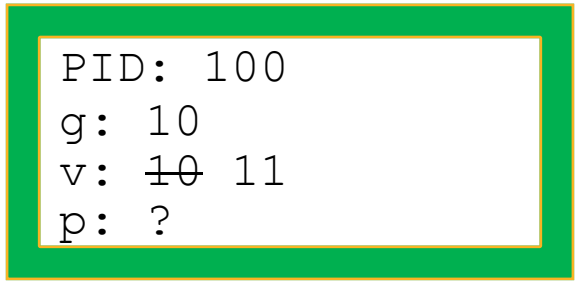
FORK – EXEMPEL

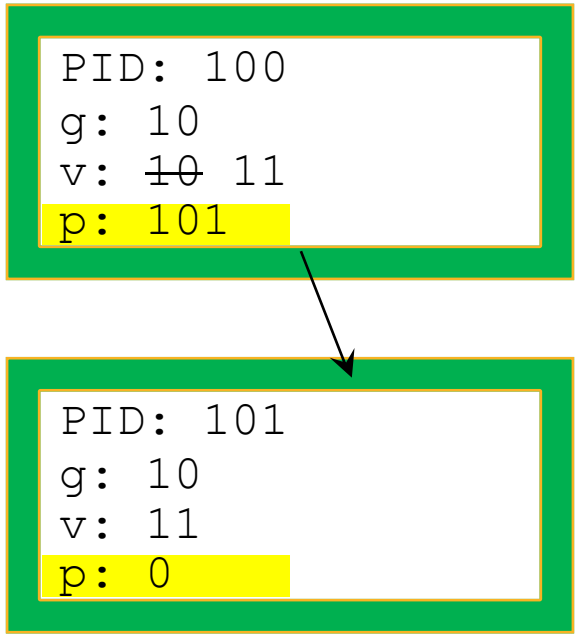
```
static int g = 10;
int main(void) {
  int v = 10;
  pid_t p;
  while (++v > 8)
    if ((p = fork()) < 0) {
        perror("fork error");
        return 1;
    } else if (p == 0) {
        v-=2;
        g++;
    } else {
        g--;
        v-=3;
    if (waitpid(p, NULL, 0) != p) {
        perror("waitpid error");
        return 1;
    }
  }
  printf("mypid = %d parentpid = %d p = %d v = %d g = %d\n",
         getpid(), getppid(), p, v, g);
  return 0;
}
```

```
PID: 100
g: 10
v: 10
p: ?
```

