

CS2OSD Tutorial 3 Solution

These are:

1. `sqrt(x : Integer) : Real`
pre: `x >= 0`
post: `result >= 0 & result*result = x`
2. `passed(x : Integer) : Boolean`
pre: `x >= 0 & x <= 100`
post: `(x >= 40 => result = true) &`
`(x < 40 => result = false)`
3. `max(x : Integer, y : Integer) : Integer`
pre: `true`
post: `(x < y => result = y) &`
`(y ≤ x => result = x)`
4. `gcd(x : Integer, y : Integer) : Integer`
pre: `x > 0 & y > 0`
post: `result > 0 & x mod result = 0 & y mod result = 0 &`
`∀ t : Integer · t > 0 & x mod t = 0 & y mod t = 0 ⇒ result mod t = 0`

A recursive solution gains half marks, as it is less explicit.