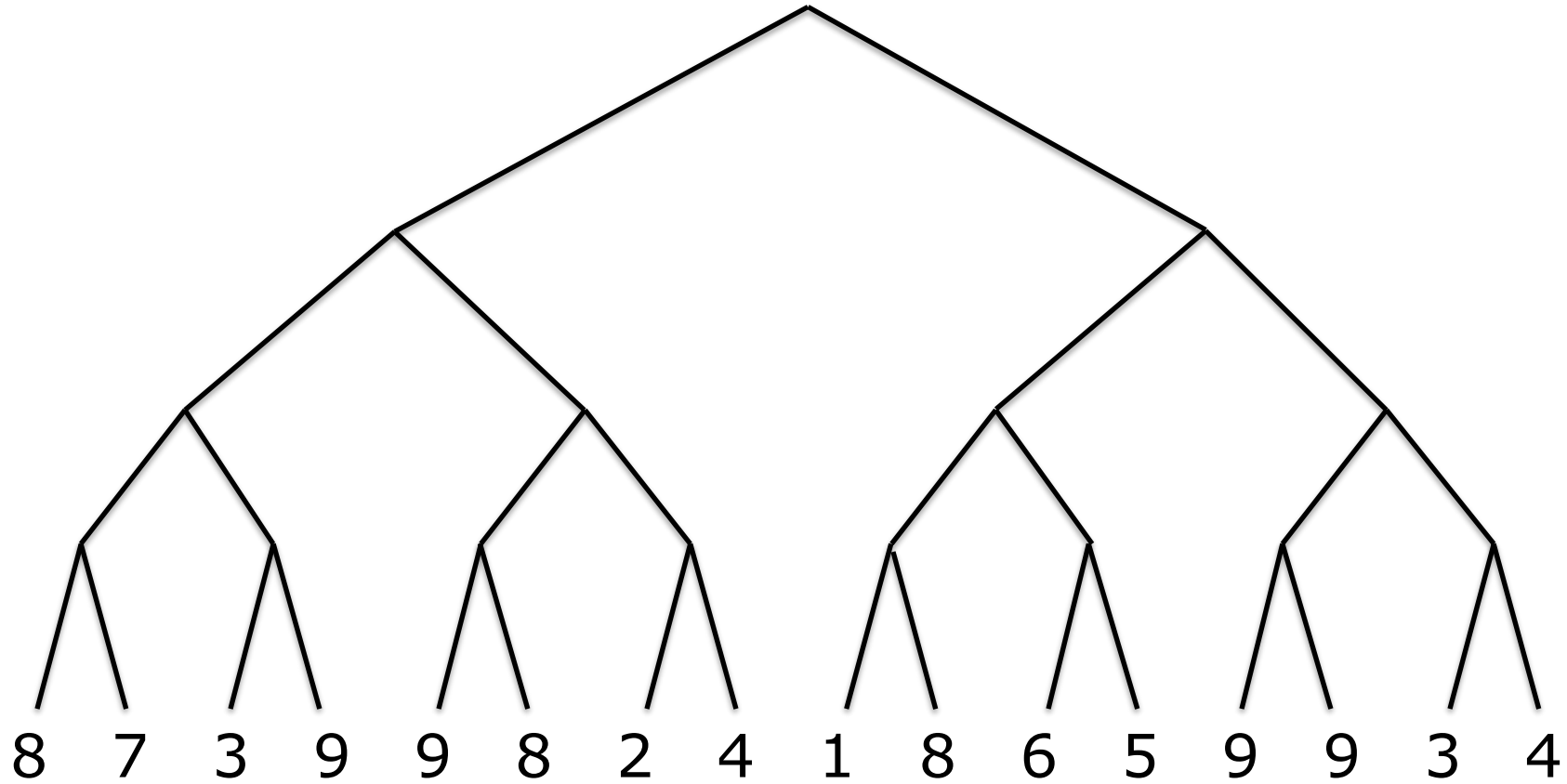




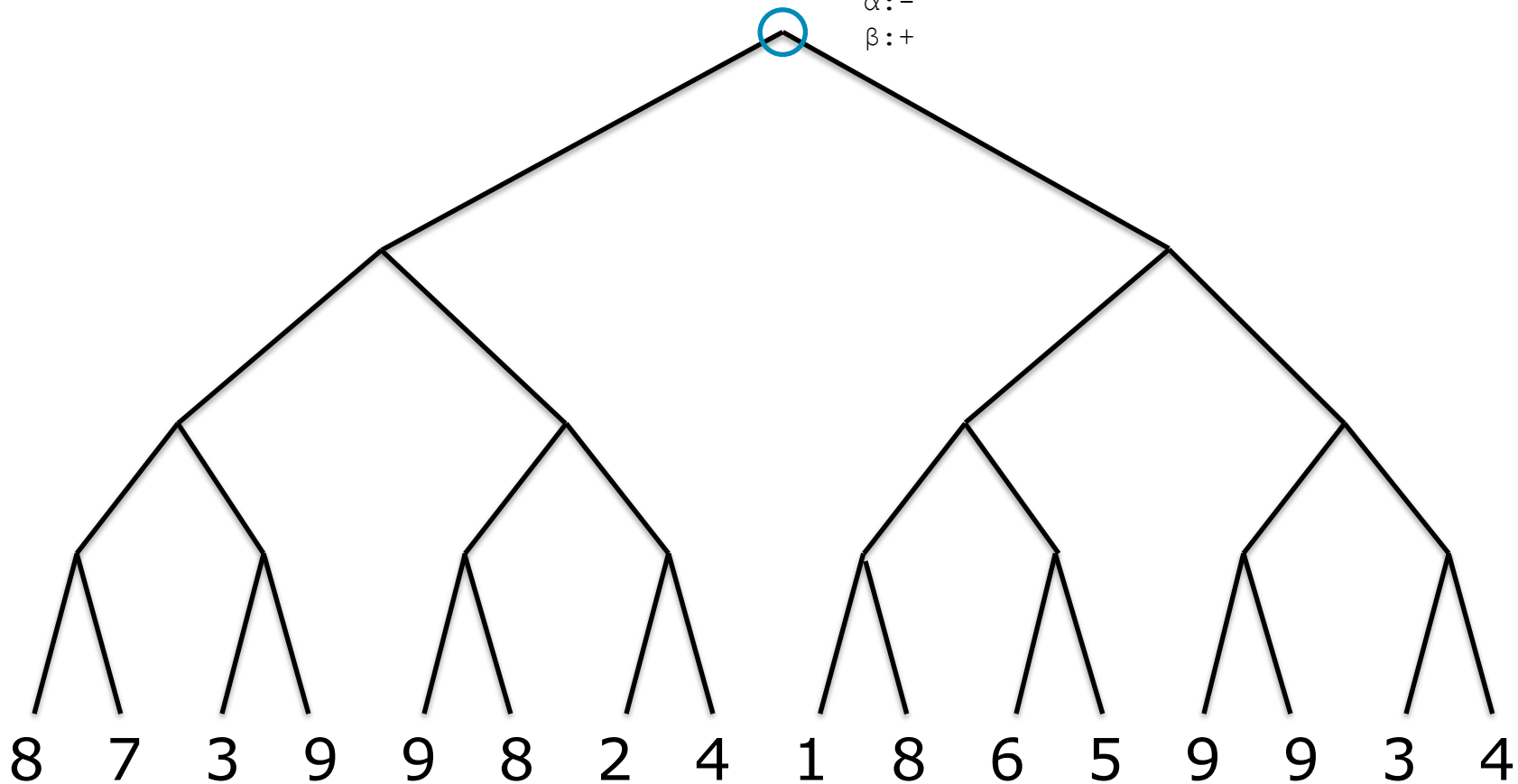
Max

Min

Max

Min

$\forall:-$
 $\alpha:-$
 $\beta:+$

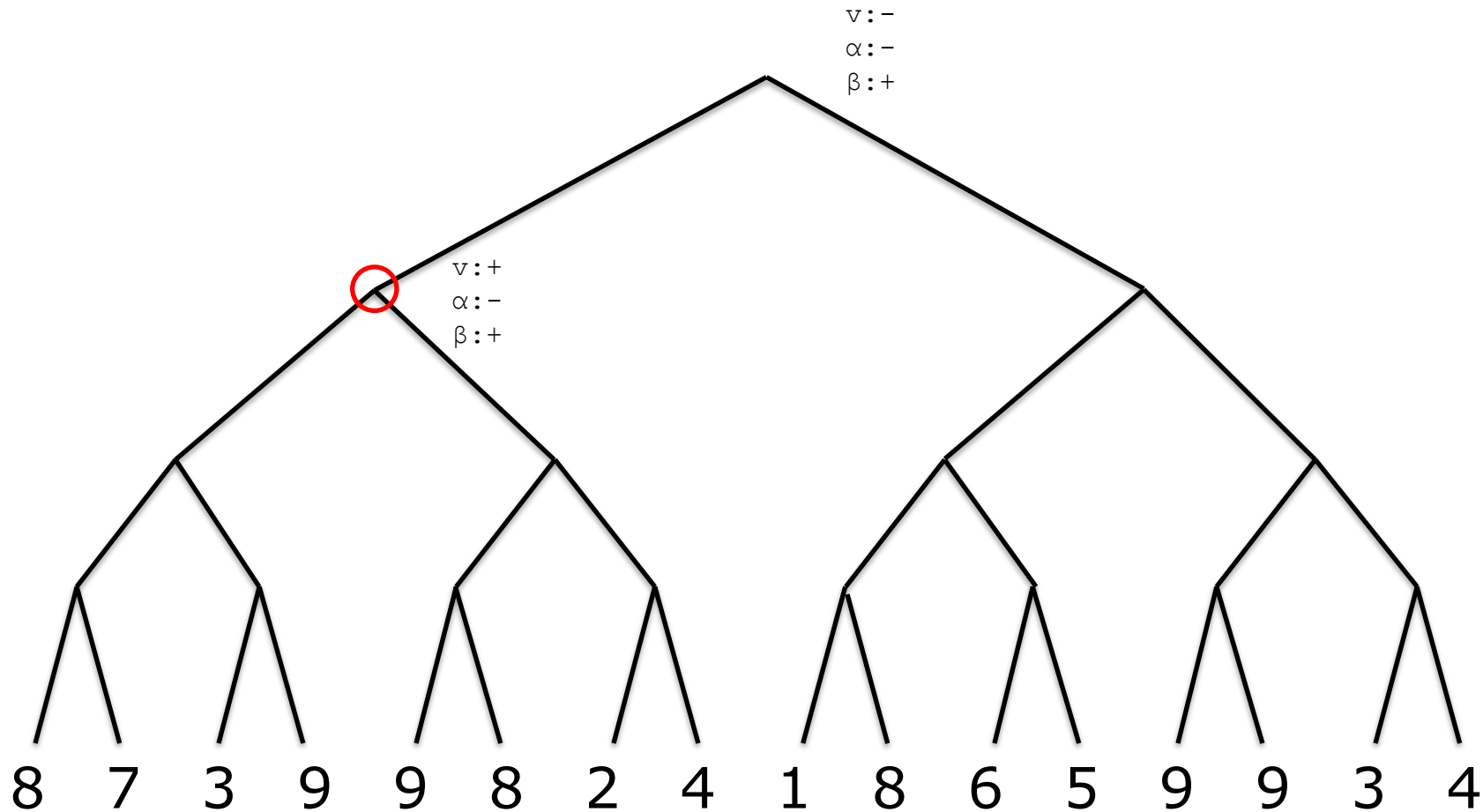


Max

Min

Max

Min

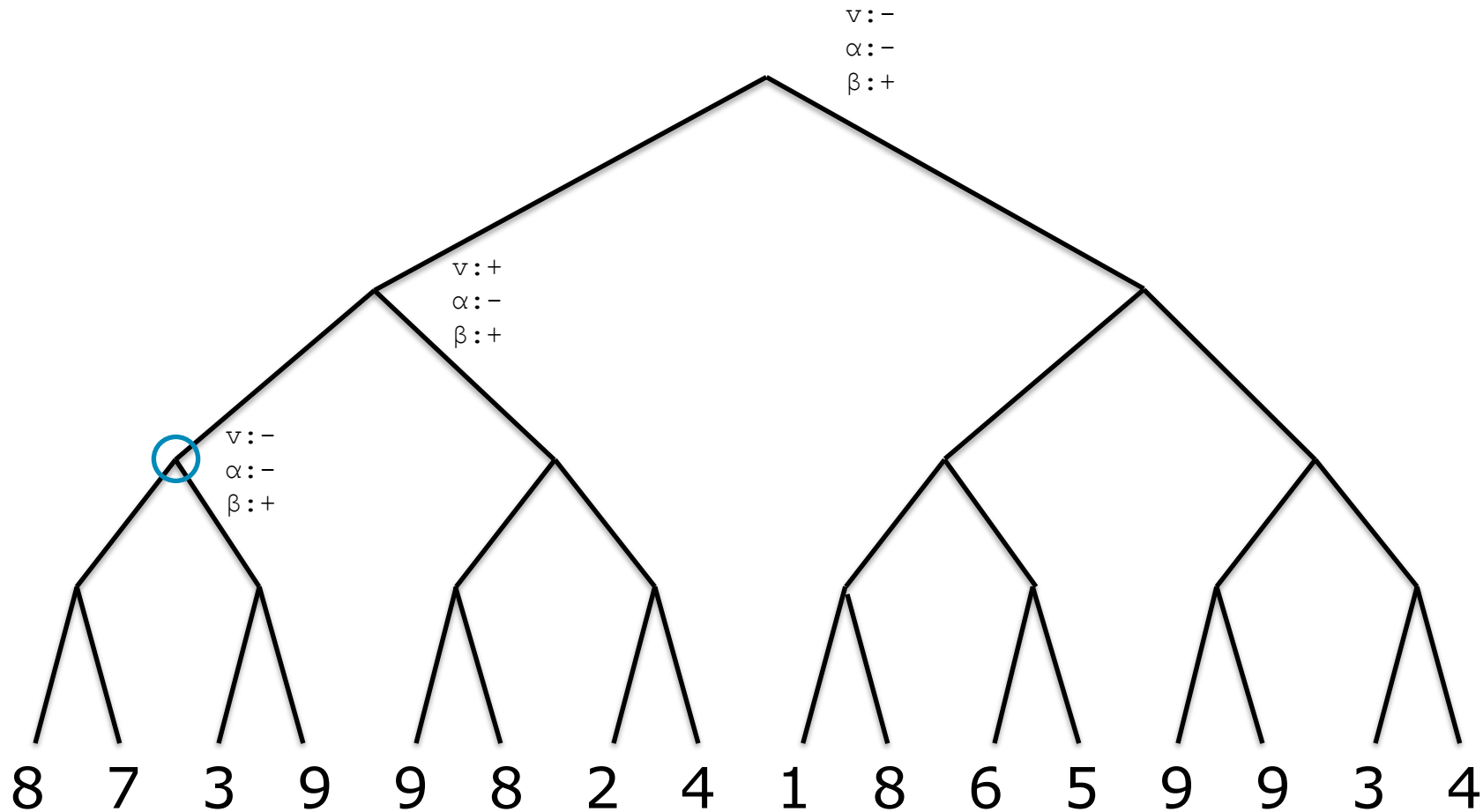


Max

Min

Max

Min

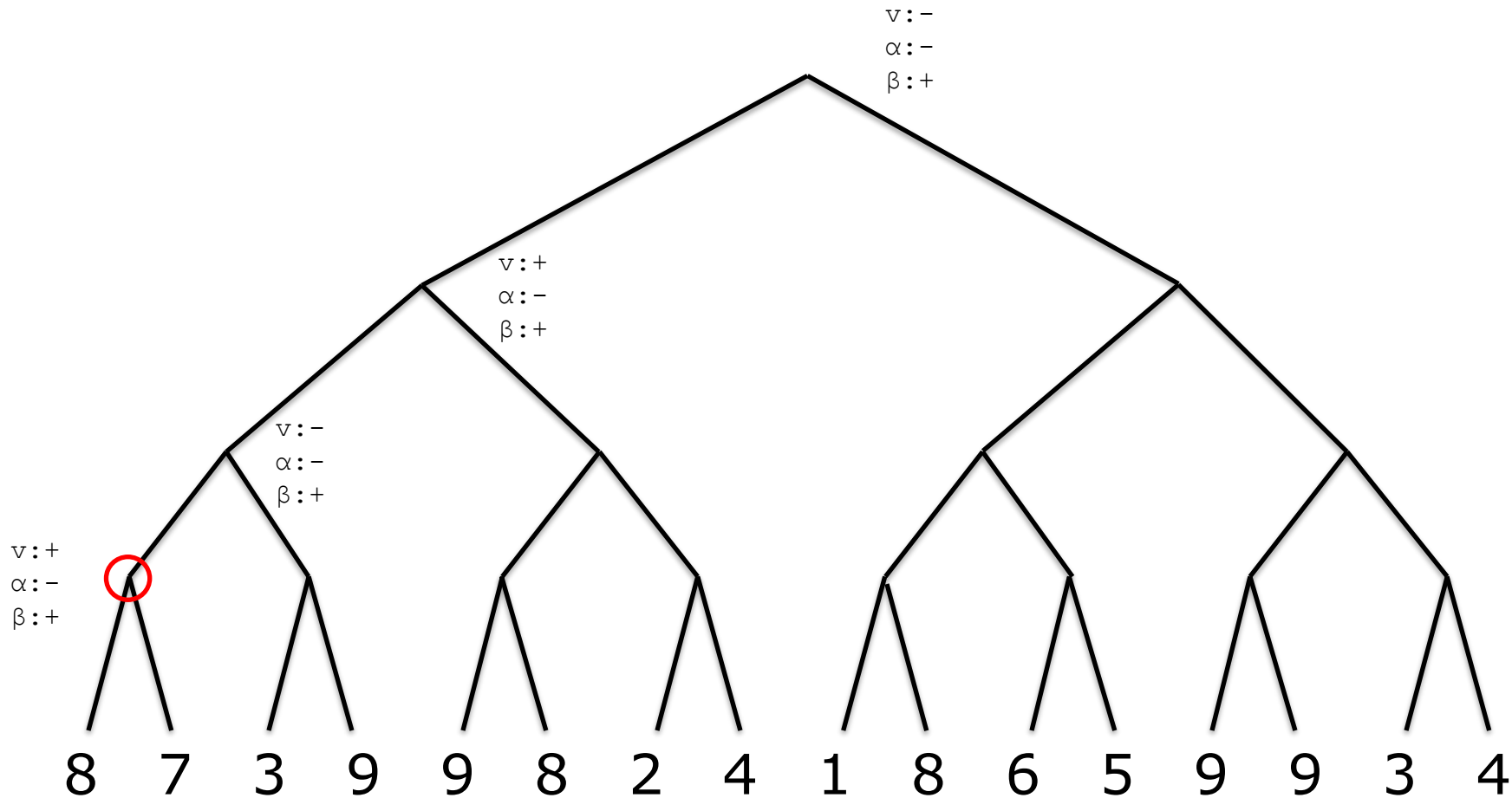


Max

Min

Max

Min



Max

MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

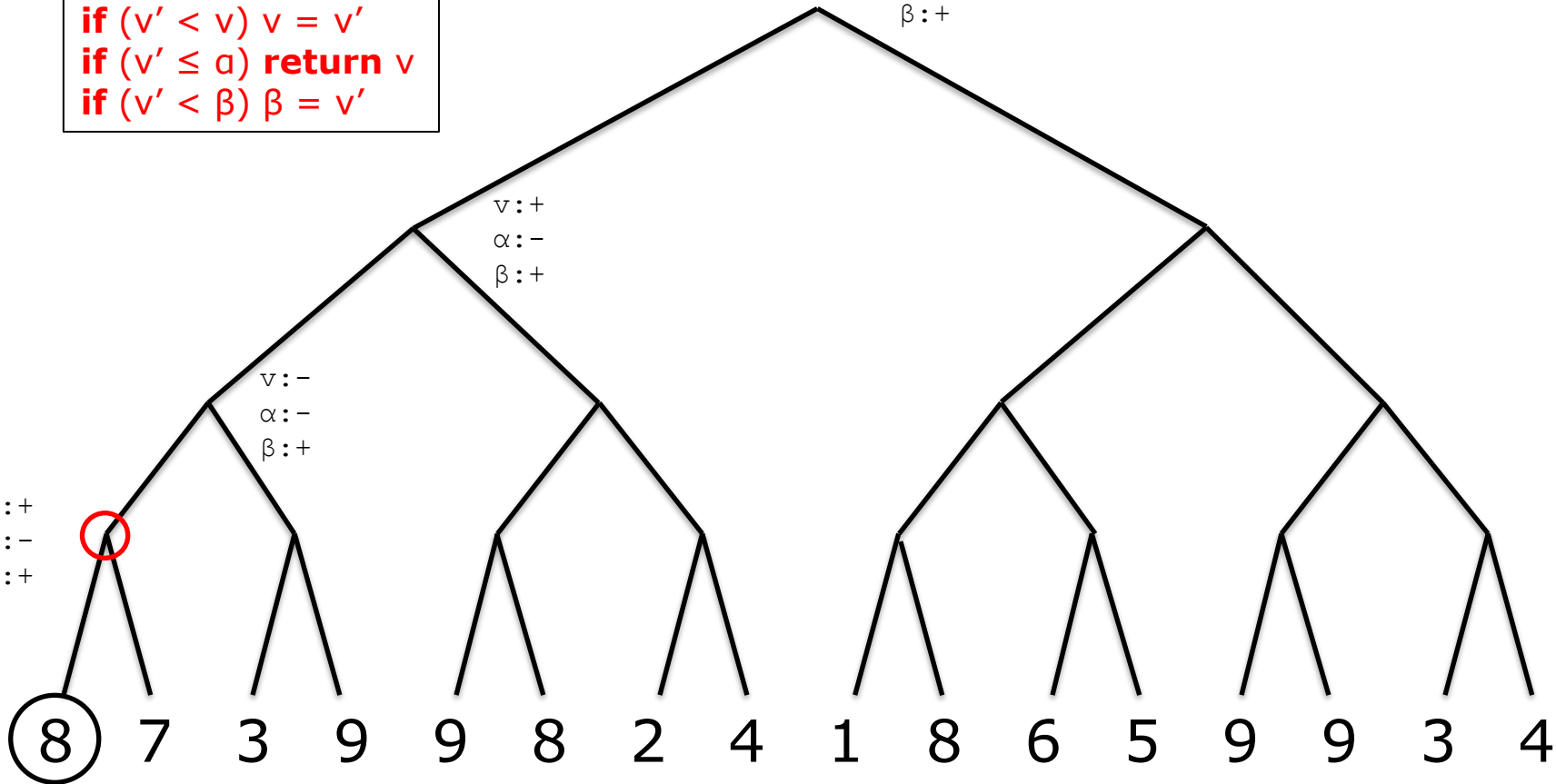
Min

$v:-$
 $\alpha:-$
 $\beta:+$

$v:+$
 $\alpha:-$
 $\beta:+$

$v:-$
 $\alpha:-$
 $\beta:+$

$v:+$
 $\alpha:-$
 $\beta:+$



Max

MinValue

```

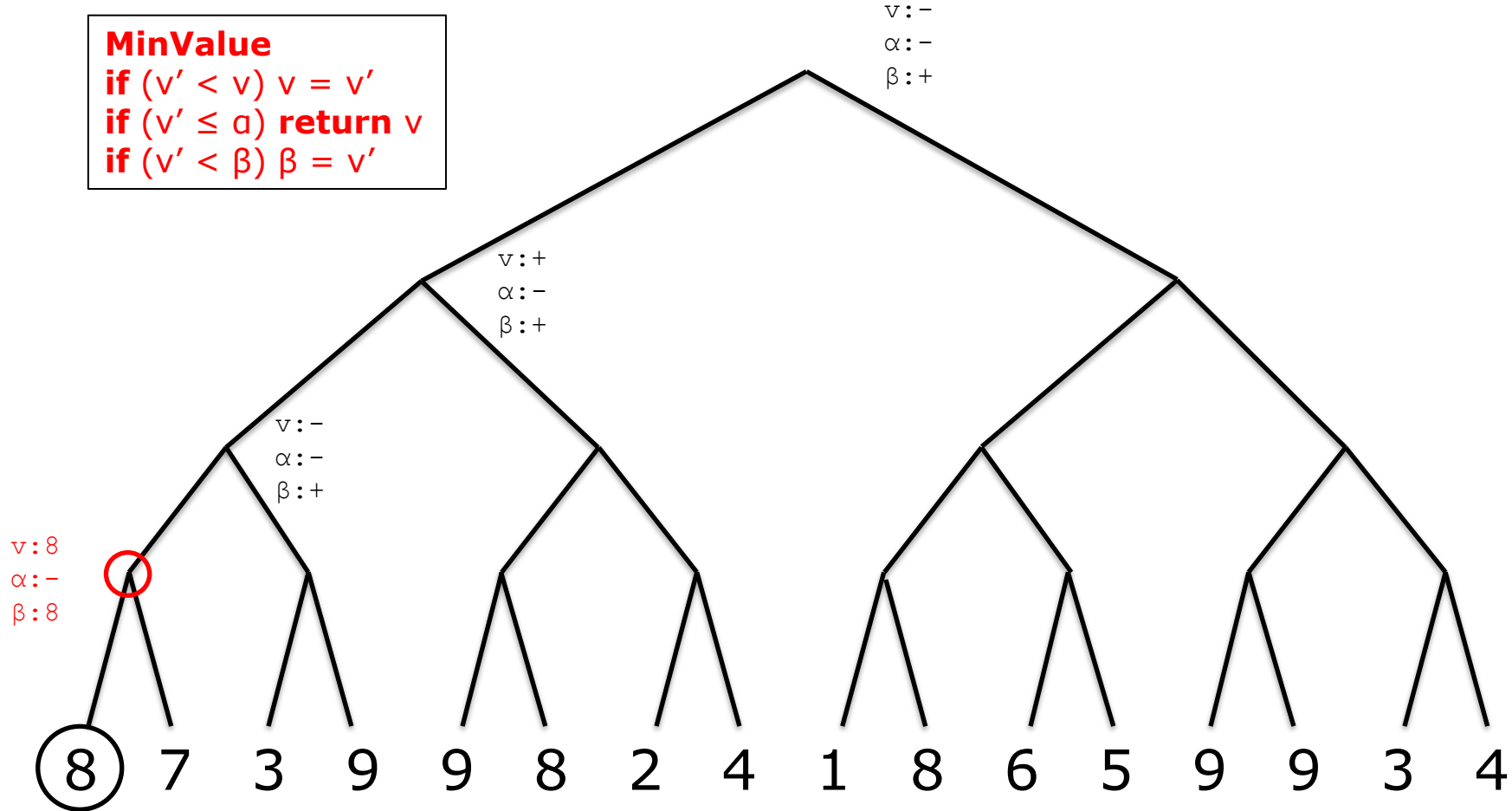
if ( $v' < v$ )  $v = v'$ 
if ( $v' \leq \alpha$ ) return  $v$ 
if ( $v' < \beta$ )  $\beta = v'$ 