v++



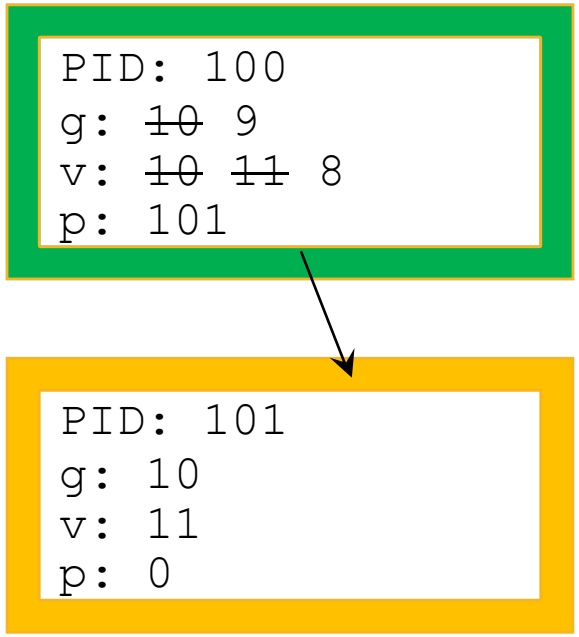
fork



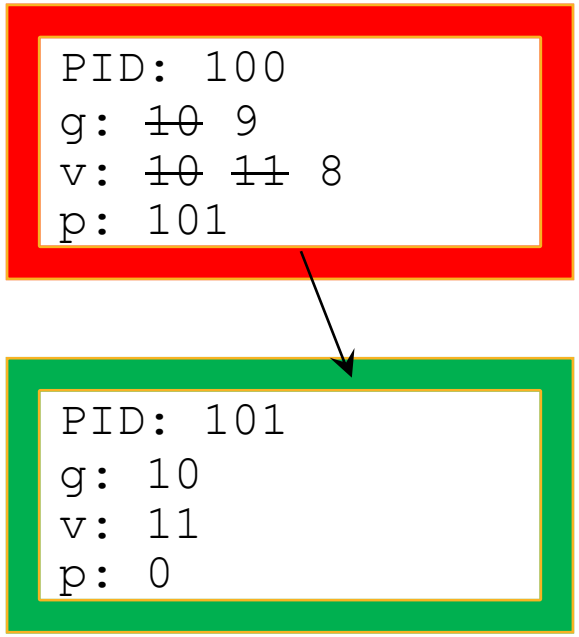

PID: 100
g: 10
v: 10 11
p: 101
PID: 101
g: 10
v: 11
p: 0

g--

