

## CS2OSD Tutorial 3: Pre and Post conditions

For each of the following operations, define suitable pre and post conditions:

1. An operation  $\text{sqrt}(x : \text{Integer}) : \text{Real}$  which returns the non-negative square root of a non-negative integer.
2. An operation  $\text{passed}(x : \text{Integer}) : \text{Boolean}$  which has input a mark  $x$  (an integer in the range 0 to 100 inclusive) and returns *true* if  $x \geq 40$  and *false* if  $x < 40$ .
3. An operation  $\text{max}(x : \text{Integer}, y : \text{Integer}) : \text{Integer}$  which returns the maximum of its inputs.
4. An operation  $\text{gcd}(x : \text{Integer}, y : \text{Integer}) : \text{Integer}$  which returns the greatest common divisor of two positive integers (the largest integer which divides both of them exactly).