```

Min

Max

Min



Max

MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

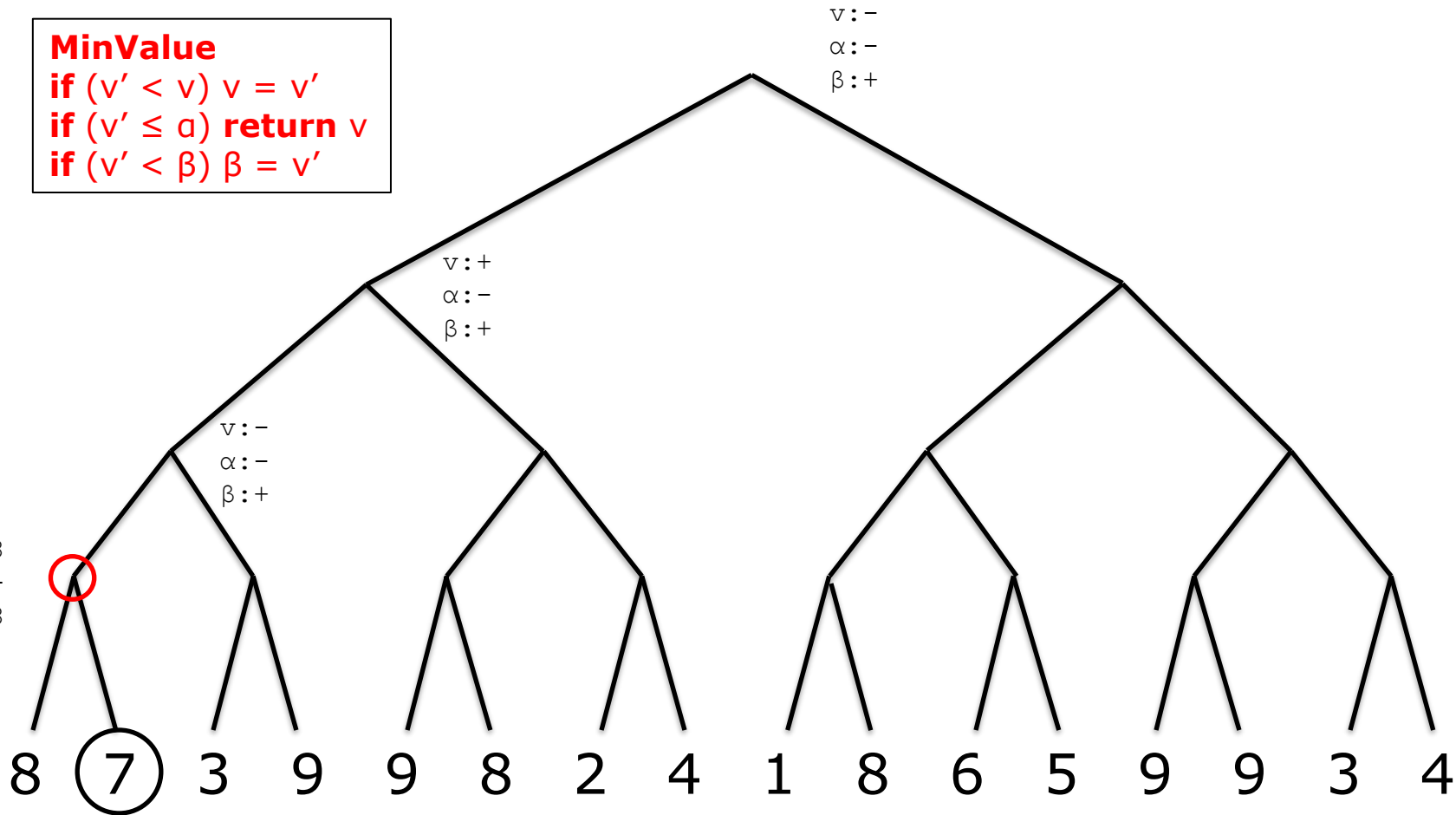
Min

$v:-$
 $\alpha:-$
 $\beta:+$

$v:+$
 $\alpha:-$
 $\beta:+$

$v:-$
 $\alpha:-$
 $\beta:+$

$v:8$
 $\alpha:-$
 $\beta:8$



Max

MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

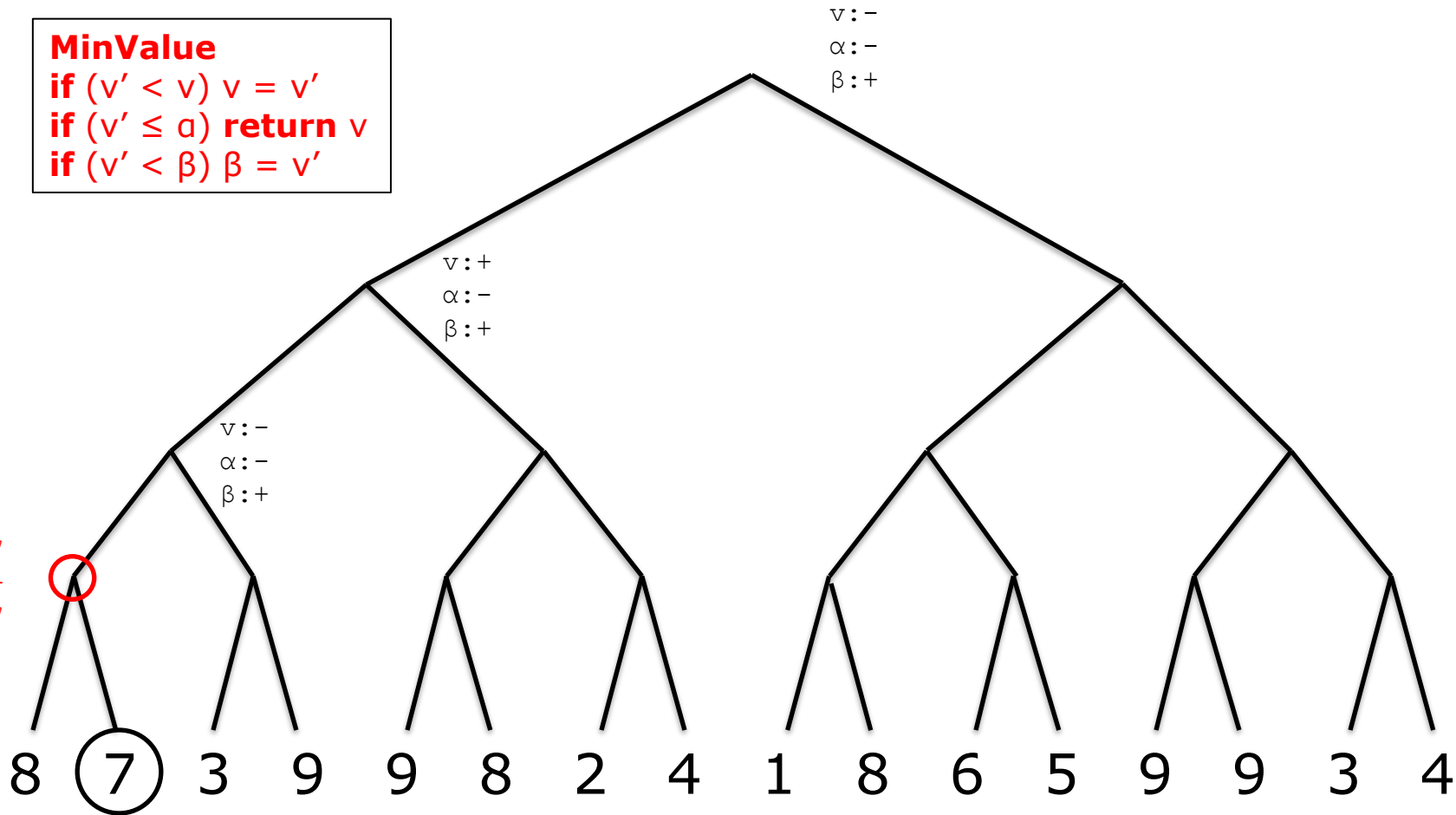
Min

$v:-$
 $\alpha:-$
 $\beta:+$

$v:+$
 $\alpha:-$
 $\beta:+$

$v:-$
 $\alpha:-$
 $\beta:+$

$v:7$
 $\alpha:-$
 $\beta:7$



Max

MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

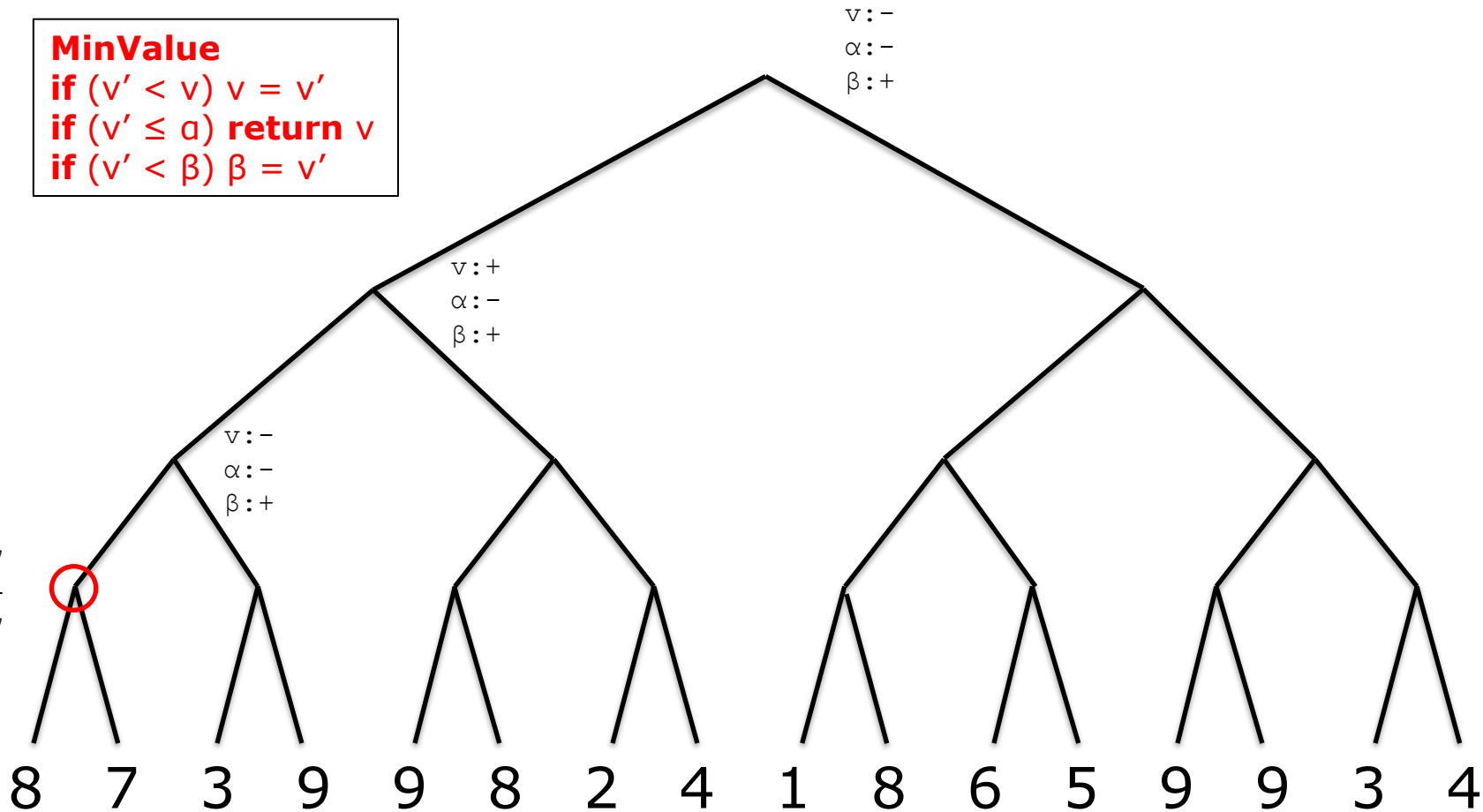
Min

$v:-$
 $\alpha:-$
 $\beta:+$

$v:+$
 $\alpha:-$
 $\beta:+$

$v:-$
 $\alpha:-$
 $\beta:+$

$v:7$
 $\alpha:-$
 $\beta:7$



Max

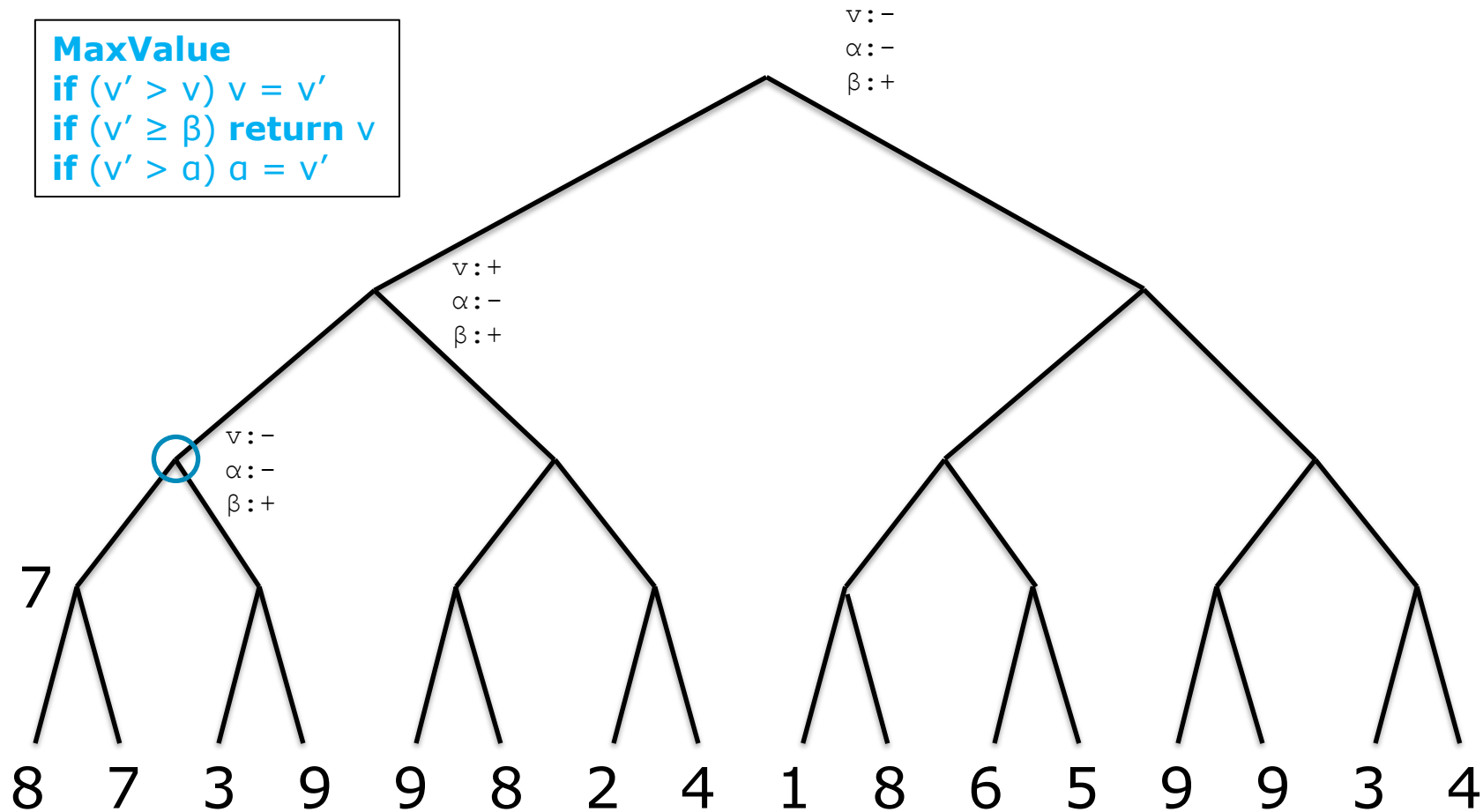
MaxValue

```
if ( $v' > v$ )  $v = v'$   
if ( $v' \geq \beta$ ) return  $v$   
if ( $v' > \alpha$ )  $\alpha = v'$ 
```

Min

Max

Min



Max

Min

Max

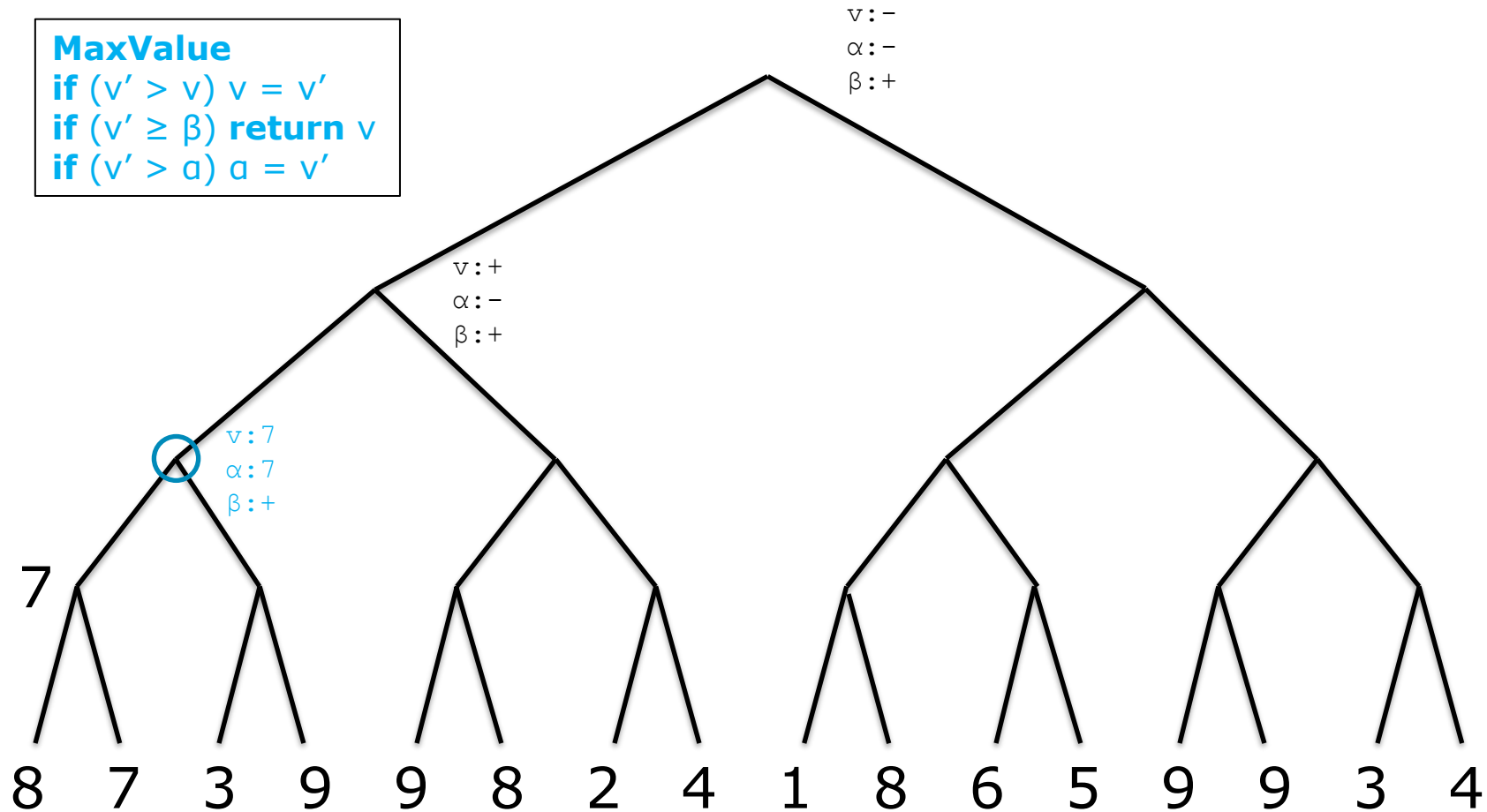
Min

MaxValue

```

if ( $v' > v$ )  $v = v'$ 
if ( $v' \geq \beta$ ) return  $v$ 
if ( $v' > a$ )  $a = v'$ 

```



Max

MaxValue

```

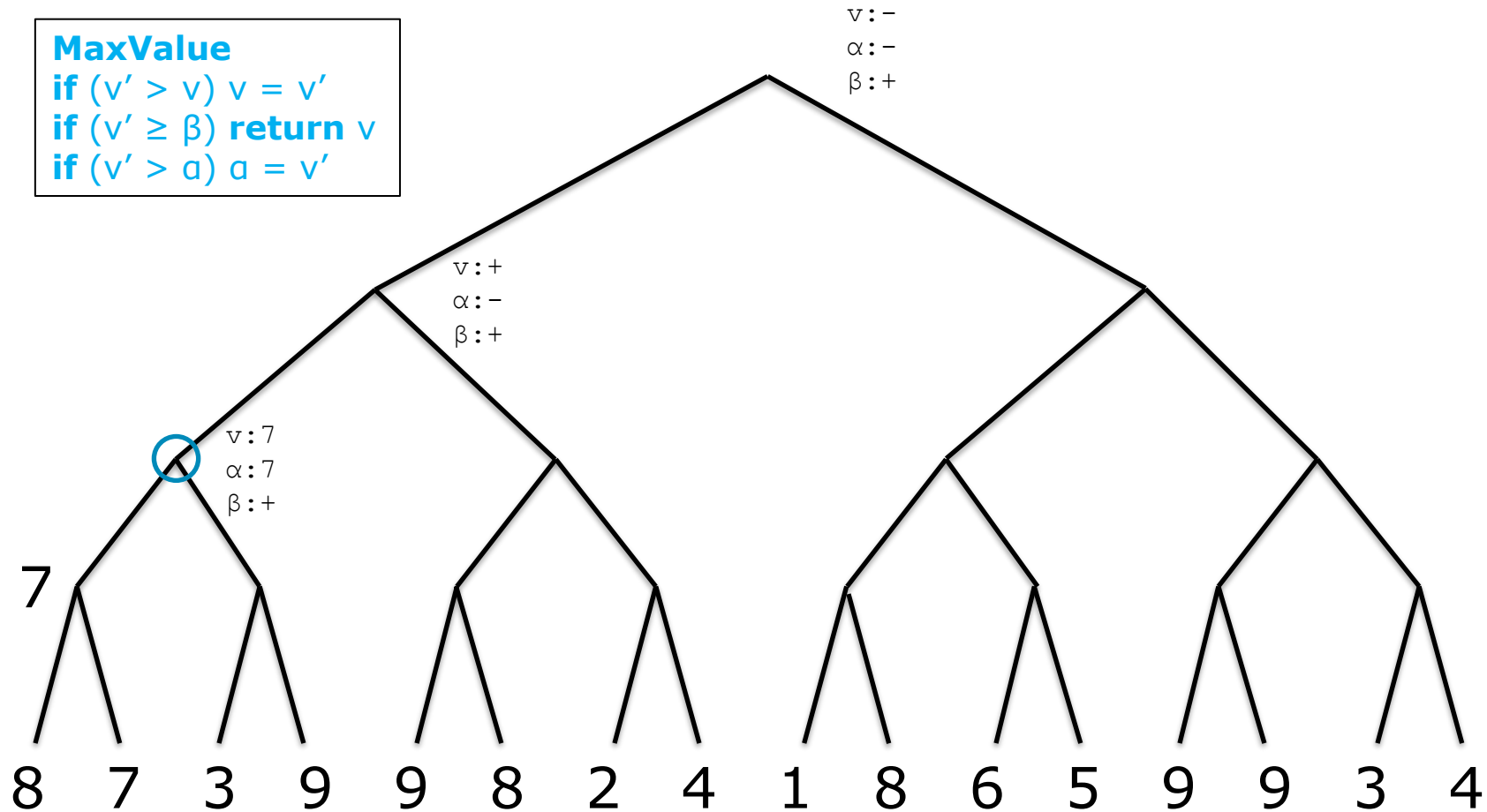
if ( $v' > v$ )  $v = v'$ 
if ( $v' \geq \beta$ ) return  $v$ 
if ( $v' > a$ )  $a = v'$ 