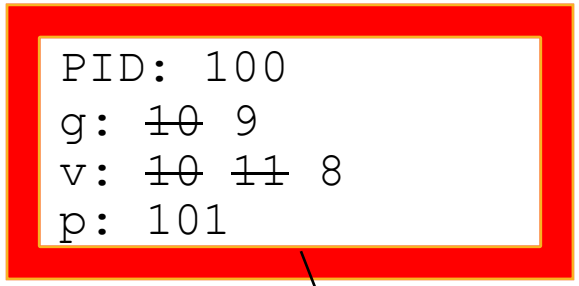
v-=3



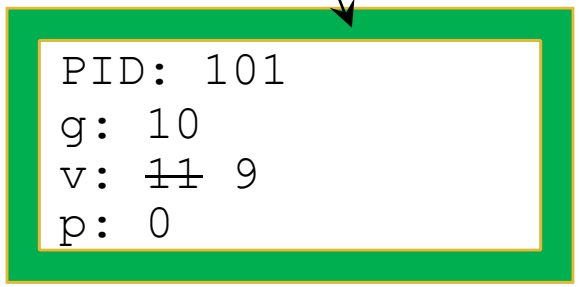
wait



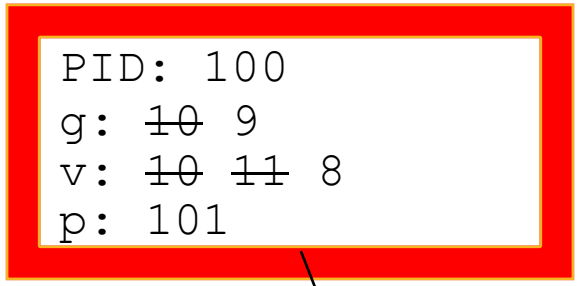
wait



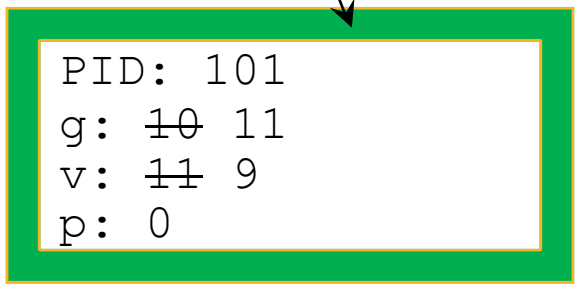
v-=2



