```
def shift(p: Z, y: Z, N: Z) {
  Contract(
    Requires(x * p + y * q == N),
    Modifies(x, q),
    Ensures(x * p + y * q == N)
  )
  x = x - y
  q = q + p
}

assume(x + q == N)
shift(1, 1, N)
assert(x + q == N)
```