```

Min

Max

Min

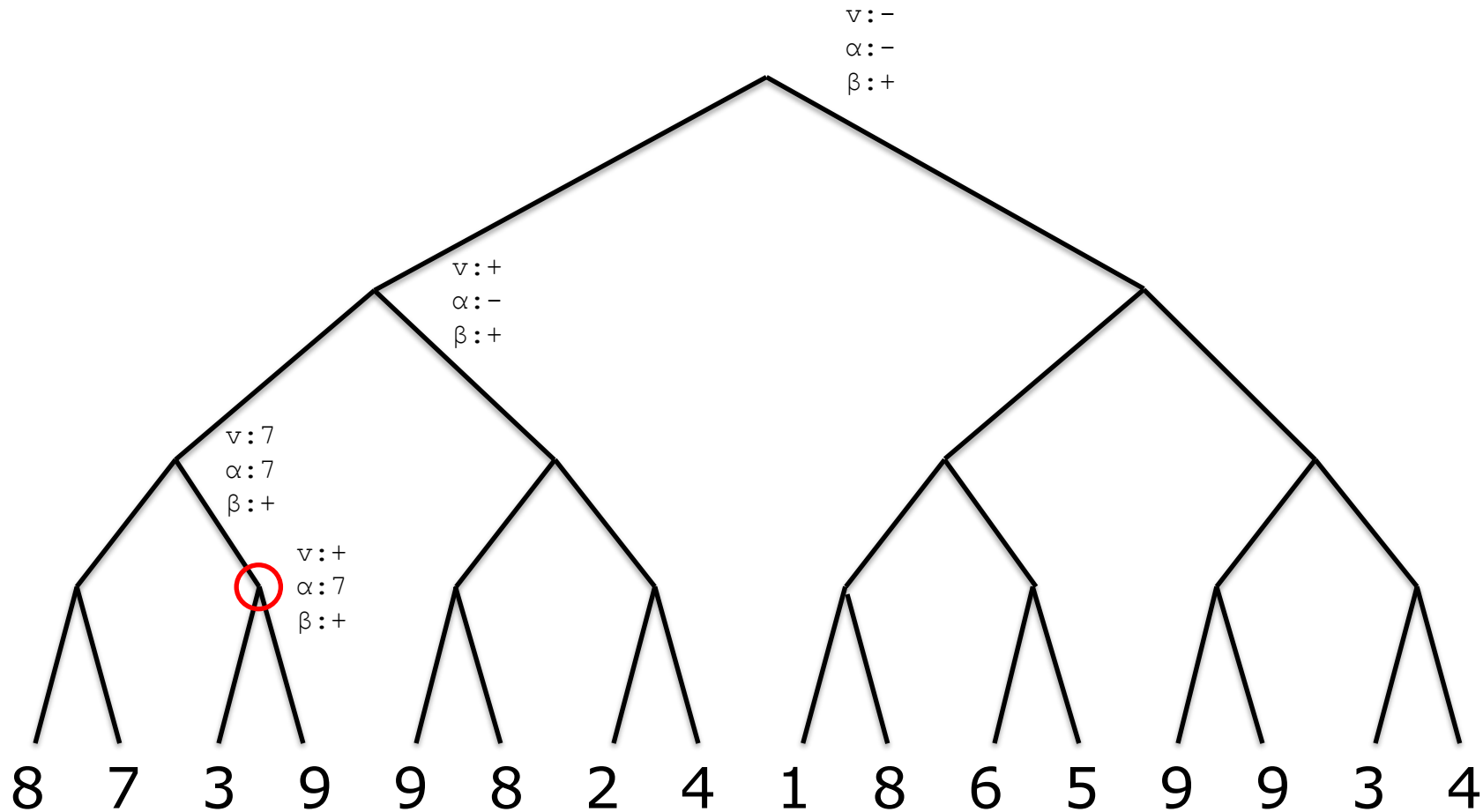


Max

Min

Max

Min



```

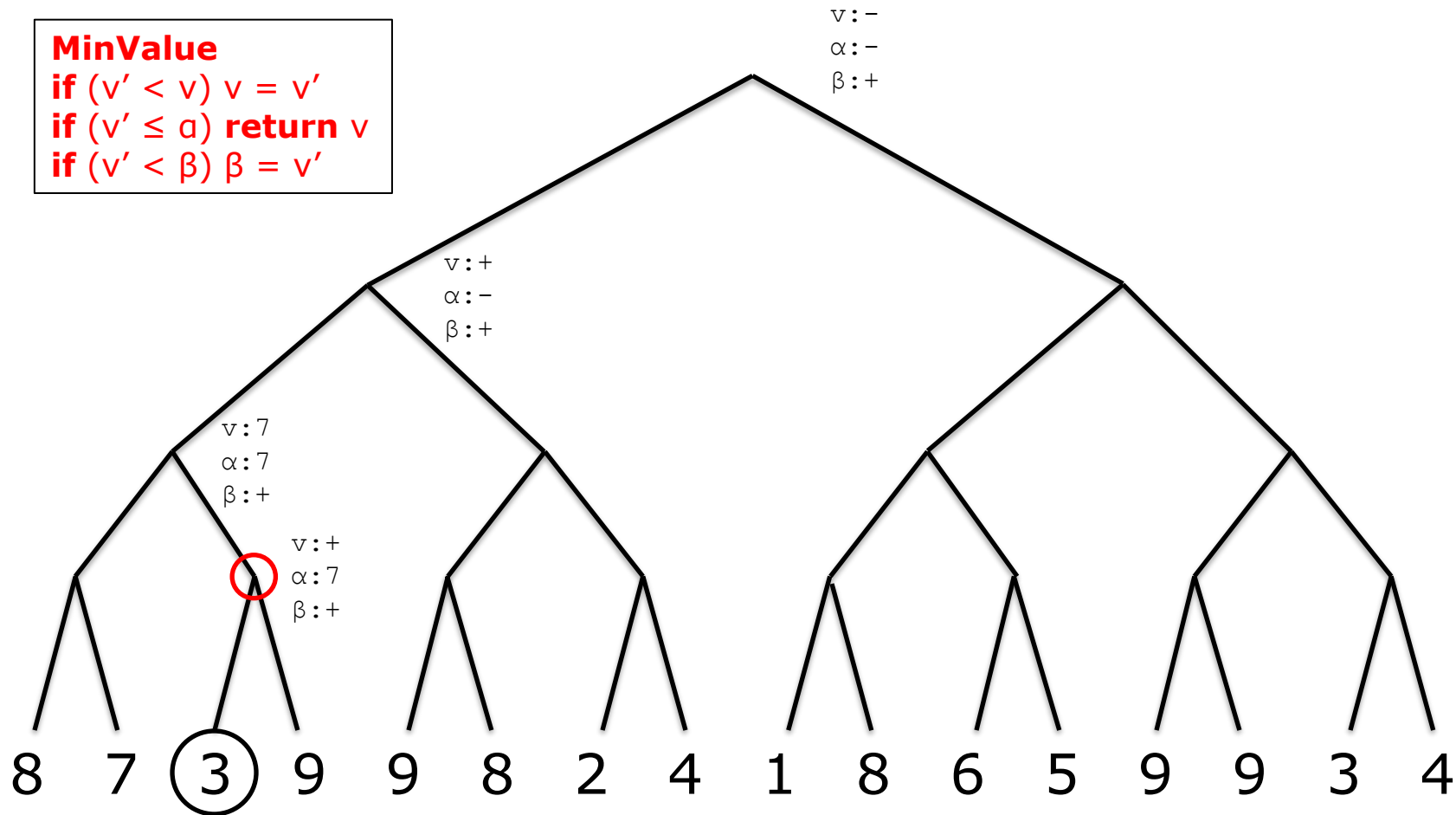
if ( $v' < v$ )  $v = v'$ 
if ( $v' \leq \alpha$ ) return  $v$ 
if ( $v' < \beta$ )  $\beta = v'$ 

```

Min

Max

Min



Max

MinValue

```

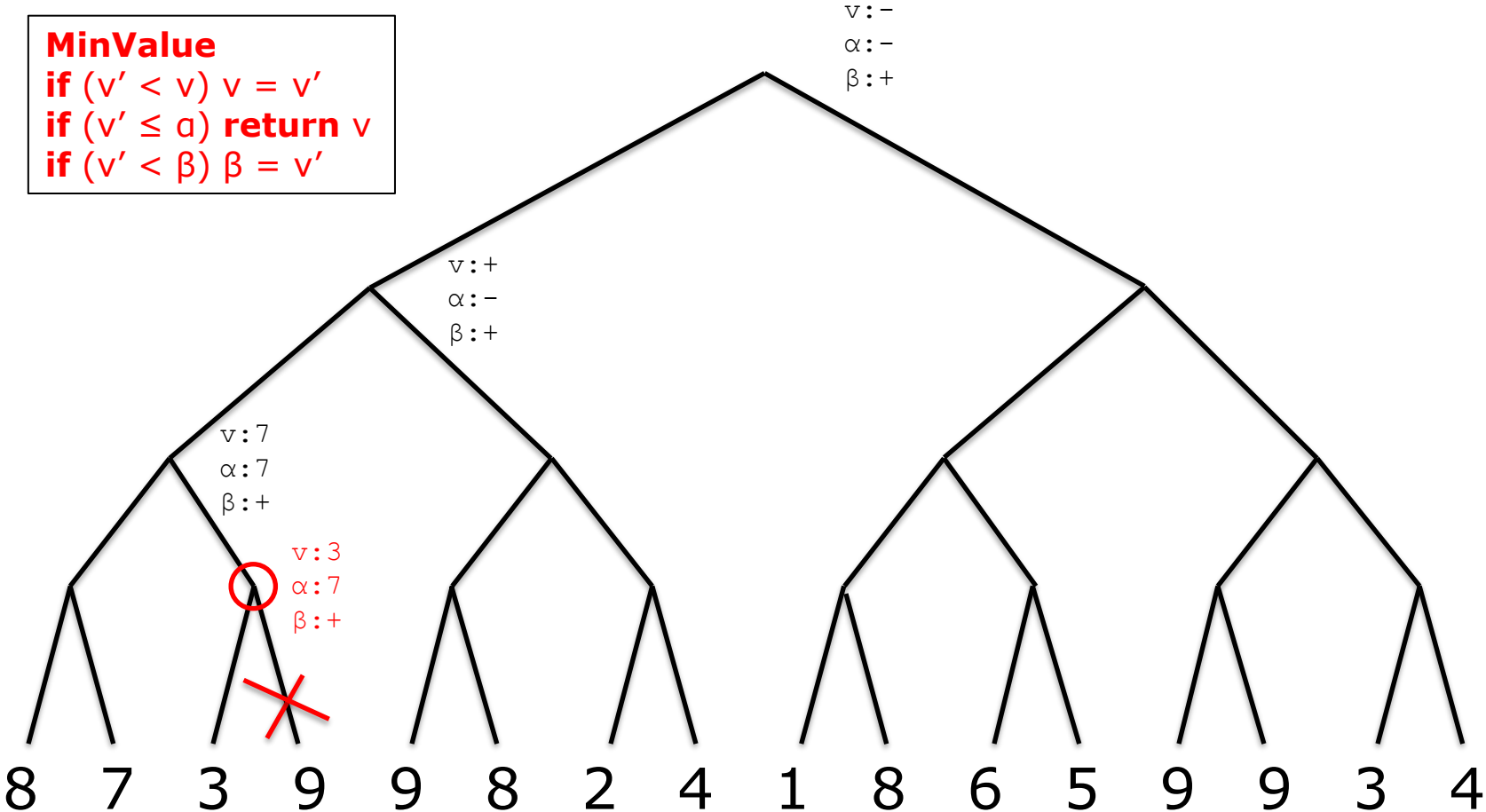
if ( $v' < v$ )  $v = v'$ 
if ( $v' \leq a$ ) return  $v$ 
if ( $v' < \beta$ )  $\beta = v'$ 

```

Min

Max

Min



Max

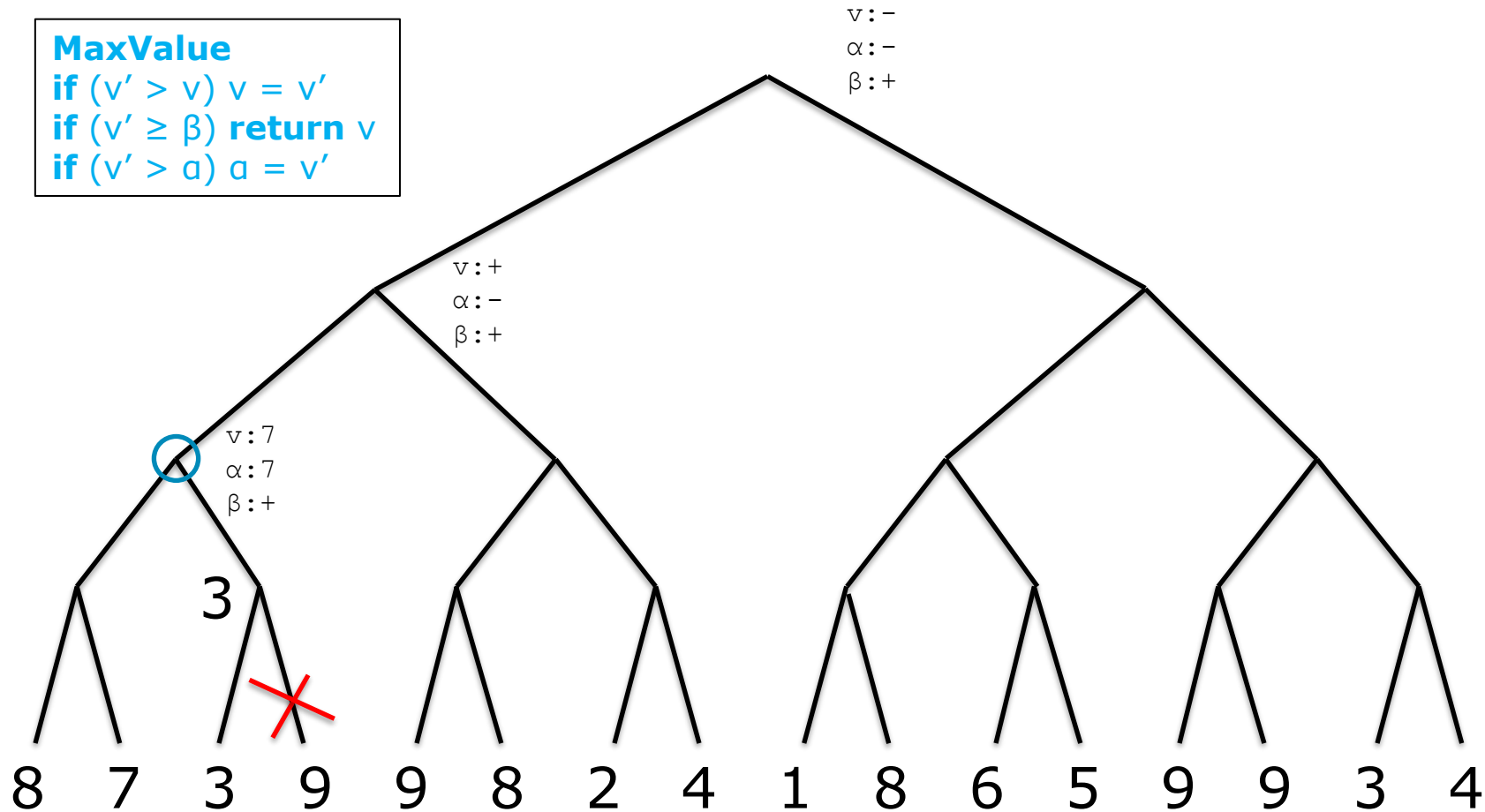
MaxValue

```
if ( $v' > v$ )  $v = v'$   
if ( $v' \geq \beta$ ) return  $v$   
if ( $v' > \alpha$ )  $\alpha = v'$ 
```

Min

Max

Min



Max

MaxValue

```

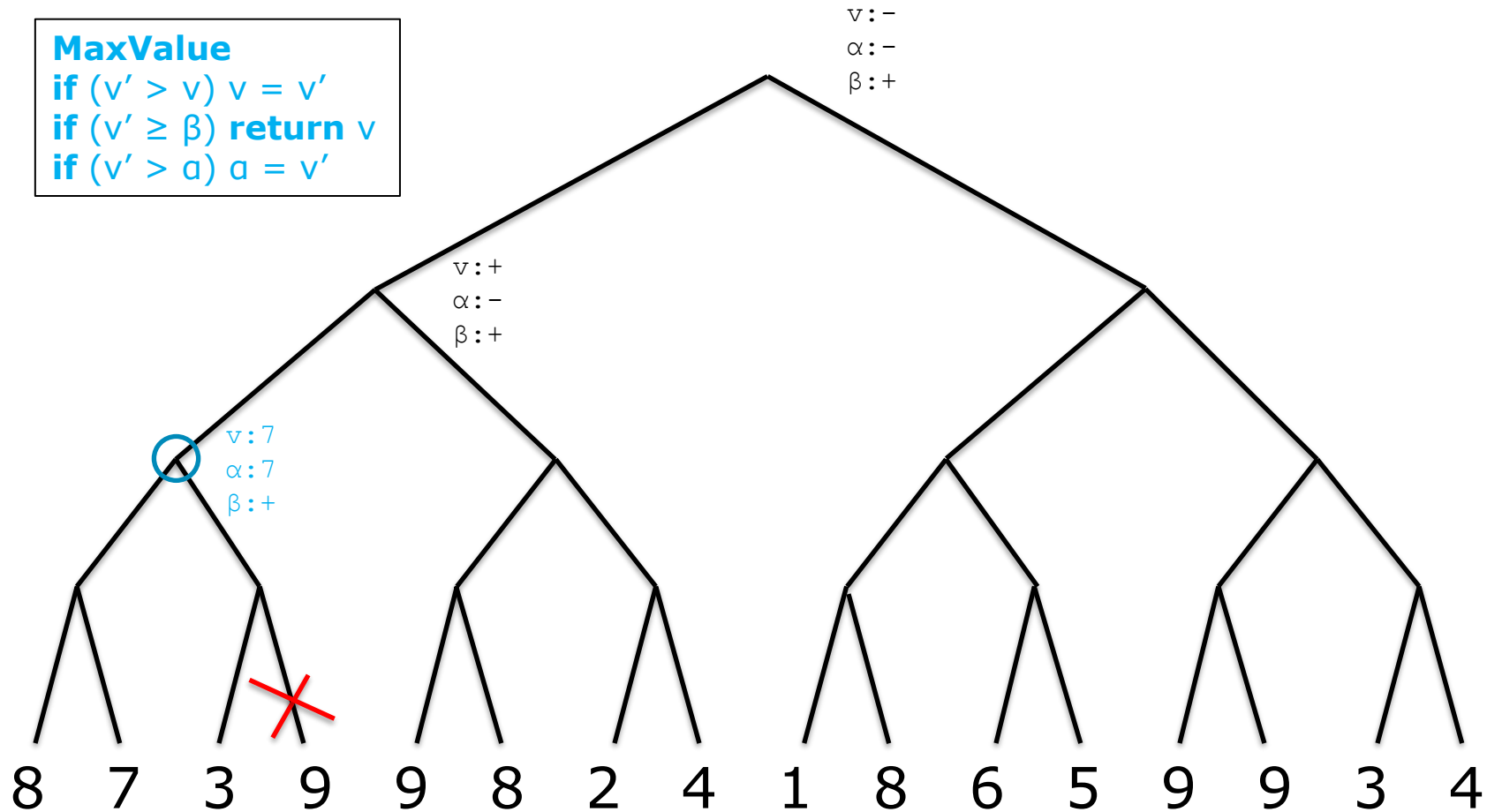
if ( $v' > v$ )  $v = v'$ 
if ( $v' \geq \beta$ ) return  $v$ 
if ( $v' > a$ )  $a = v'$ 

```

Min

Max

Min



Max

Min

Max

Min

MinValue

if ($v' < v$) $v = v'$

```
if ( $v' \leq q$ ) return  $v$ 
```

if ($v' < \beta$) $\beta = v'$

$$V: -$$
 $\alpha: -$ $\beta : +$
$$V: +$$
 $\alpha: -$ $\beta: +$

7

8

7

3

9

9

8

2

4

1

8

e

5

9

9

:

4

Max

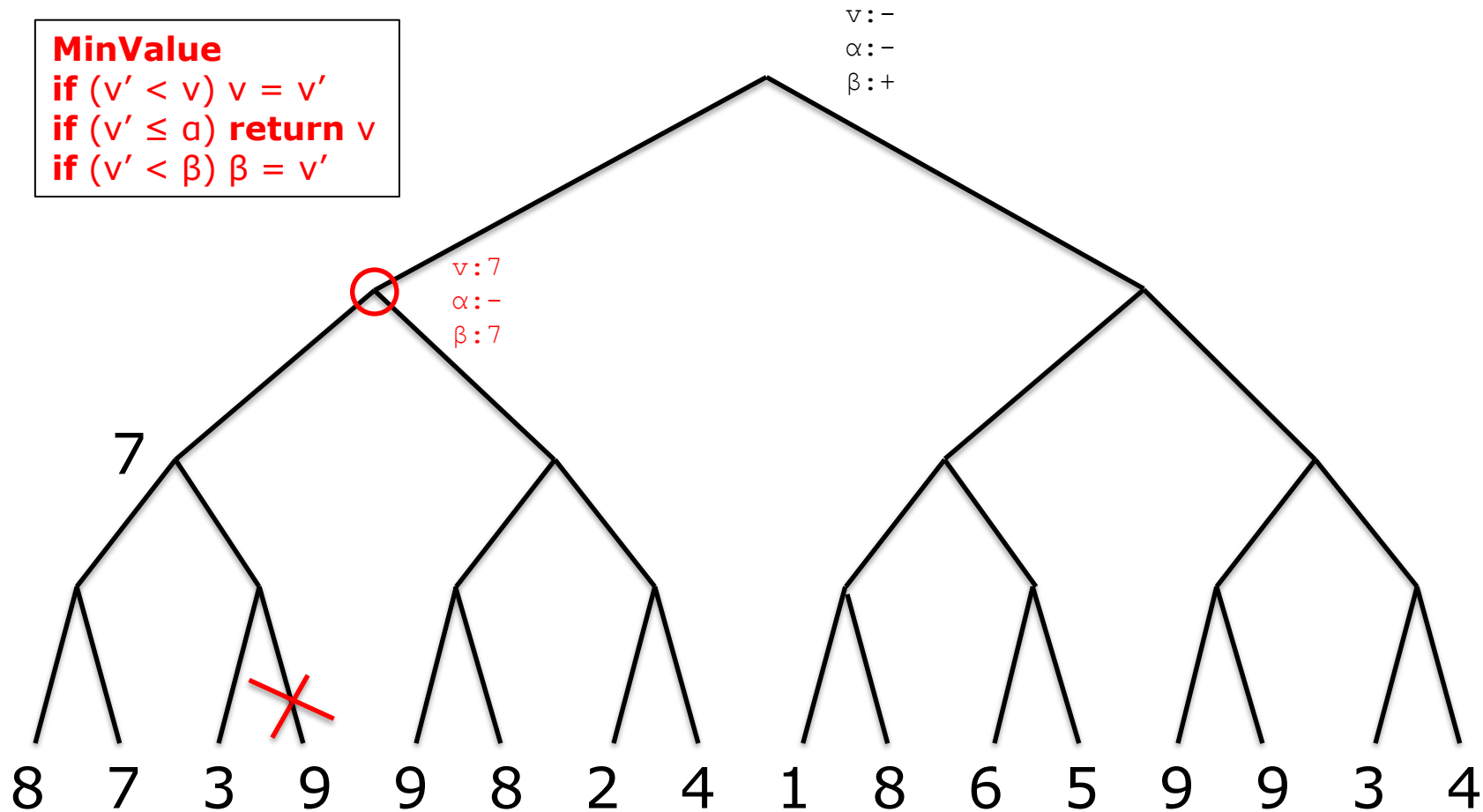
MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

