.9

Add the third and fourth binary numbers of [Figure 00.5](#). Convert the sum to decimal, and compare to the sum of the decimal numbers obtained in [Exercise 00.3](#).

Signed binary

In [Exercises 00.10](#) to [00.12](#) interpret the same four bytes from [Figure 00.5](#) as *signed* binary numbers expressed in 8-bit, two's complement.

Exercise 00.10

Determine the decimal equivalents of each (signed) binary number of [Figure 00.5](#).

Exercise 00.11

Add the first and second (signed) binary numbers of [Figure 00.5](#). Convert the sum to decimal, and compare to the sum of the decimal numbers obtained in [Exercise 00.10](#).

Exercise 00.12

Add the third and fourth (signed) binary numbers of [Figure 00.5](#). Convert the sum to decimal, and compare to the sum of the decimal numbers obtained in [Exercise 00.10](#).

REVIEW DRAFT