

Exercise Sheet

04/01

1. 假设 n 是非负整数，请写出下面程序的符号执行过程和其生成的验证条件。

```
//@ require true
//@ ensure l * l <= n < (l + 1) * (l + 1)
x = n;
l = 0;
r = n + 1;
//@ inv l * l <= n < r * r && l + 1 <= r && x == n
while (l + 1 < r) do {
  mid = (l + r) / 2;
  if (x < mid * mid)
  then { r = mid }
  else { l = mid }
}
```