Min

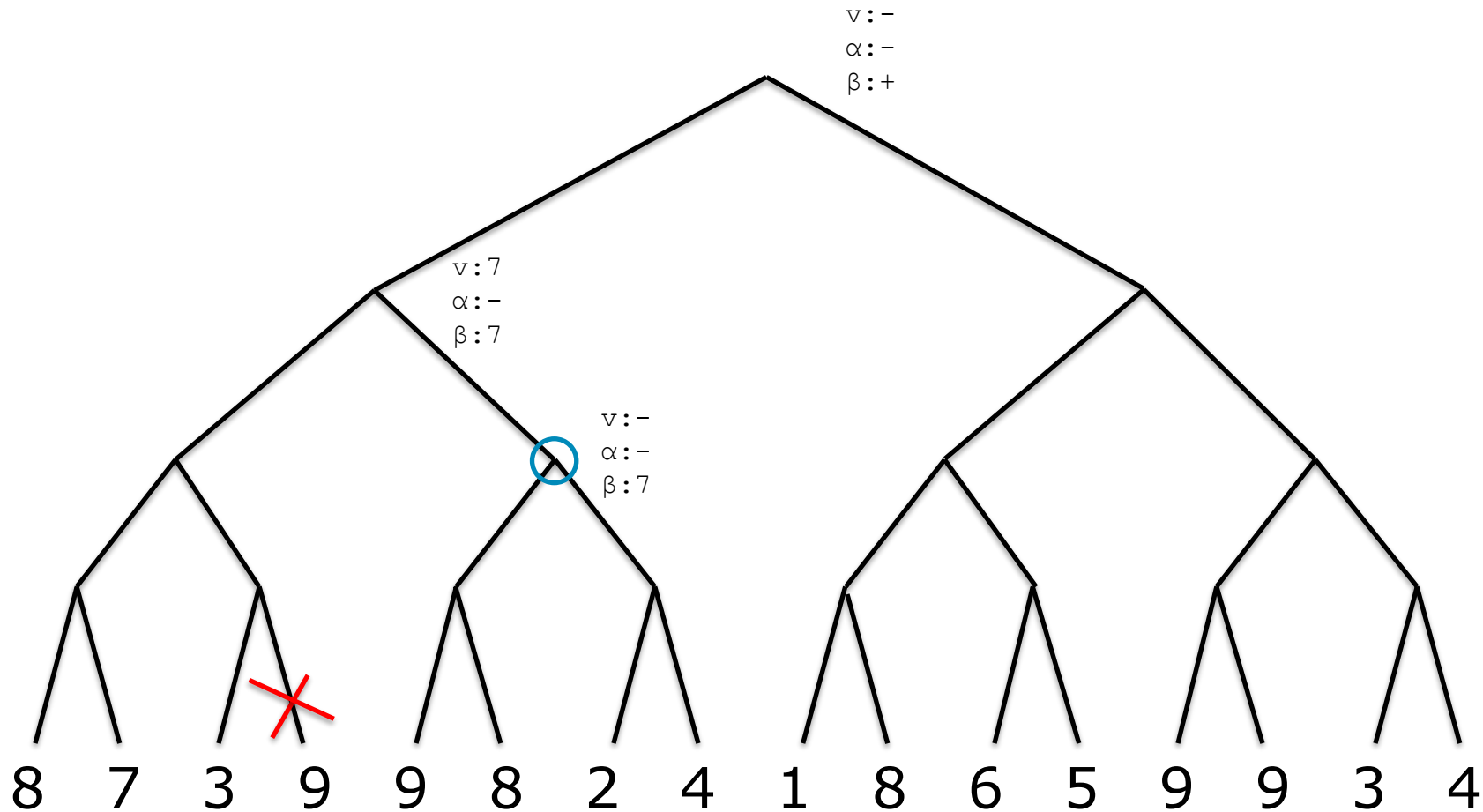


Max

Min

Max

Min

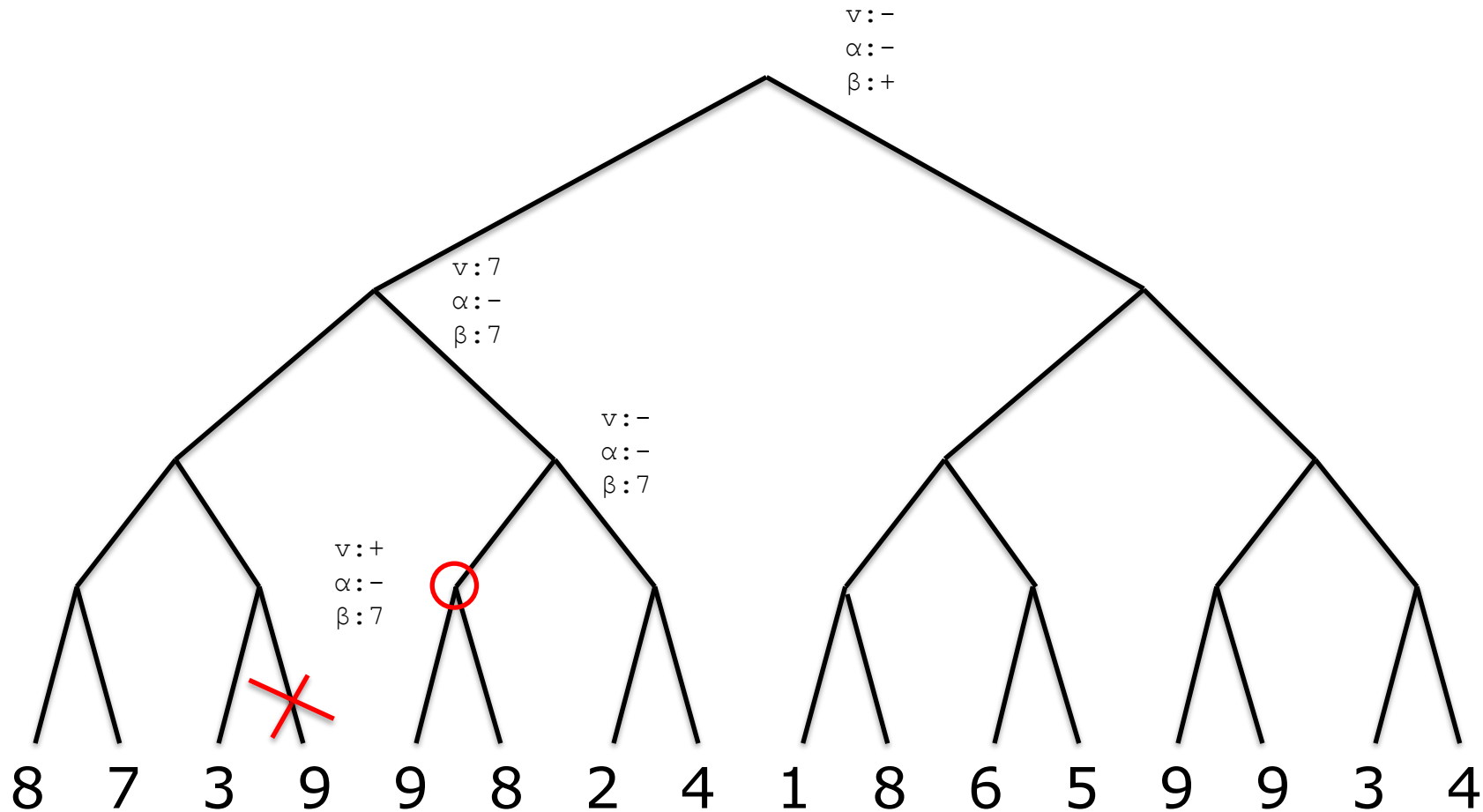


Max

Min

Max

Min



Max

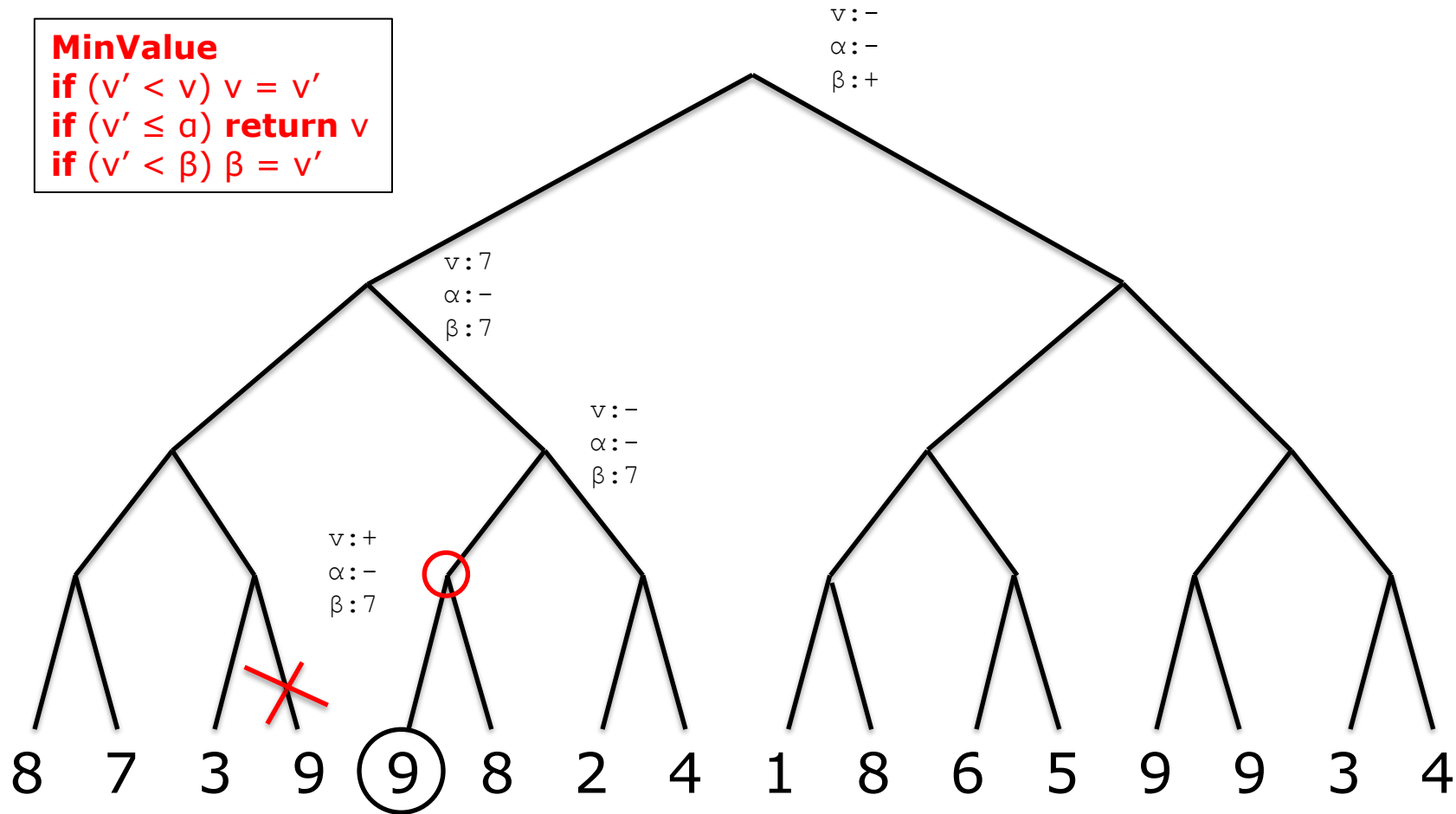
MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

Min



Max

MinValue

```

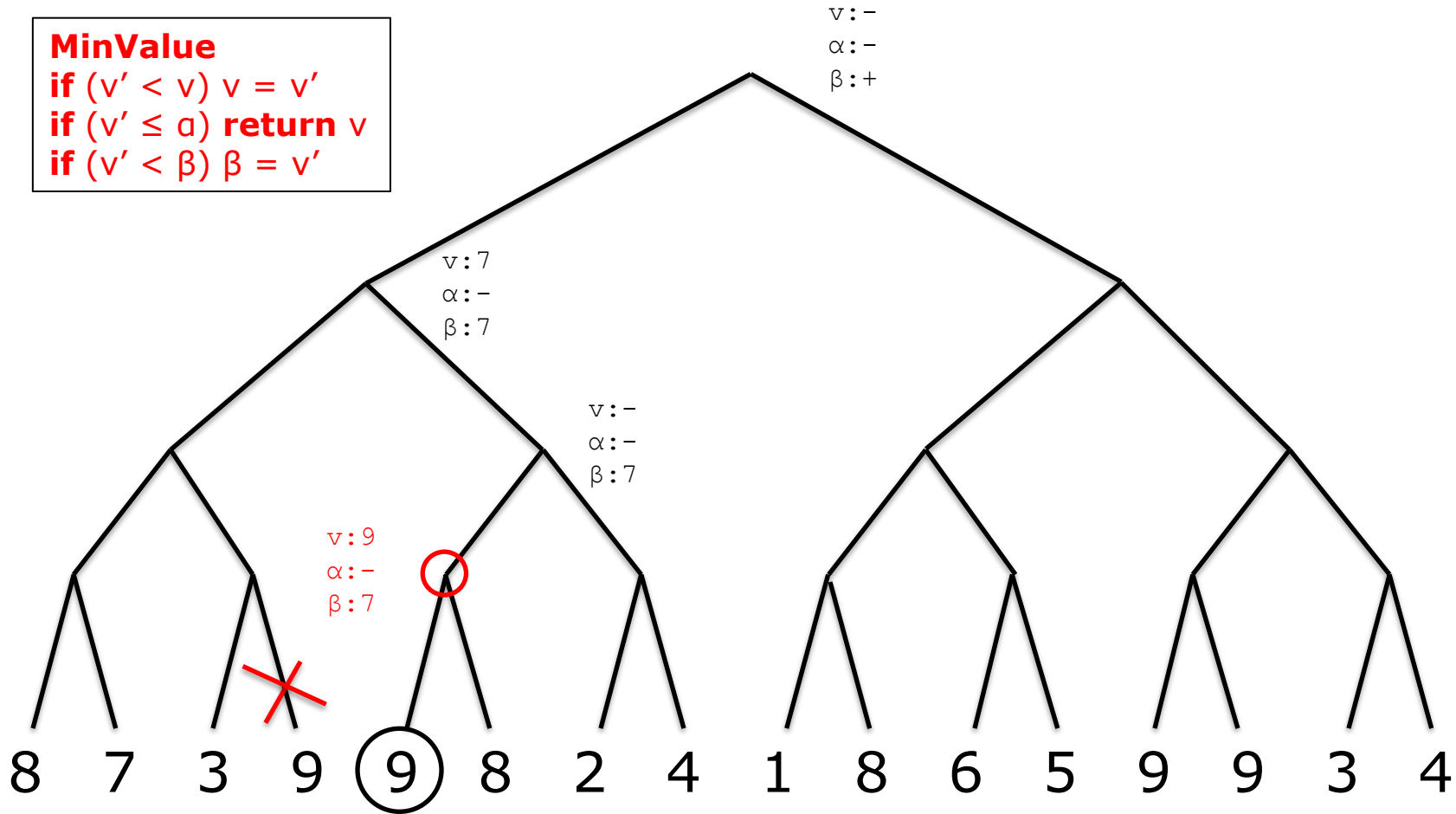
if ( $v' < v$ )  $v = v'$ 
if ( $v' \leq \alpha$ ) return  $v$ 
if ( $v' < \beta$ )  $\beta = v'$ 

```

Min

Max

Min



Max

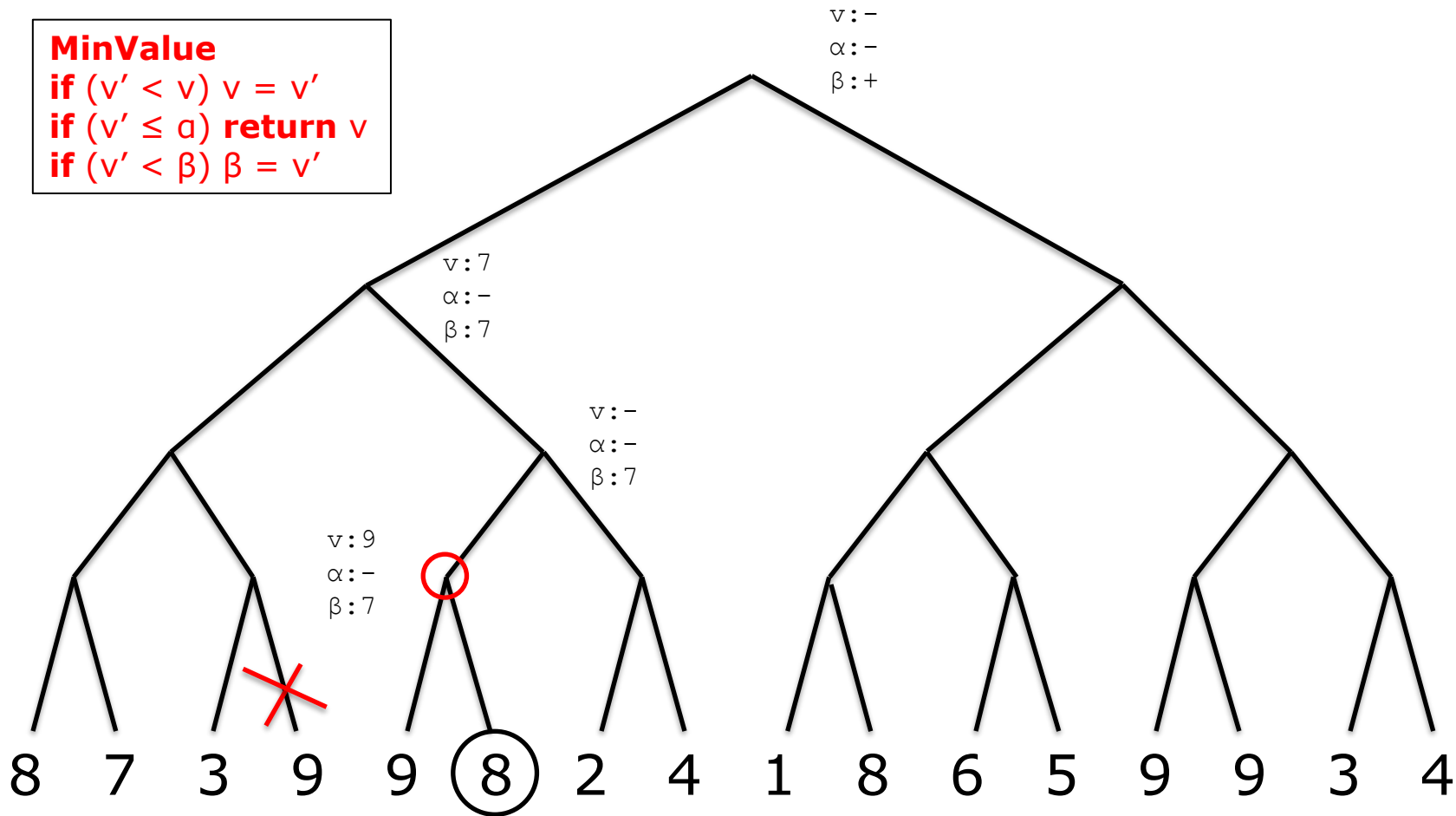
MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

Min



Max

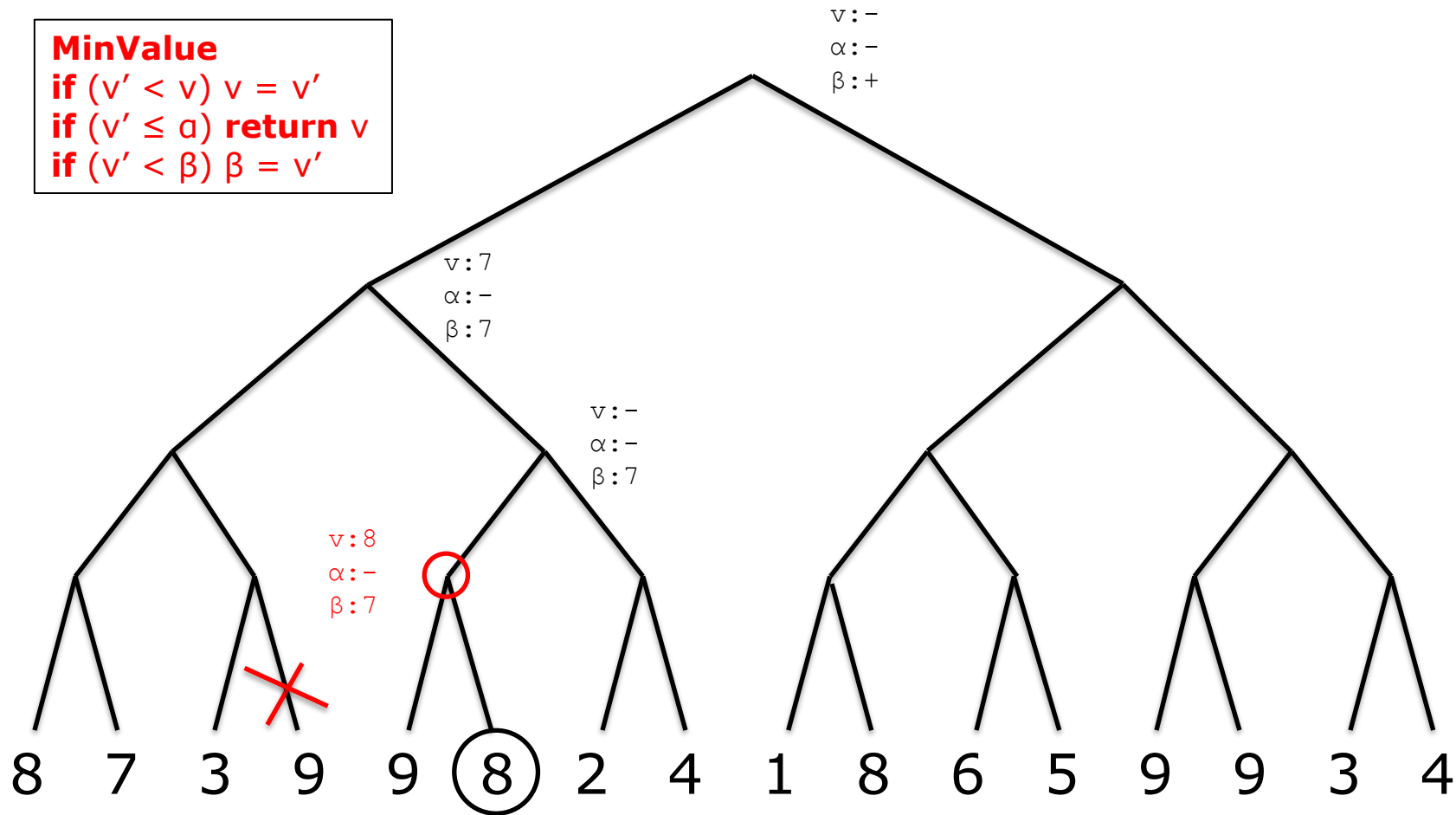
MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

Min



Max

MaxValue

```

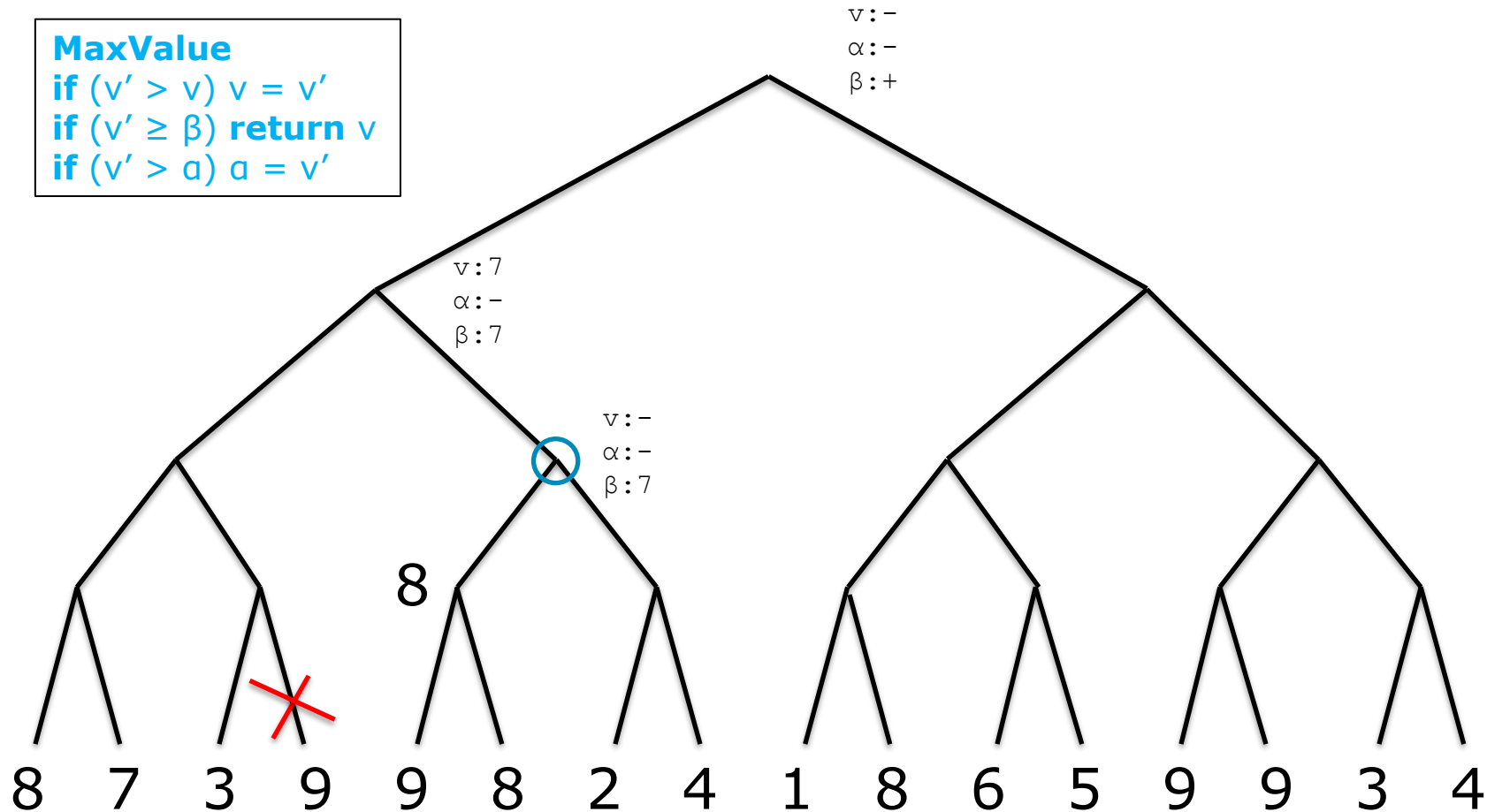
if ( $v' > v$ )  $v = v'$ 
if ( $v' \geq \beta$ ) return  $v$ 
if ( $v' > a$ )  $a = v'$ 

