

Some of these problems are taken from the course textbook. This will be a good reference to use for completing this assignment.

## Problem 1

### Exercise 4.10

It is not hard to see that the definition of floating point numbers leads to gaps. In base 10, suppose you use two digits behind the decimal point. If you choose 5.14, for instance, then 5.147 is not representable, and it will either be rounded up to 5.15 or truncated to 5.14. In a program, define:

```
float root_beer = 1.;
float eps;
```

and determine the smallest value of `eps` that you can add to the `root_beer` float so that the result is no longer equal to one (*e.g.*, `root_beer + eps != 1.0`).

## Problem 2

### Exercise 4.18

Given

```
int n;
```

write a code that uses elementary mathematical operators to compute  $n$ -cubed:  $n^3$ . Do you get the correct result for all  $n$ ? Explain.

## Problem 3

Write a program to ask for any integer `n` as input. Then, using a combination of `if` and `case` blocks, classify the number as `positive odd`, `positive even`, `negative odd`, `negative even`, or `zero`. Print out your result. *Hint:* You may want to use the `case` block for `zero`.

## Problem 4

### Exercise 39.2

Read two numbers and print a message like

```
3 is a divisor of 9
```

if the first is an exact divisor of the second, and another message

```
4 is not a divisor of 9
```

if it is not. You may want to study Section 4.5 and Section 5.1 from the course text.