

# Assignment 5

Show that the following Hoare triples are valid.

1.

**[  $y \geq 0$  ]**

**Precondition**

$a = 0;$

$z = 0;$

while ( $a \neq y$ ) {

$z = z + x;$

$a = a + 1;$

}

**[  $z = x.y$  ]**

**Postcondition**

2.

 **$[y = y_0 \ \& \ y \geq 0]$**       **Precondition** $z = 0;$  $\text{while } (y \neq 0) \{$  $z = z + x;$  $y = y - 1;$  $\}$  **$[z = x, y_0]$**       **Postcondition**

3.

 **$[ \top ]$**  $\text{if } (x > y)$  $z = x;$  $\text{else}$  $z = y;$  $\text{if } (w > z)$  $z = w;$  **$[ z = \max(x,y,w) ]$**