```

Min

Max

Min



Max

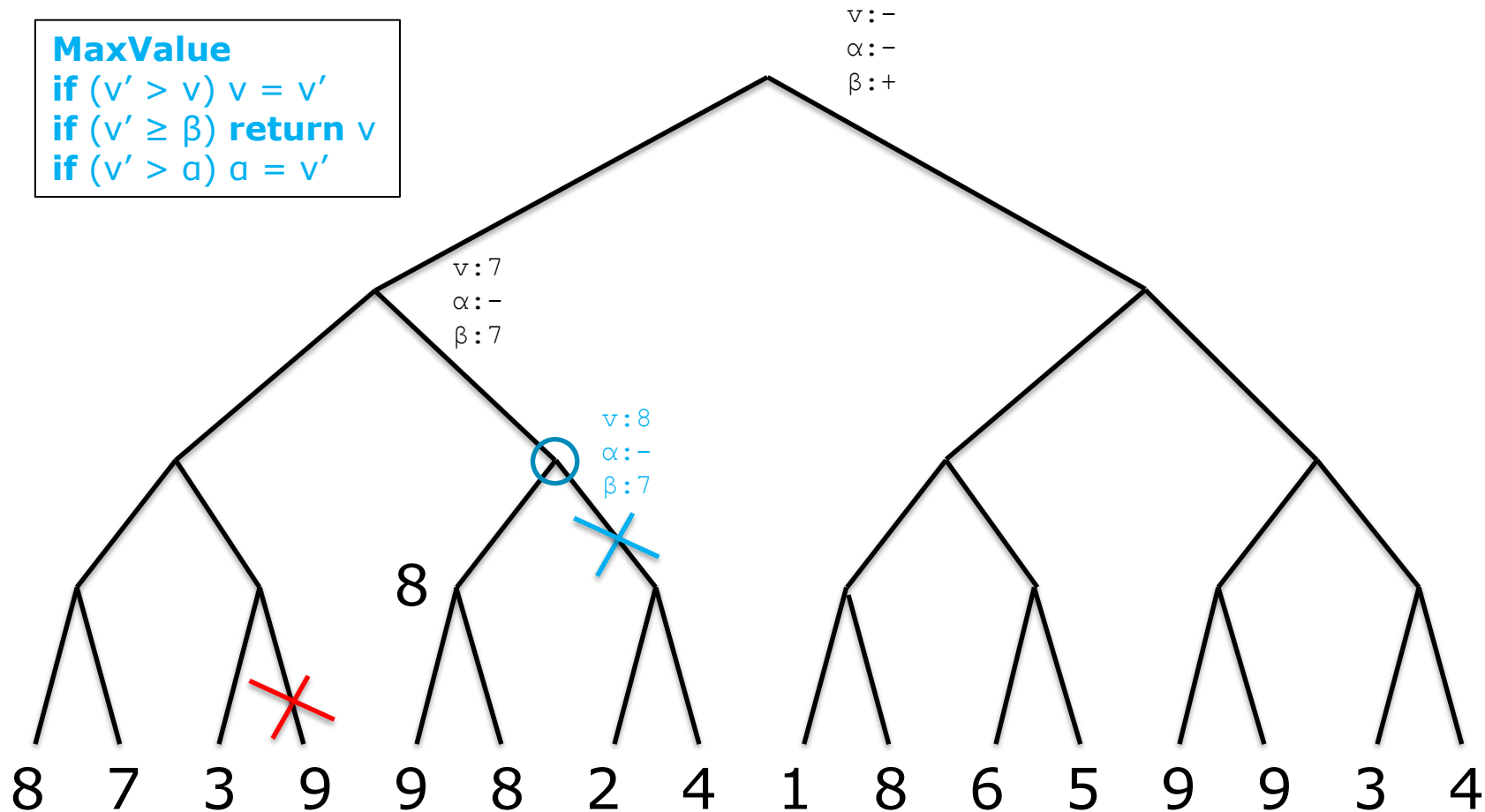
MaxValue

```
if ( $v' > v$ )  $v = v'$   
if ( $v' \geq \beta$ ) return  $v$   
if ( $v' > \alpha$ )  $\alpha = v'$ 
```

Min

Max

Min



Max

Min

Max

Min

MinValue

if ($v' < v$) $v = v'$

```

if ( $v' \leq a$ ) return  $v$ 

```

if ($v' < \beta$) $\beta = v'$

$$V :-$$
$$\alpha :=$$
 $\beta : +$ $v:7$ $\alpha: -$ $\beta : 7$

8

8

7

3

9

9

8

2

4

1

8

6

5

9

9

(3)

4

Max

MinValue

if ($v' < v$) $v = v'$

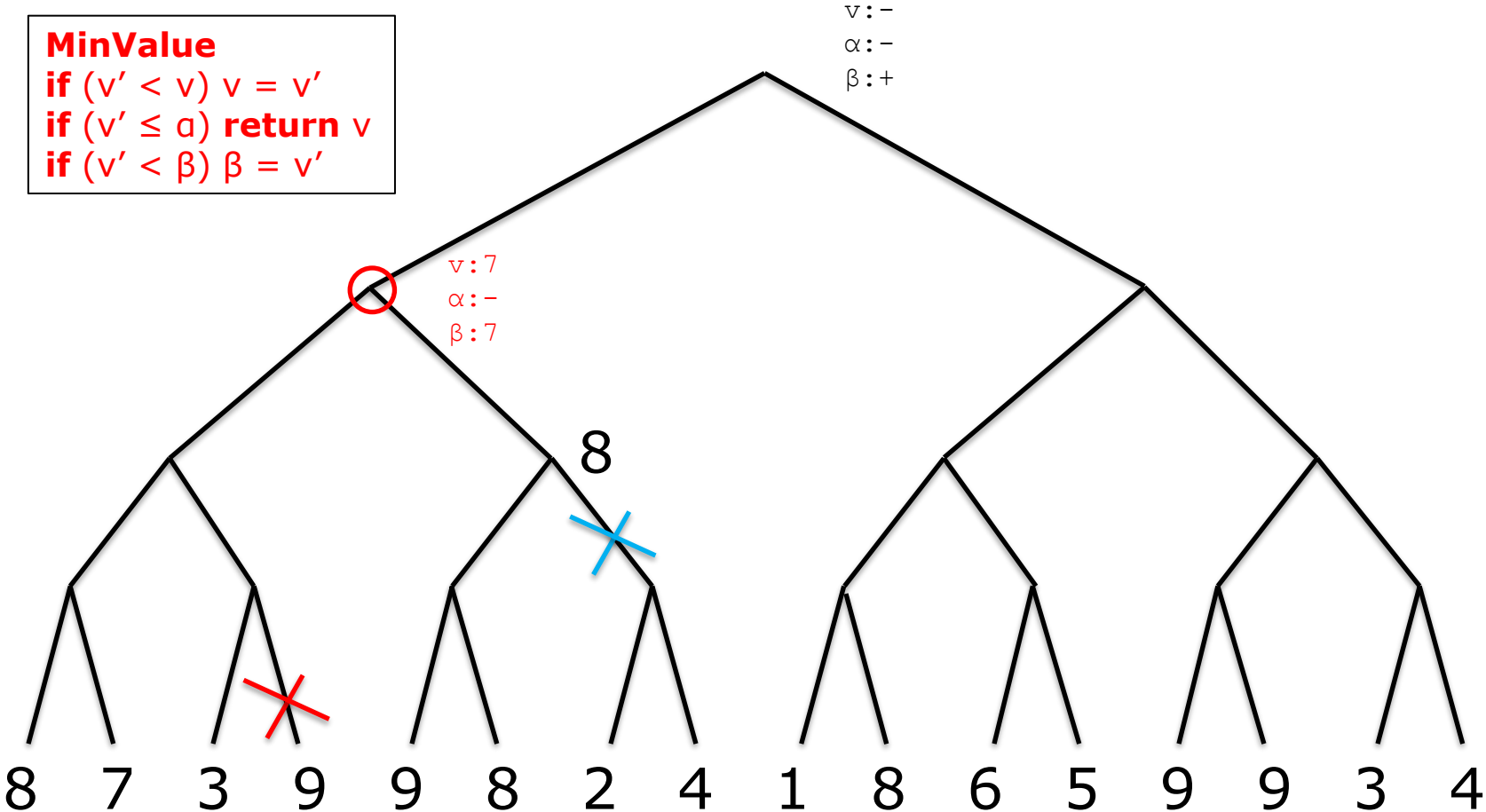
if ($v' \leq a$) return v

if ($v' < \beta$) $\beta = v'$

Min

Max

Min

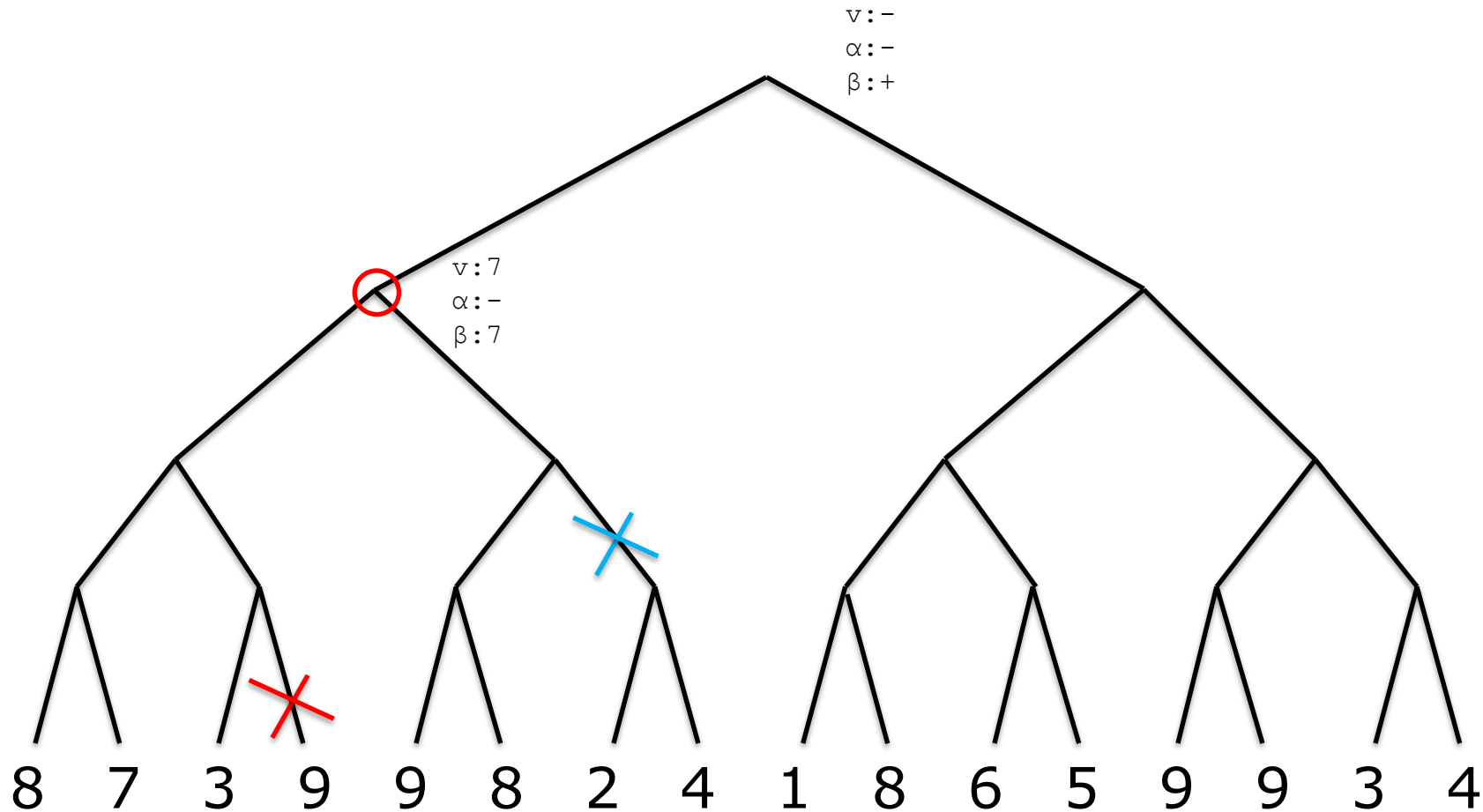


Max

Min

Max

Min



Max

MaxValue

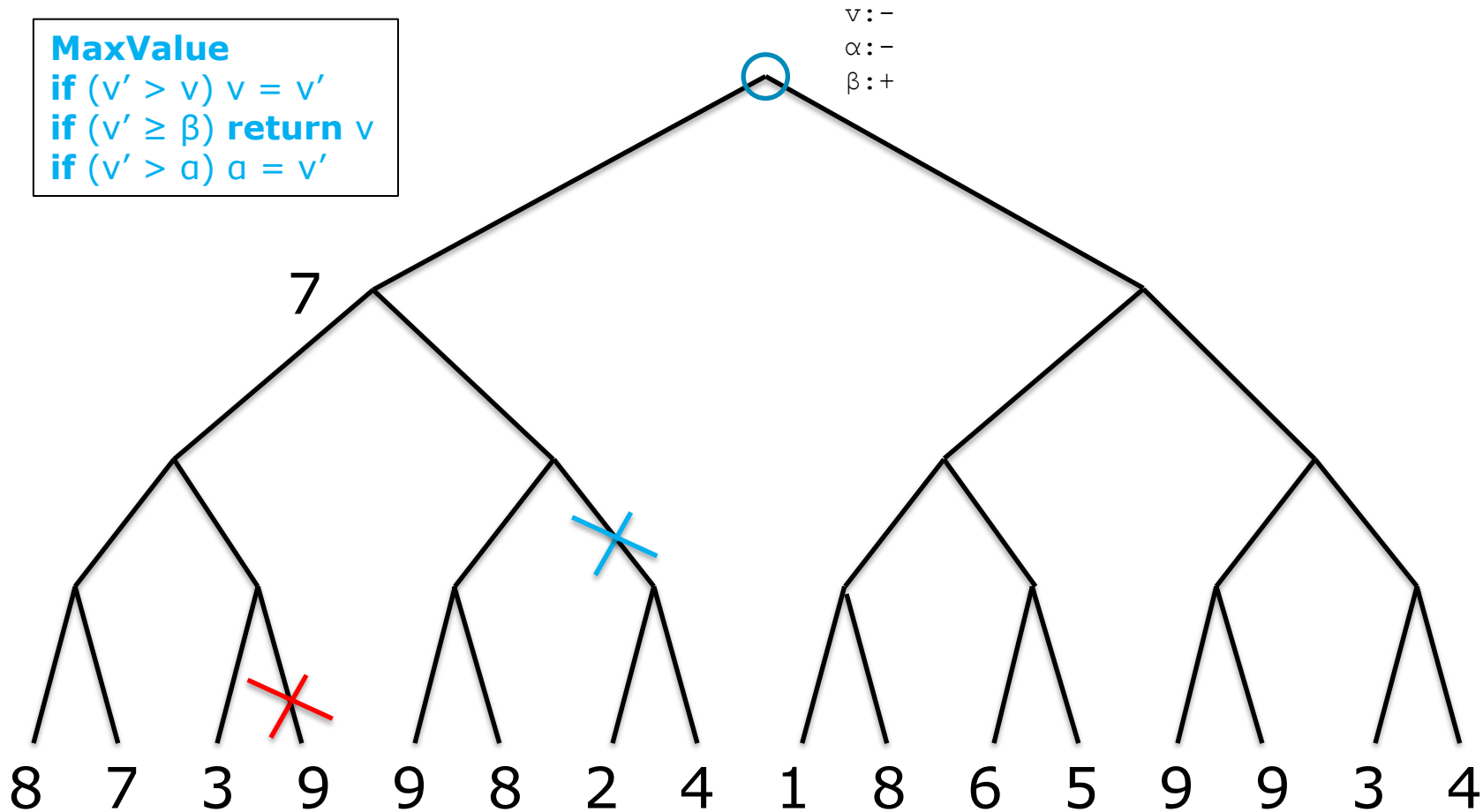
```
if ( $v' > v$ )  $v = v'$   
if ( $v' \geq \beta$ ) return  $v$   
if ( $v' > \alpha$ )  $\alpha = v'$ 
```

$v:-$
 $\alpha:-$
 $\beta:+$

Min

Max

Min



Max

MaxValue

```
if ( $v' > v$ )  $v = v'$   
if ( $v' \geq \beta$ ) return  $v$   
if ( $v' > \alpha$ )  $\alpha = v'$ 
```

