

Exercises 8

1. Write Java expressions for the following mathematical expressions:

(a) $\frac{a}{b + \frac{1}{c}} + 2.5 \cdot 10^6$

(b) $e^{2k} \cdot \sqrt{x^2 - 2xy + 1}$

(c) $z = \begin{cases} 1 & \text{if } n \text{ is even} \\ 0 & \text{otherwise} \end{cases}$

(Remark: \sqrt{x} is `Math.sqrt(x)`, e^x is `Math.exp(x)`, `a % b` gives the rest when dividing `a` by `b`.)

2. The following Java method `m` gets an integer array `x` as its argument:

```
public int m(int x[])
{
    int c, i;
    c = 0;
    for (i = 0; i < x.length; i++)
        if (x[i] % 2 == 1) c++;
    return c;
}
```

What does this method calculate (or count) ?

3. (a) Which errors can possibly occur during runtime of the following Java program fragment?

```
int i;
float list[300];
float x, y;
...
/* i, x and y are somehow calculated */
...
list[i] = 1.5 / (x + y);
...
```

(b) Which conditions (to be specified in Java syntax) should be checked to capture these errors before they can cause trouble?