

Intervals Example 2

Monday, January 15, 2024 1:43 AM

```
let x:int = 0, y:int = 10,
    z:int = input();

while x - y < z {
  if x < z {
    x = x + y;
  } else {
    y = y - 1;
  }
}

return x + y
```

```
let x:int, y:int, z:int, t1:int,
    t2:int, t3:int, t4:int
```

```
entry:
  x = $copy 0
  y = $copy 10
  z = $call_ext input()
  $jump loop_hdr
```

```
loop_hdr:
  t1 = $arith sub x y
  t2 = $cmp lt t1 z
  $branch t2 if_hdr exit
```

$$\left[\begin{array}{l} x \mapsto [-\infty, \infty] \\ y \mapsto [-\infty, 10] \end{array} \right]$$

```
if_hdr:
  t3 = $cmp lt x z
  $branch t3 if_true if_false
```

```
if_true:
  x = $arith add x y
  $jump if_end
```

```
if_false:
  y = $arith sub y 1
  $jump if_end
```

```
if_end:
  $jump loop_hdr
```

```
exit:
  t4 = $arith add x y
  $ret t4
```