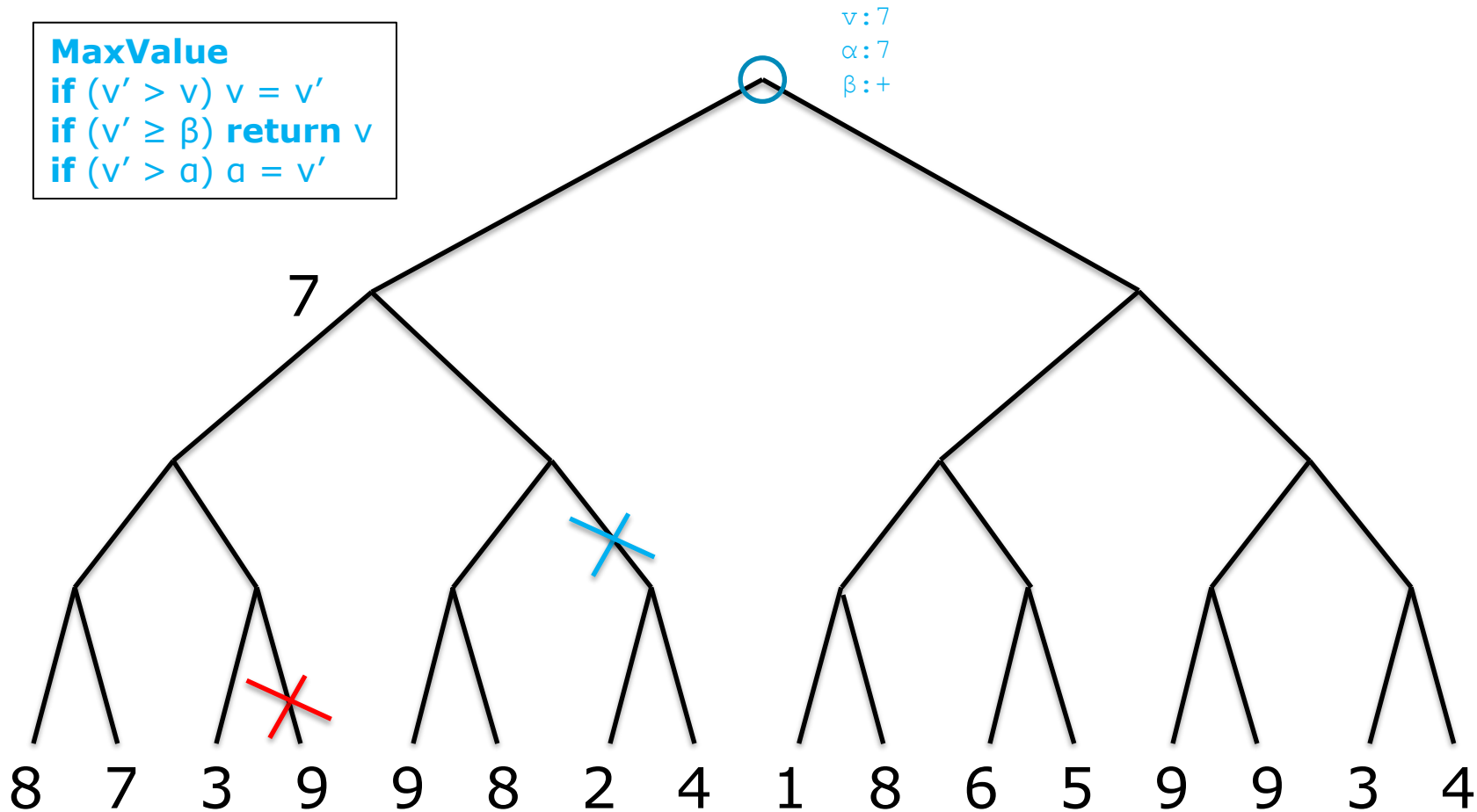
$v:7$
 $\alpha:7$
 $\beta:+$

Min

7

Max

Min

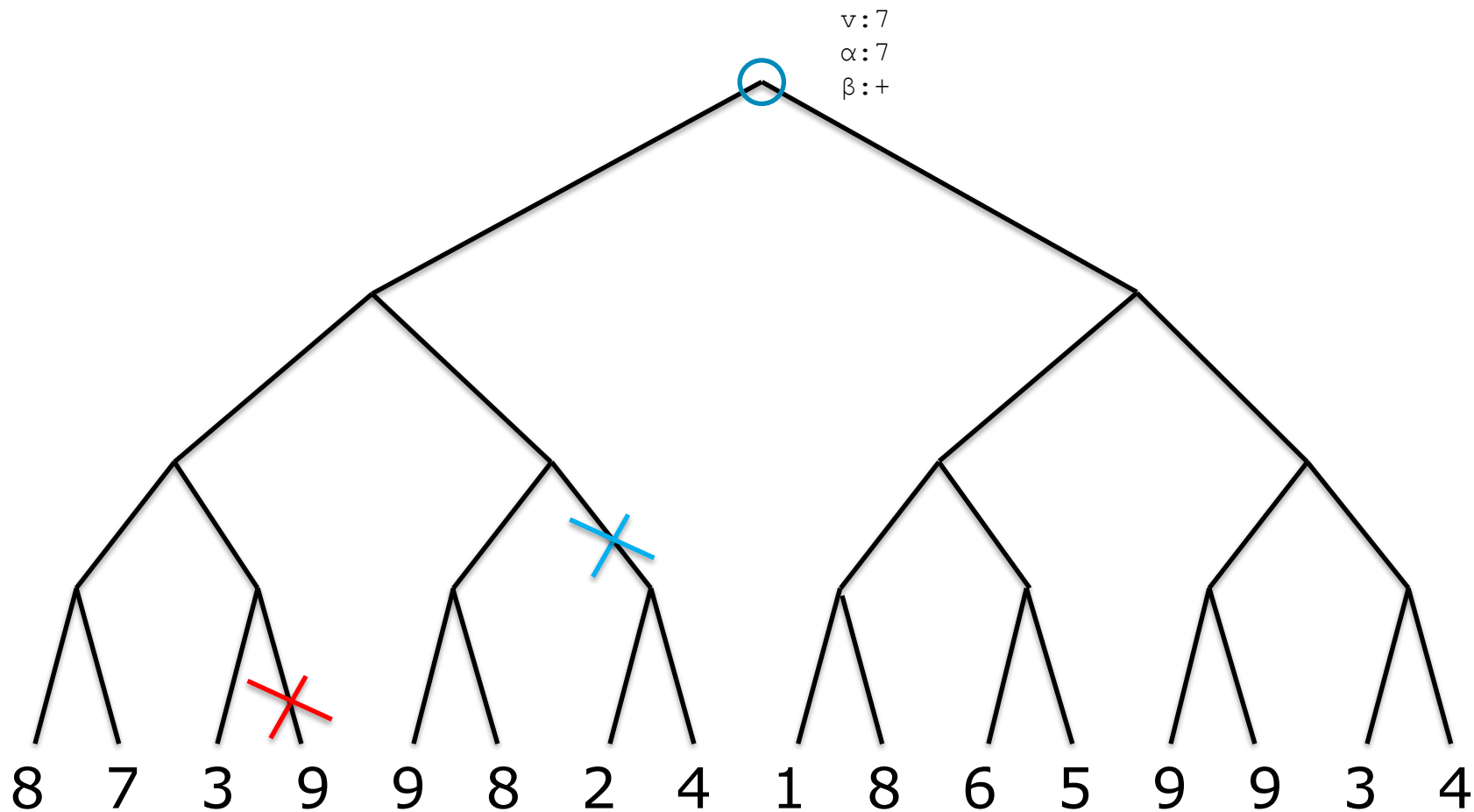


Max

Min

Max

Min

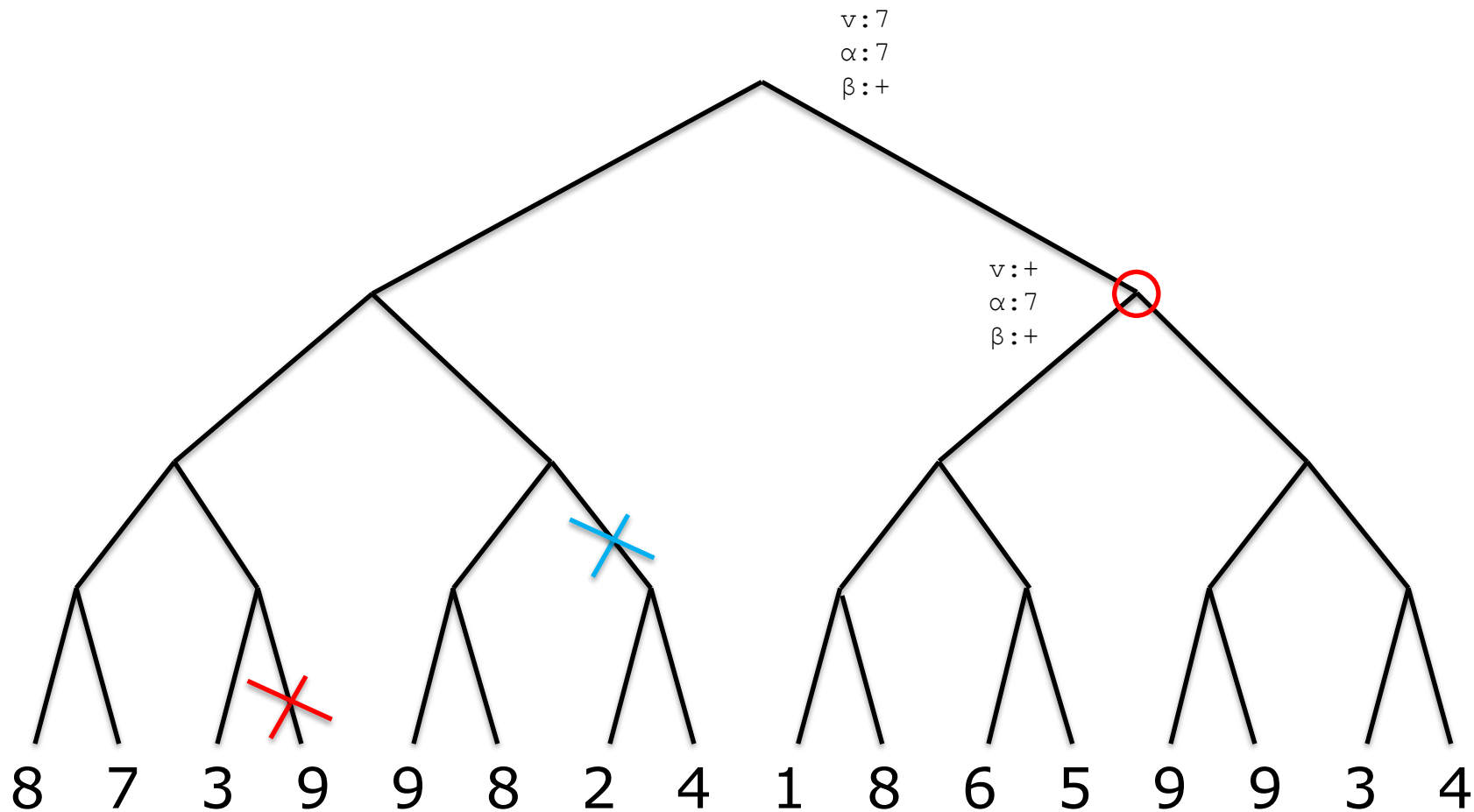


Max

Min

Max

Min

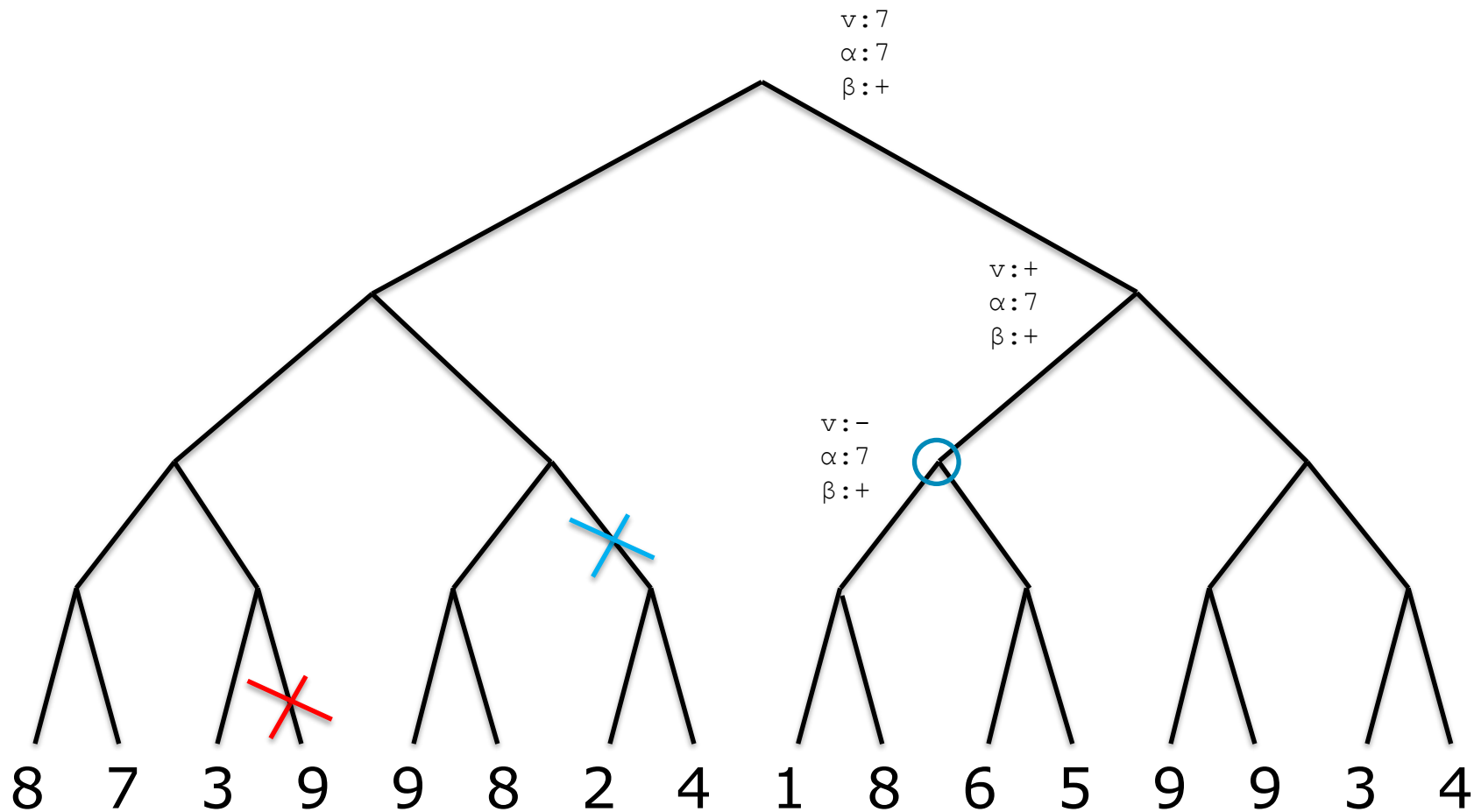


Max

Min

Max

Min

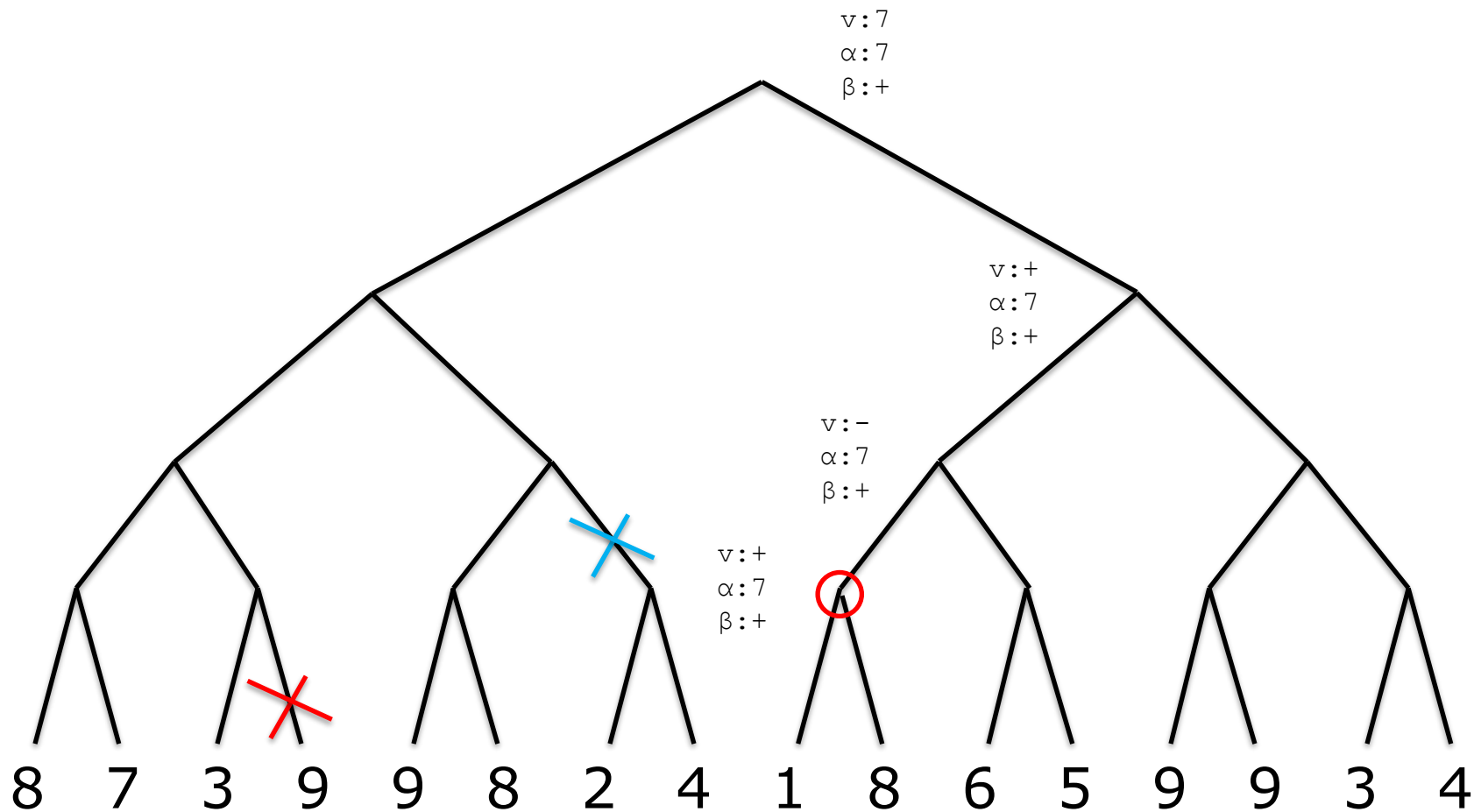


Max

Min

Max

Min



Max

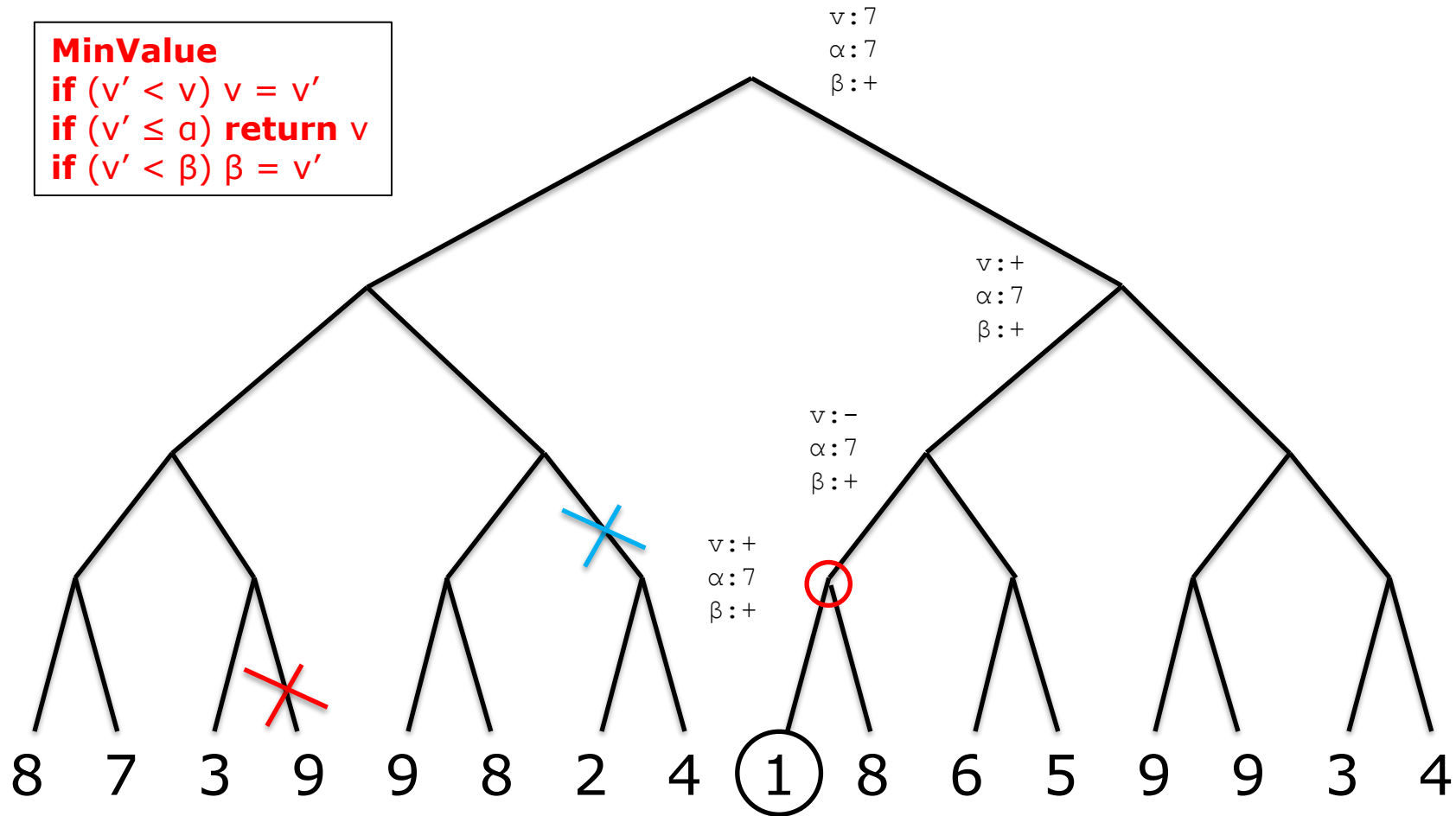
MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

Min



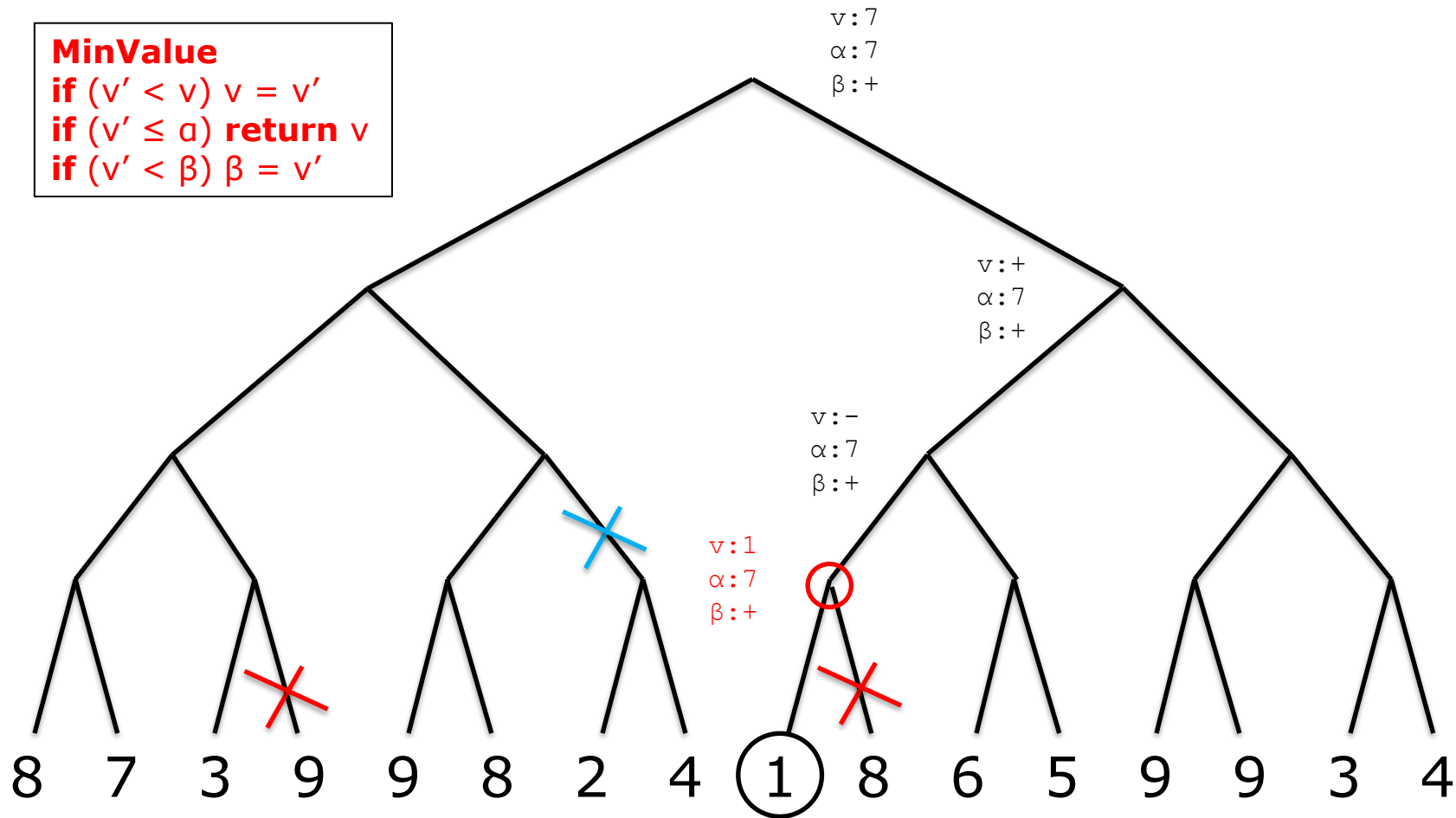
MinValue
if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Max

Min

Max

Min



Max

Min

Max

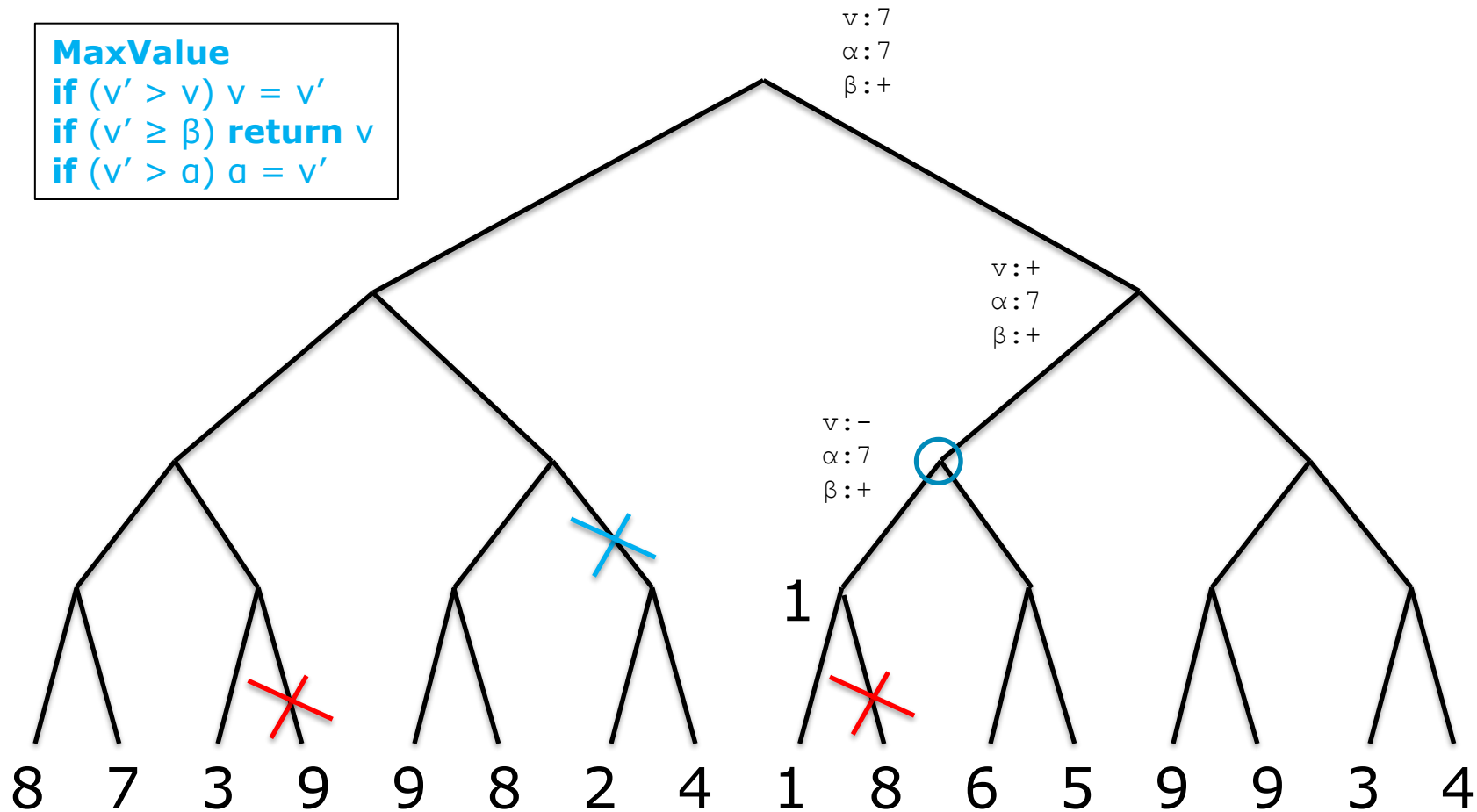
Min

MaxValue

```

if ( $v' > v$ )  $v = v'$ 
if ( $v' \geq \beta$ ) return  $v$ 
if ( $v' > a$ )  $a = v'$ 

```



Max

Min

Max

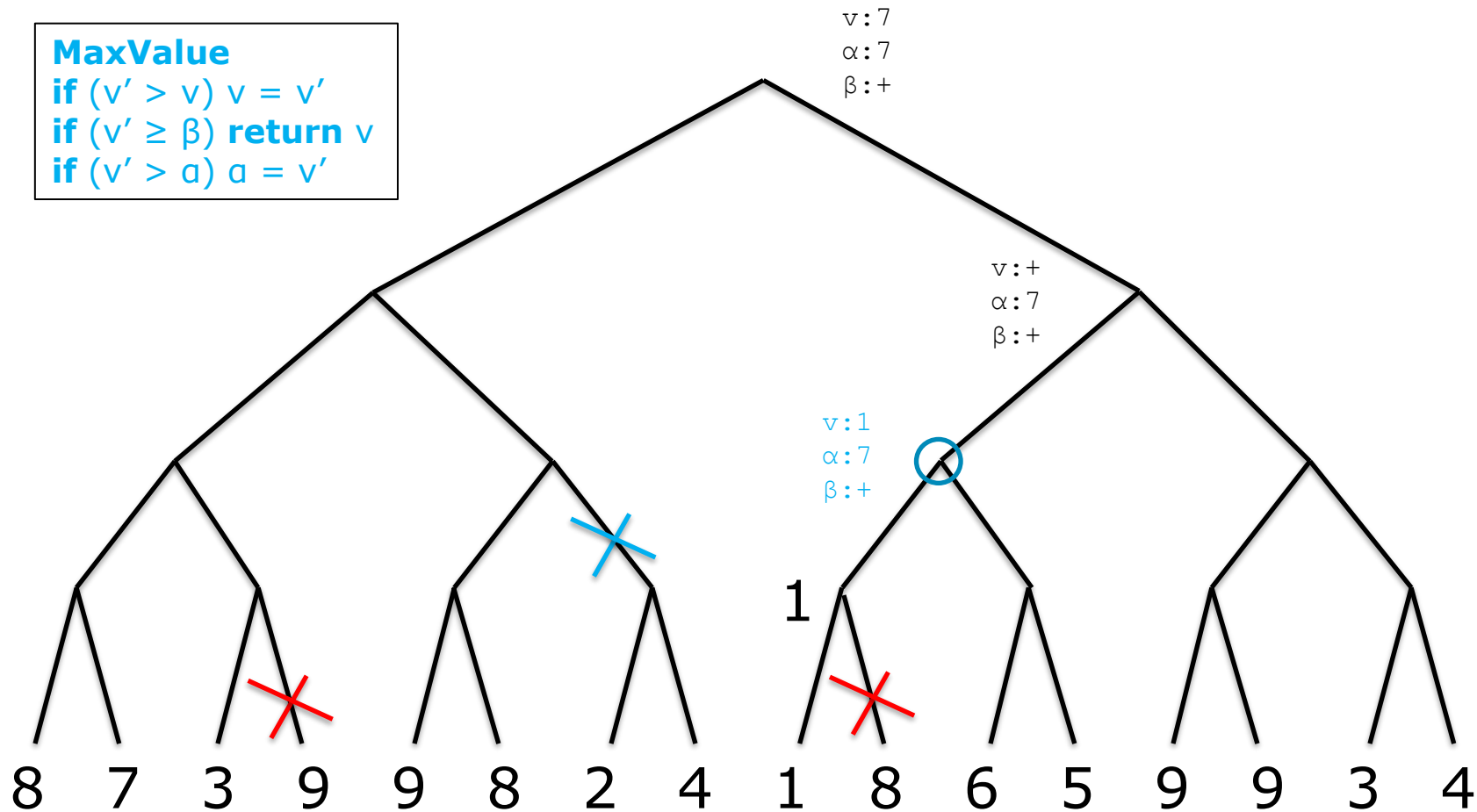
Min

MaxValue

```

if ( $v' > v$ )  $v = v'$ 
if ( $v' \geq \beta$ ) return  $v$ 
if ( $v' > a$ )  $a = v'$ 

```

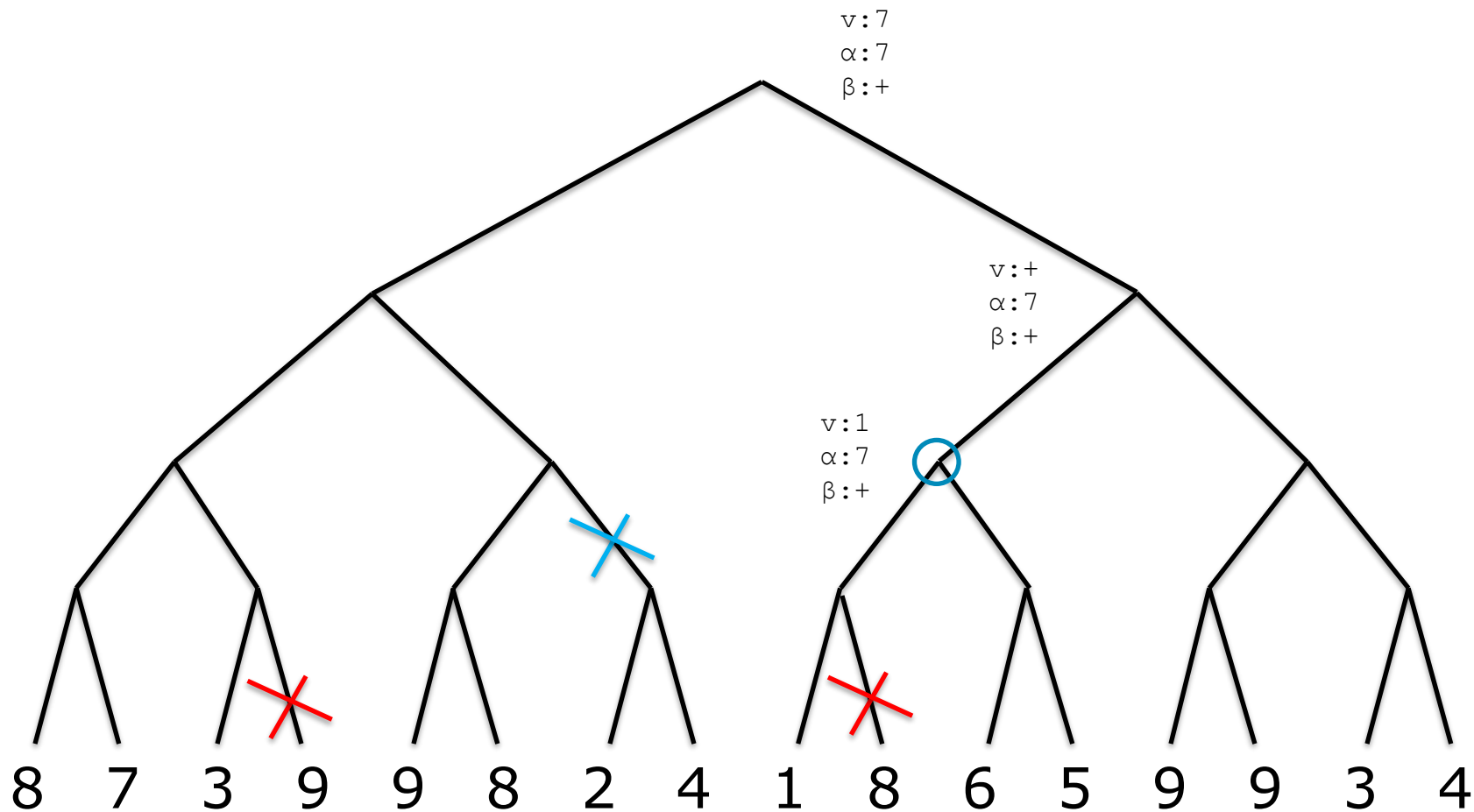


Max

Min

Max

Min

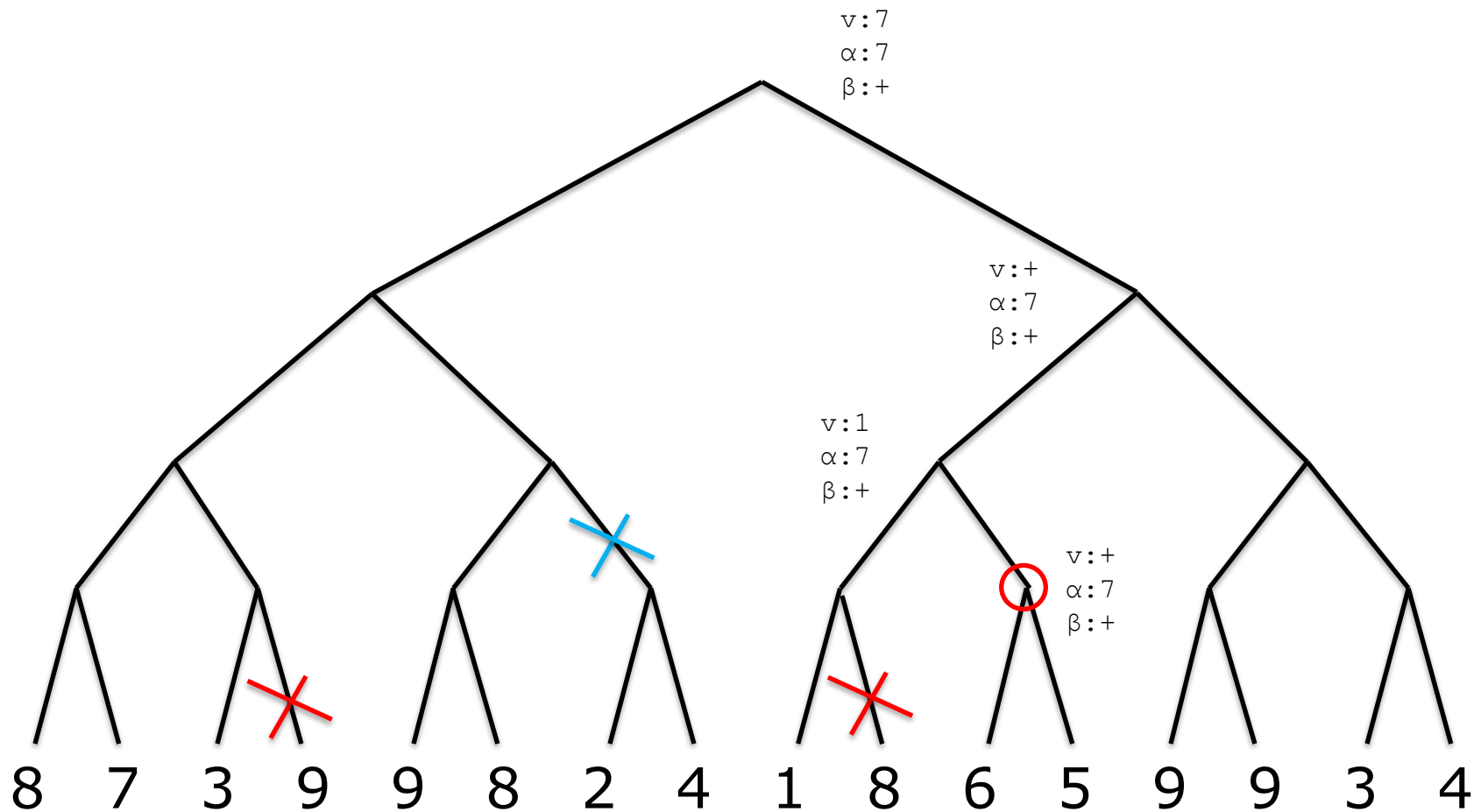


Max

Min

Max

Min



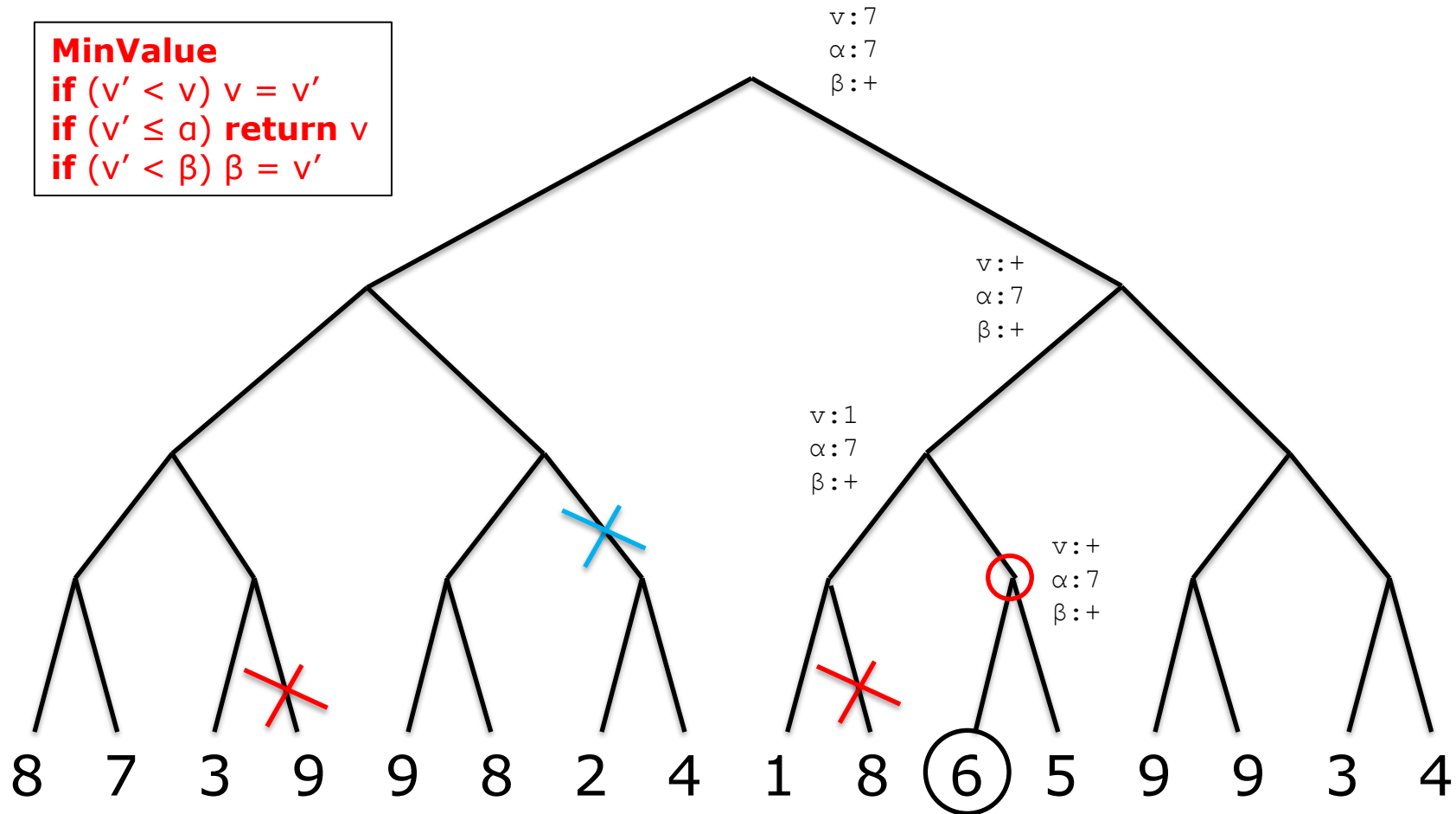
MinValue
if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Max

Min

Max

Min



Max

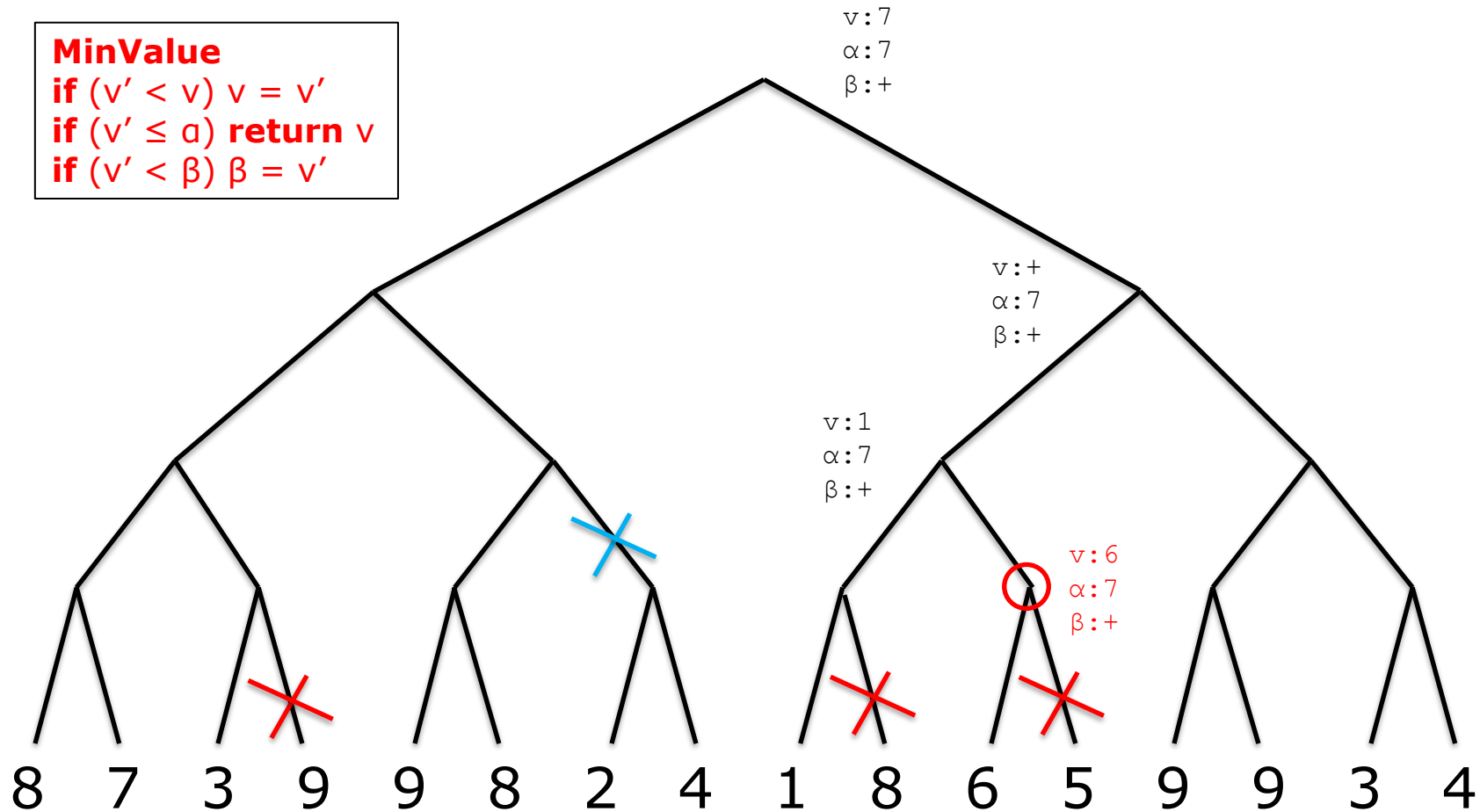
MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

Min



Max

MaxValue

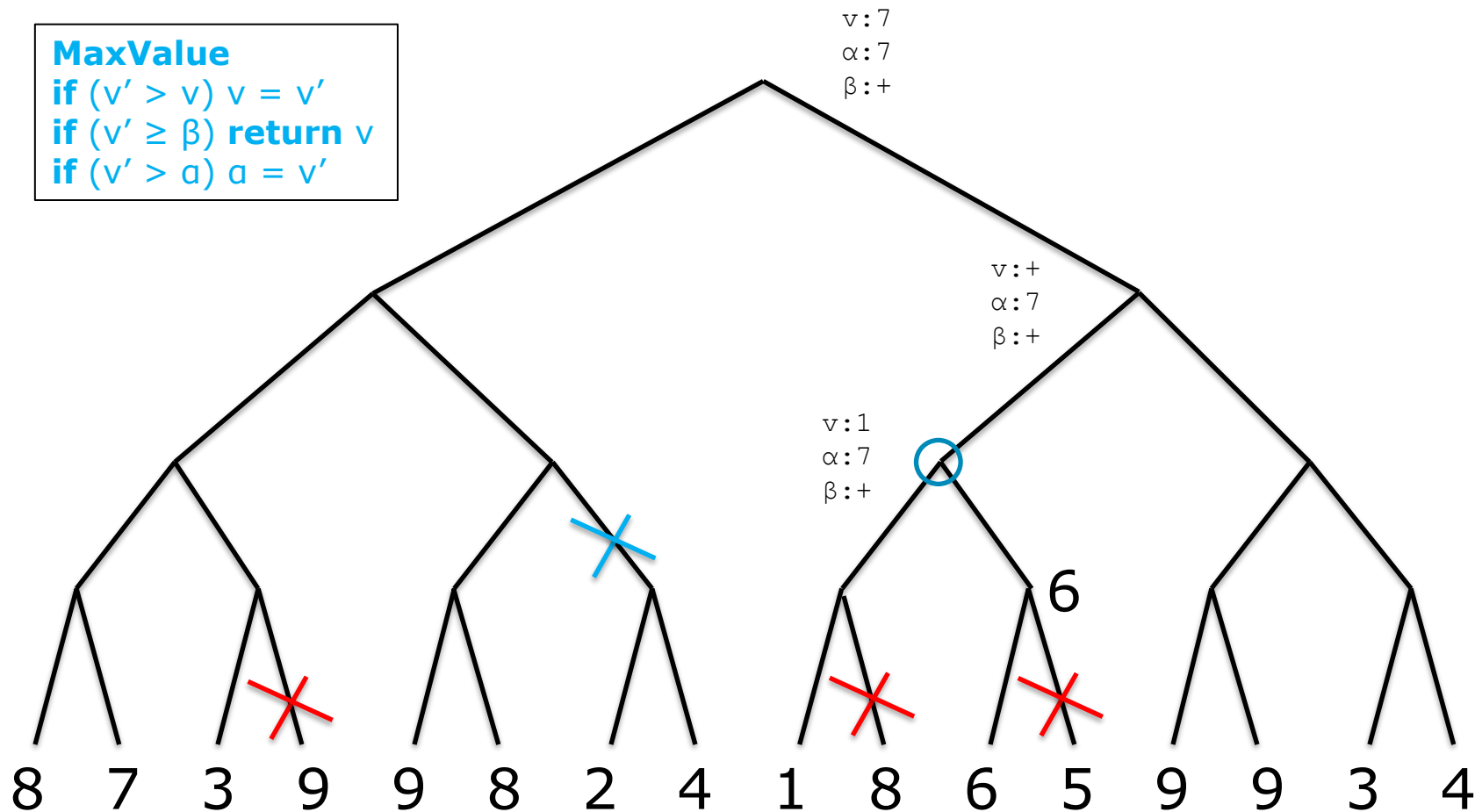
```

if ( $v' > v$ )  $v = v'$ 
if ( $v' \geq \beta$ ) return  $v$ 
if ( $v' > \alpha$ )  $\alpha = v'$ 
    
```

Min

Max

Min



Max

Min

Max

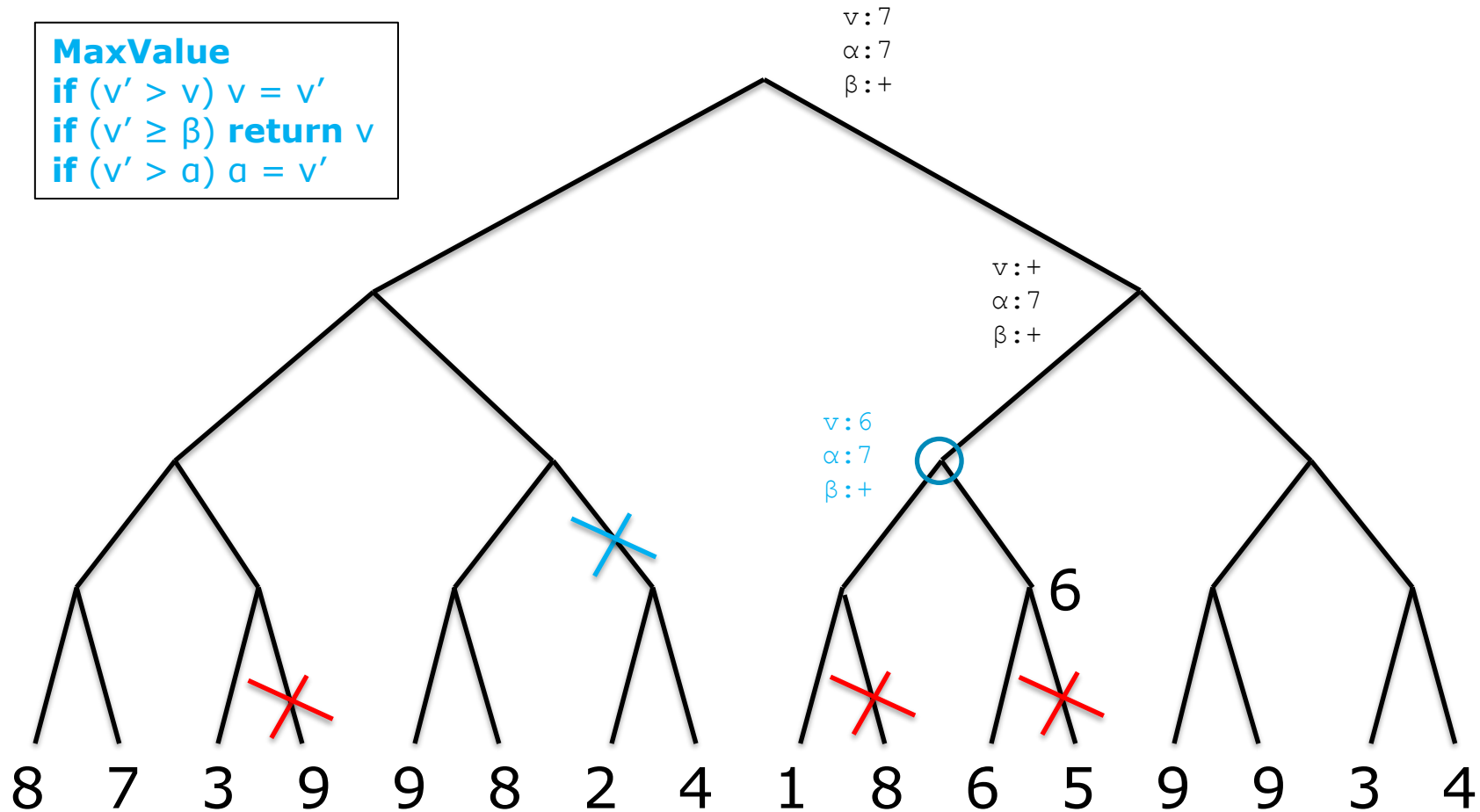
Min

MaxValue

```

if ( $v' > v$ )  $v = v'$ 
if ( $v' \geq \beta$ ) return  $v$ 
if ( $v' > a$ )  $a = v'$ 

```



Max

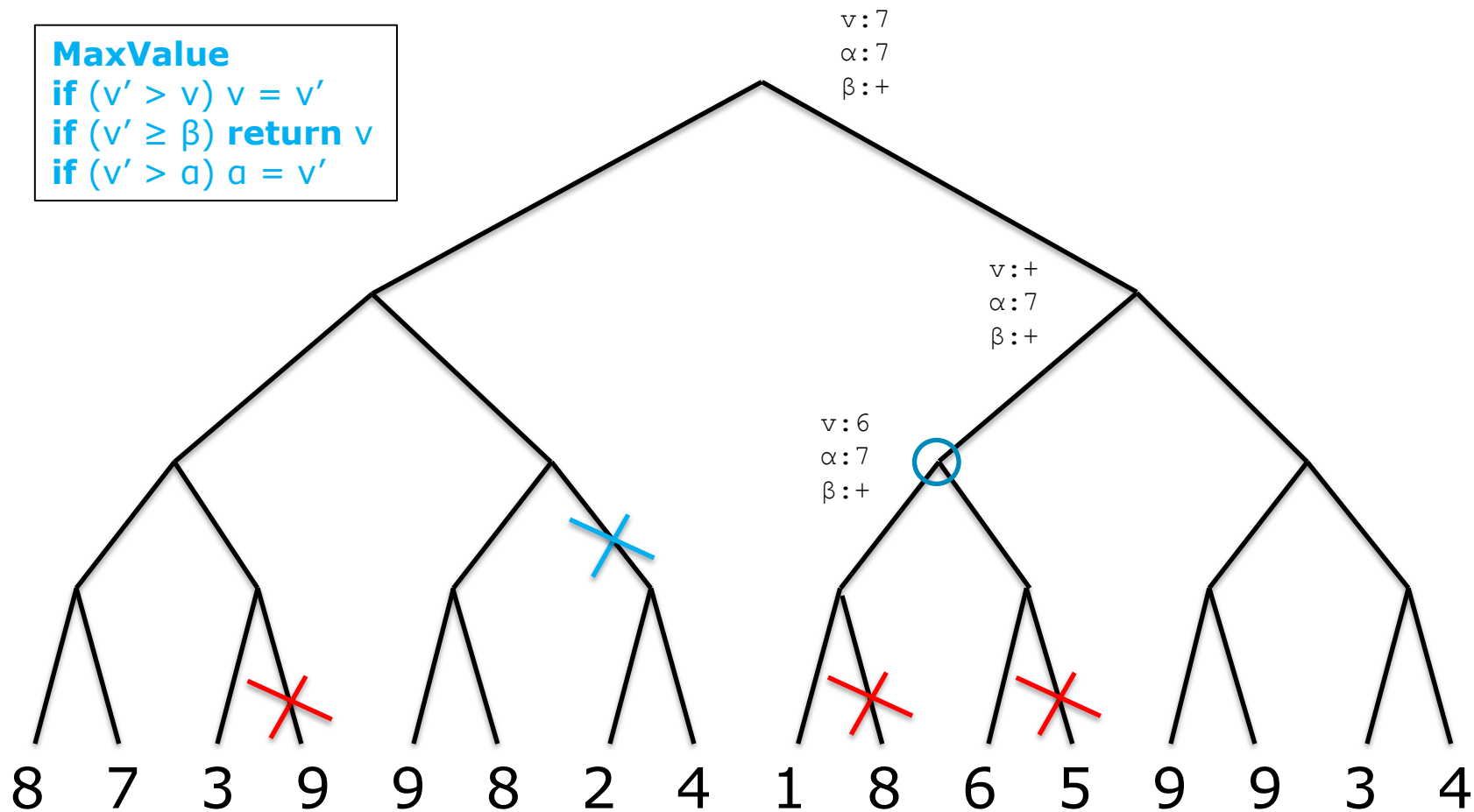
MaxValue

```
if ( $v' > v$ )  $v = v'$   
if ( $v' \geq \beta$ ) return  $v$   
if ( $v' > \alpha$ )  $\alpha = v'$ 
```

Min

Max

Min



Max

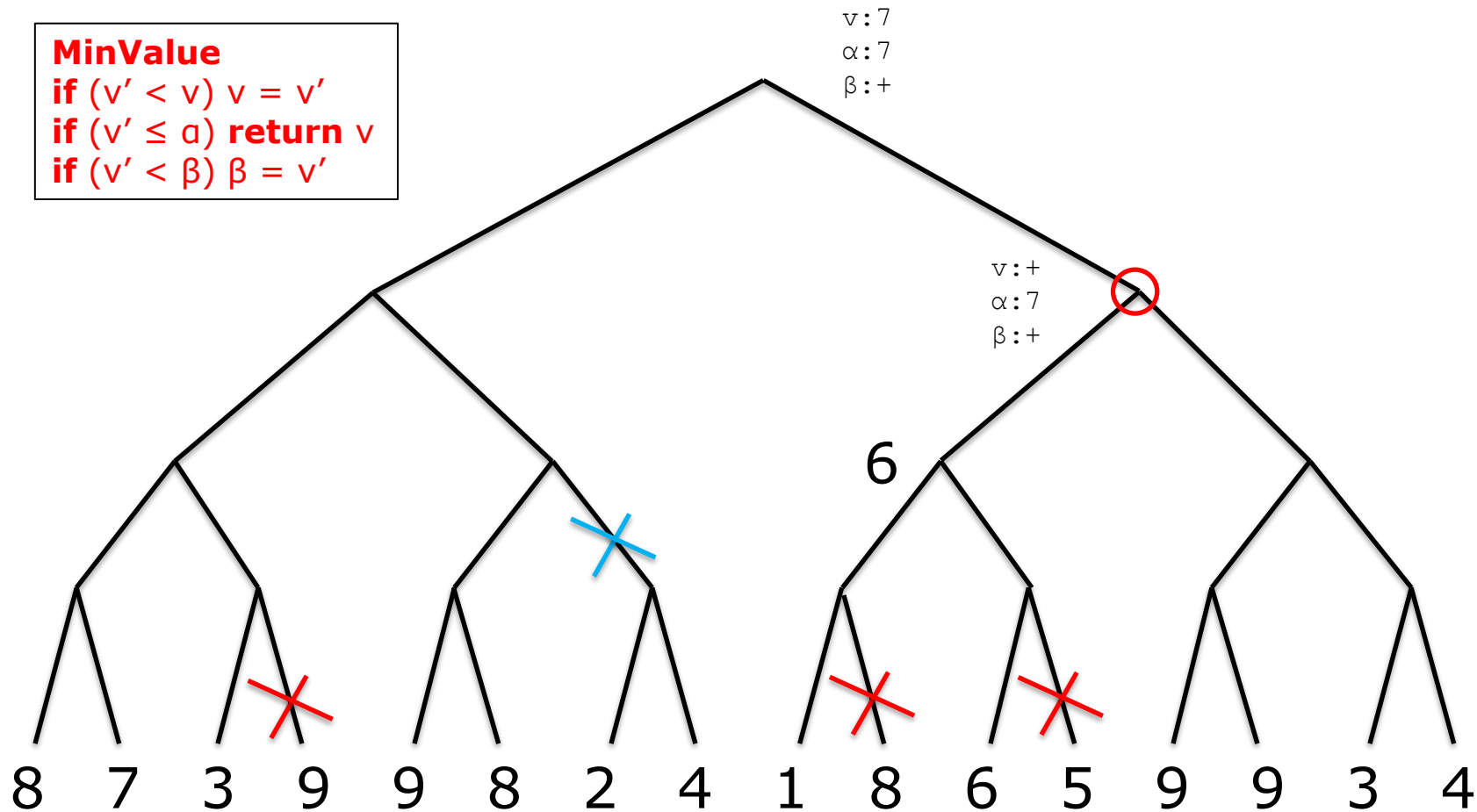
MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

Min



Max

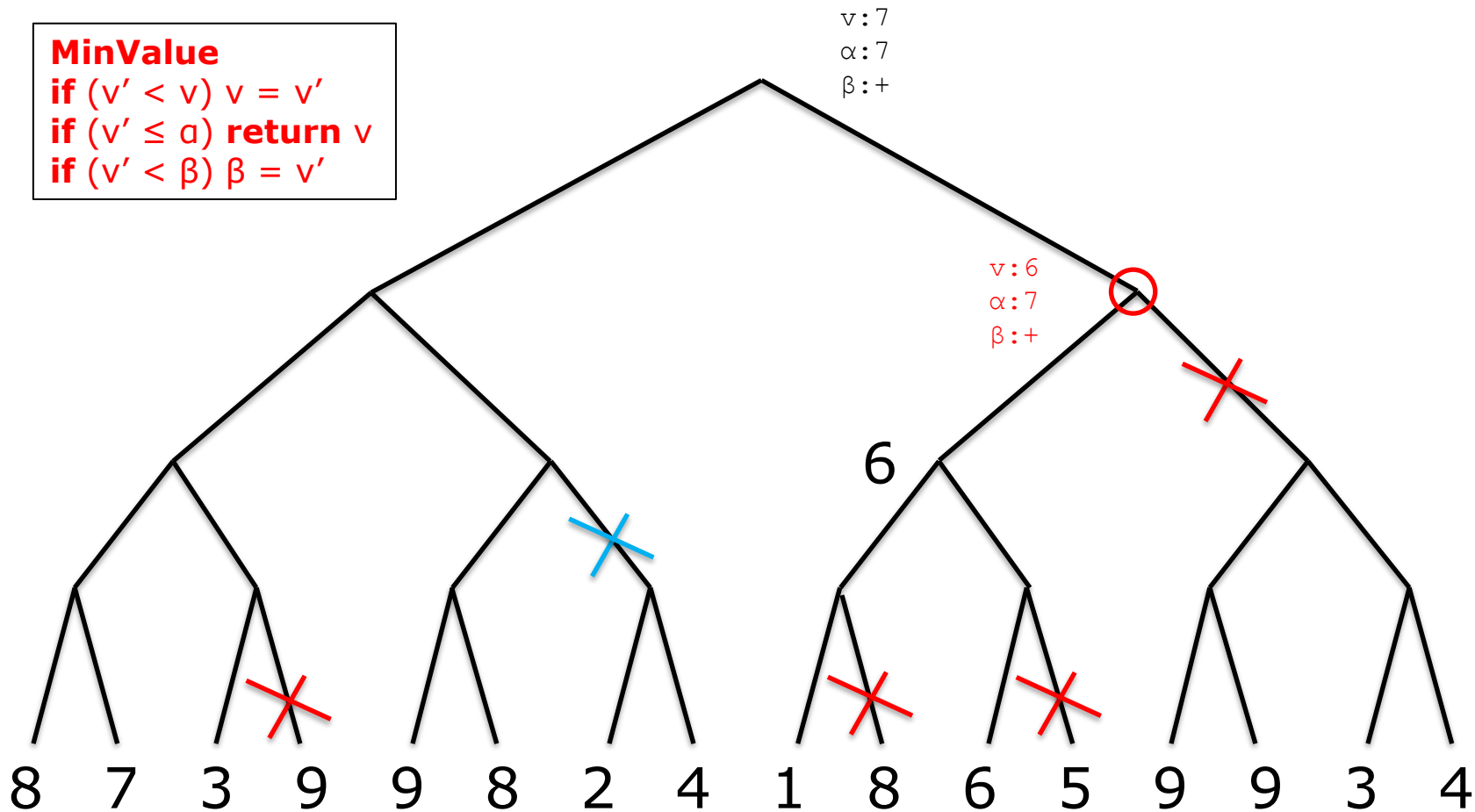
MinValue

if ($v' < v$) $v = v'$
if ($v' \leq \alpha$) **return** v
if ($v' < \beta$) $\beta = v'$

Min

Max

Min



Max

Min

Max

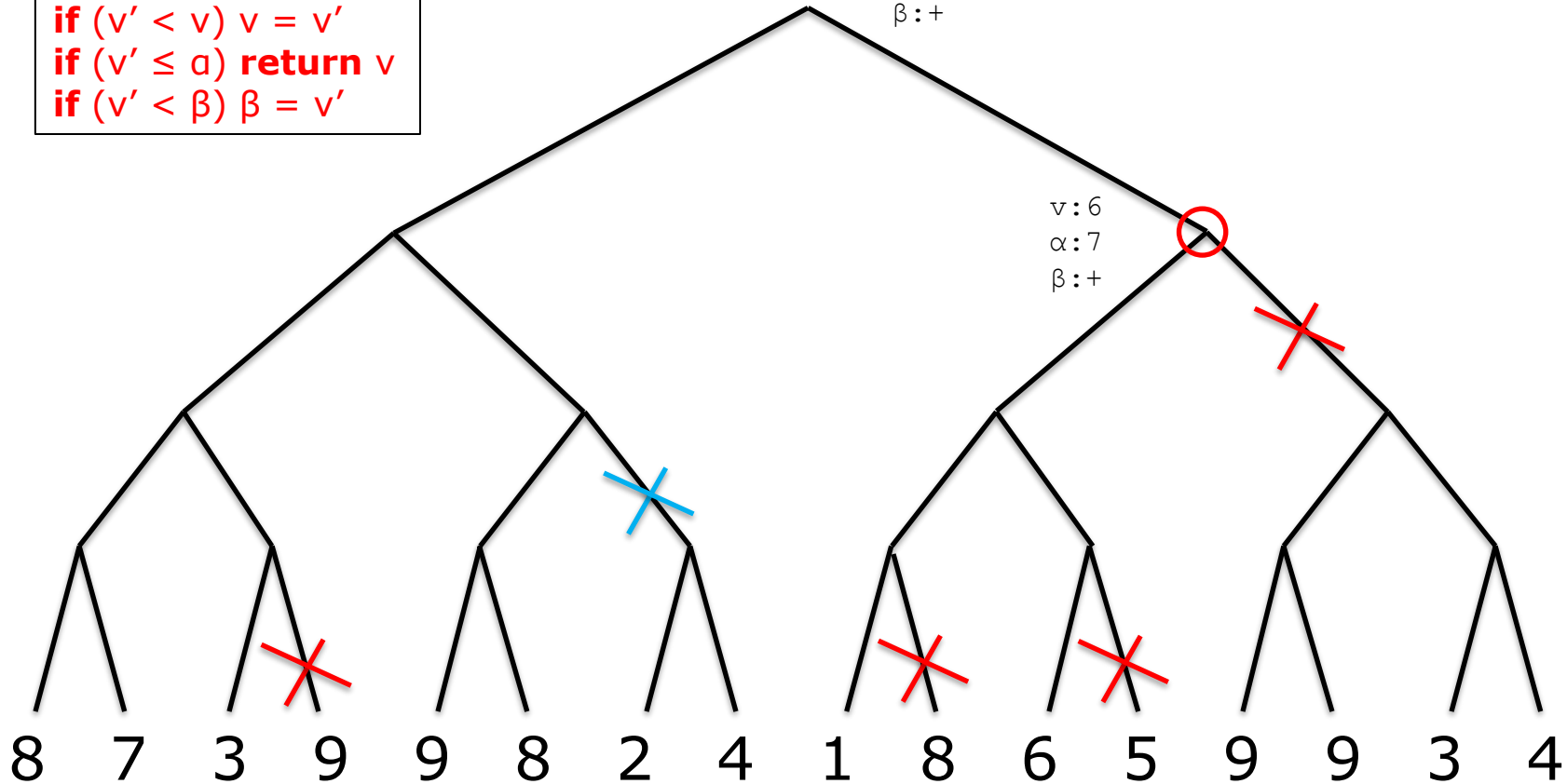
Mir

MinValue

if ($v' < v$) $v = v'$

if ($v' \leq a$) return v

if ($v' < \beta$) $\beta = v'$

$$V: \mathbb{R}^n \rightarrow \mathbb{R}$$
 $\alpha: \mathbb{R}^n \rightarrow \mathbb{R}^n$ $\beta : +$
$$V: \mathbb{R}^n \rightarrow \mathbb{R}$$
 $\alpha:$ $\beta :-$ 

Max

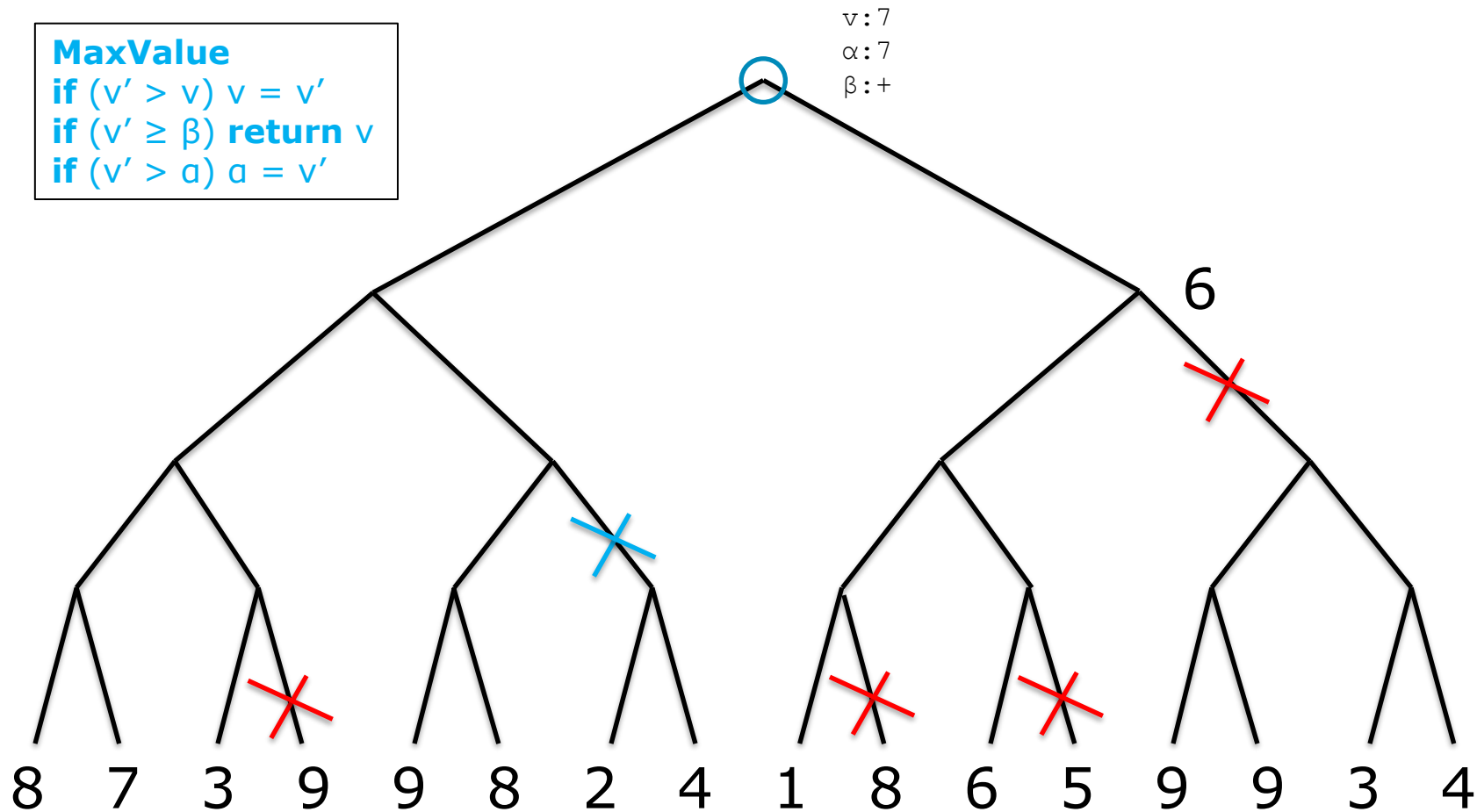
MaxValue

```
if ( $v' > v$ )  $v = v'$   
if ( $v' \geq \beta$ ) return  $v$   
if ( $v' > \alpha$ )  $\alpha = v'$ 
```

Min

Max

Min



Max

MaxValue

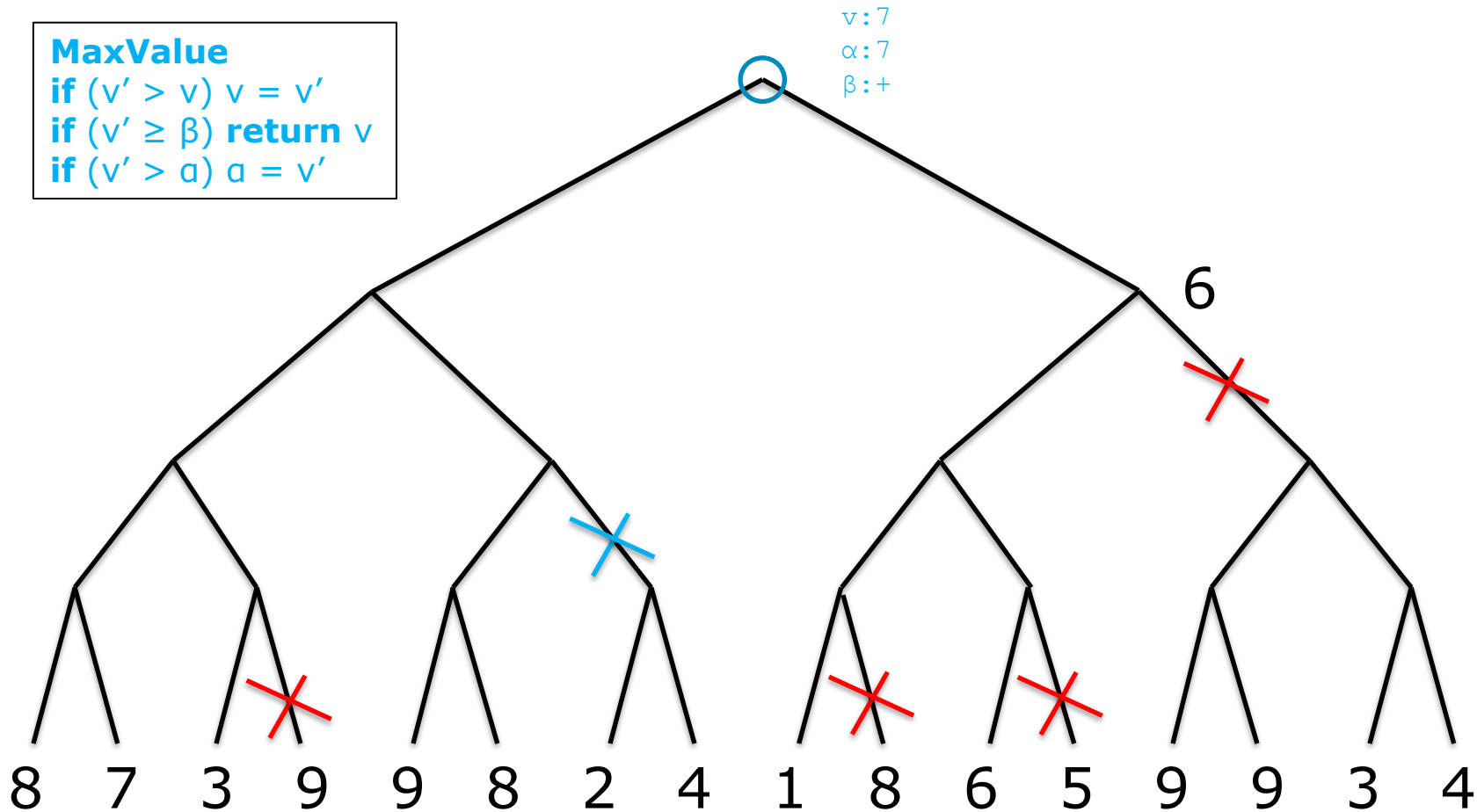
```
if ( $v' > v$ )  $v = v'$   
if ( $v' \geq \beta$ ) return  $v$   
if ( $v' > \alpha$ )  $\alpha = v'$ 
```

$v:7$
 $\alpha:7$
 $\beta:+$

Min

Max

Min

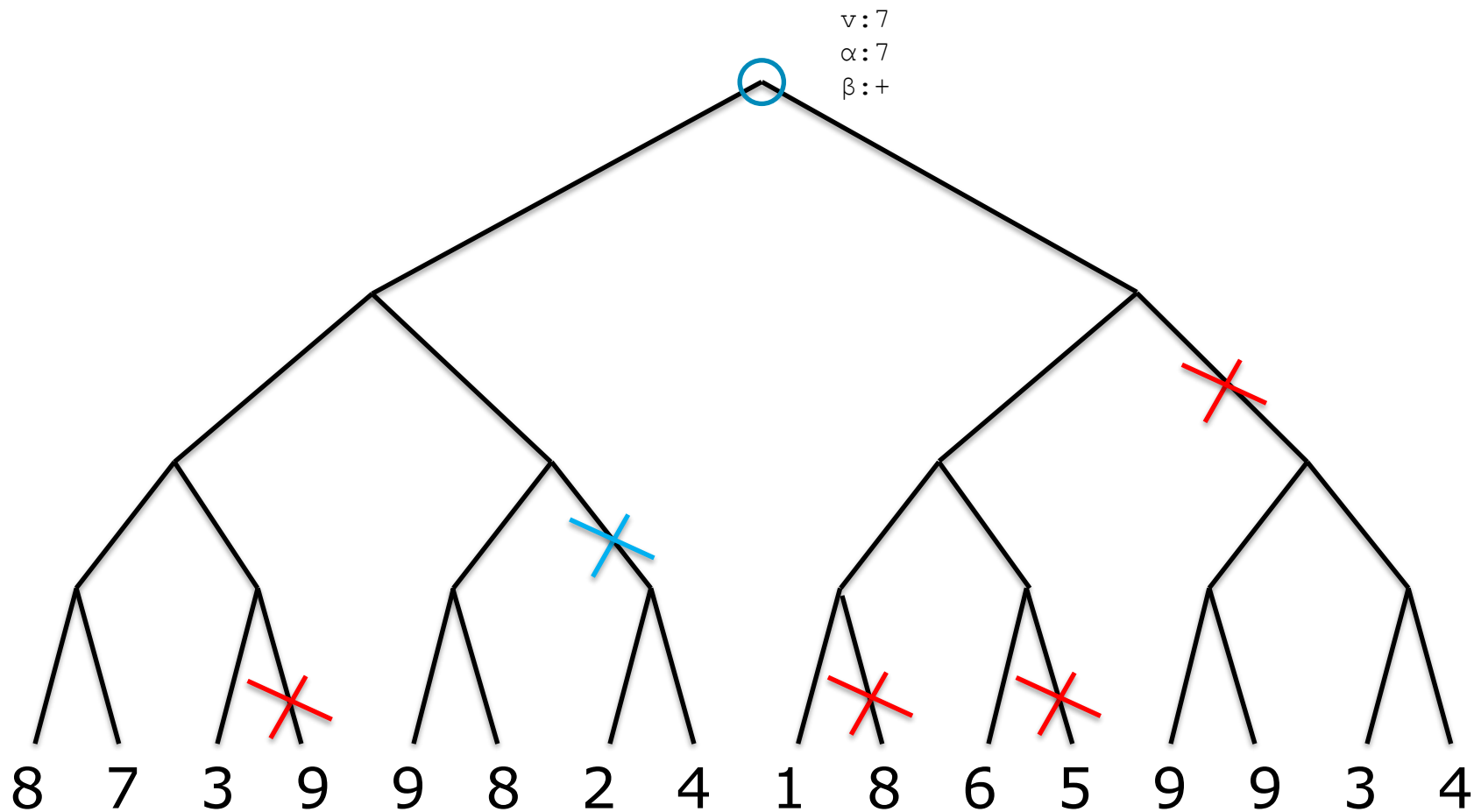


Max

Min

Max

Min



Max

Value of Root = 7



Min

Max

Min