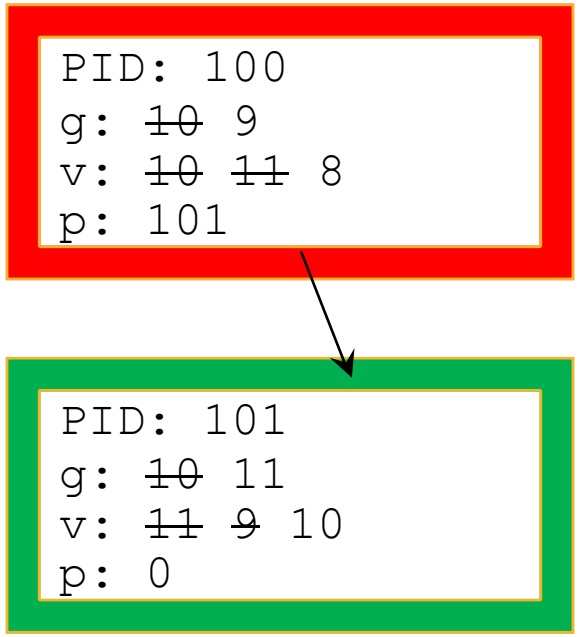
wait



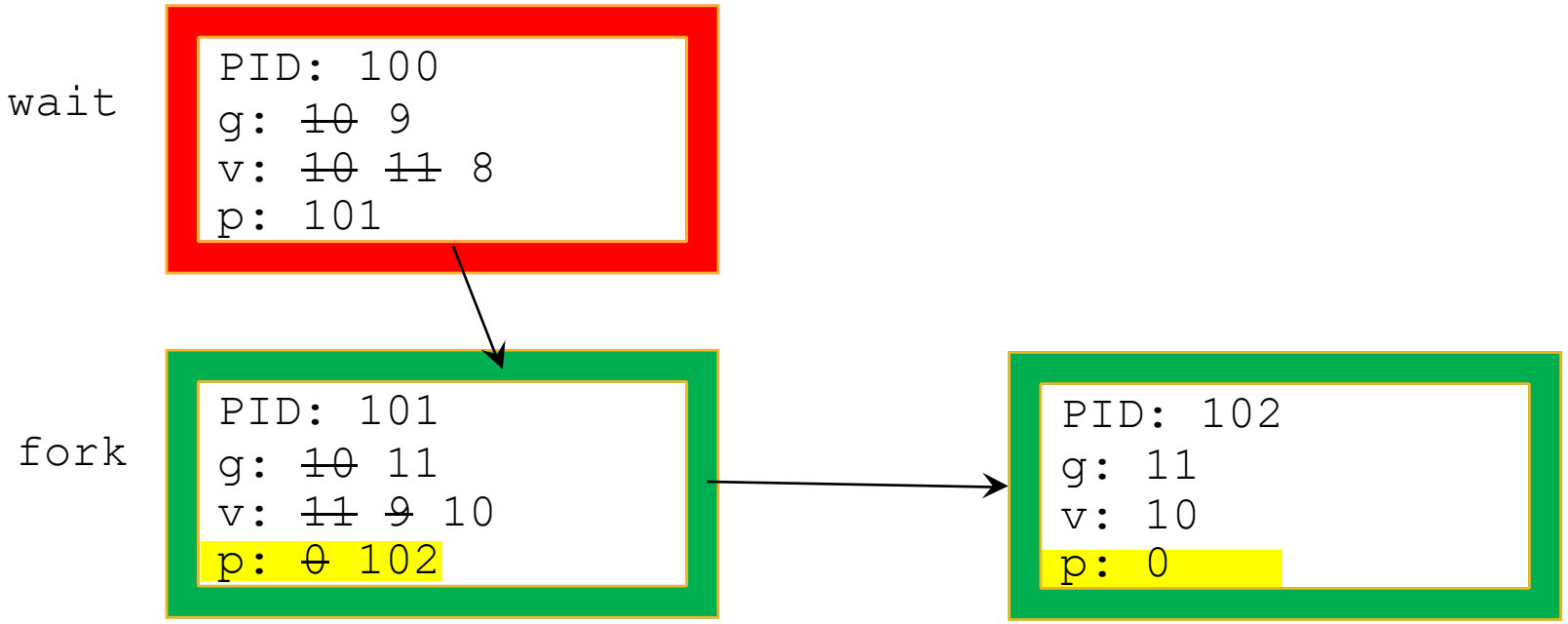
g++



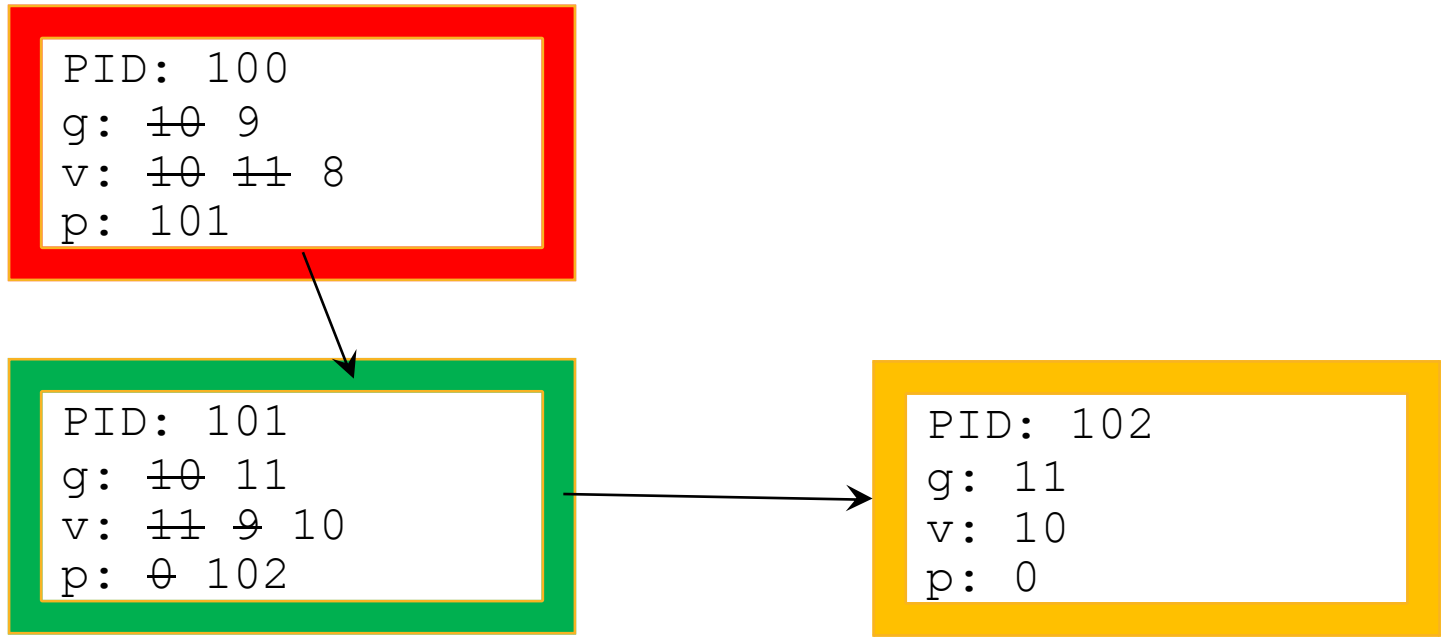
wait

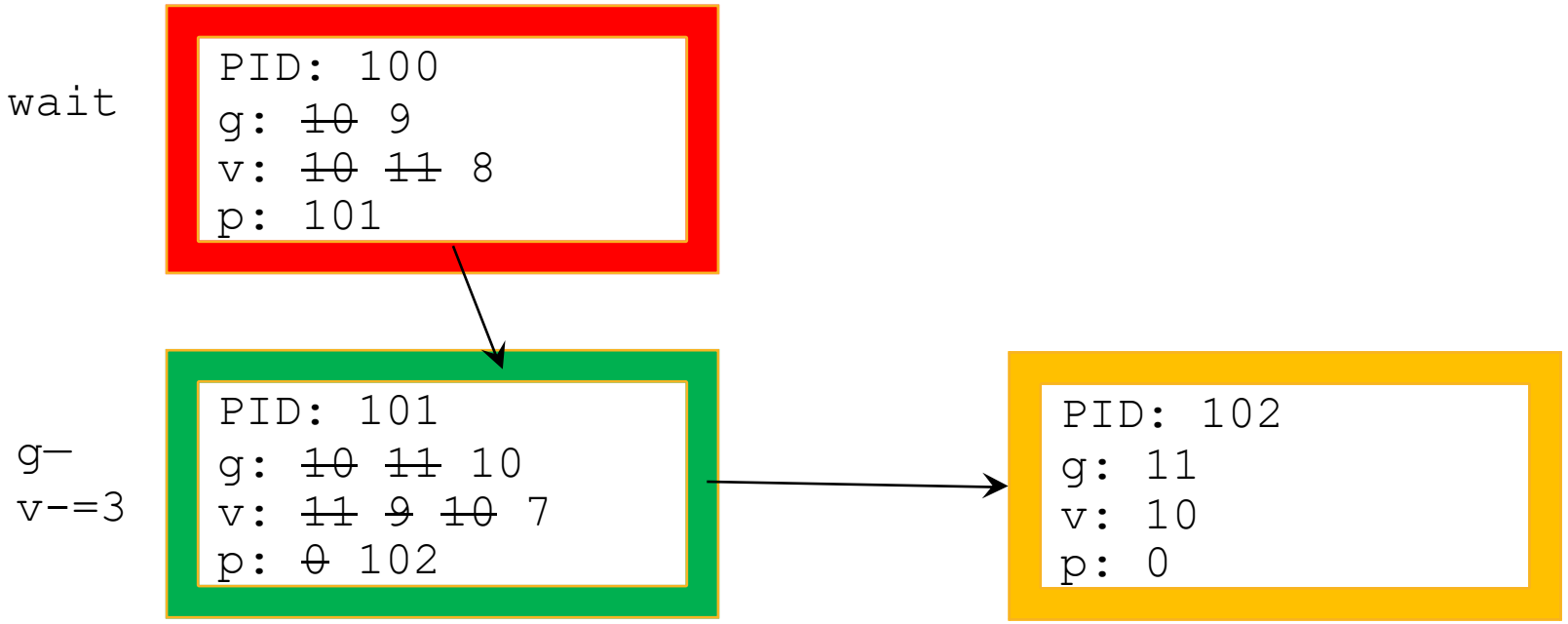


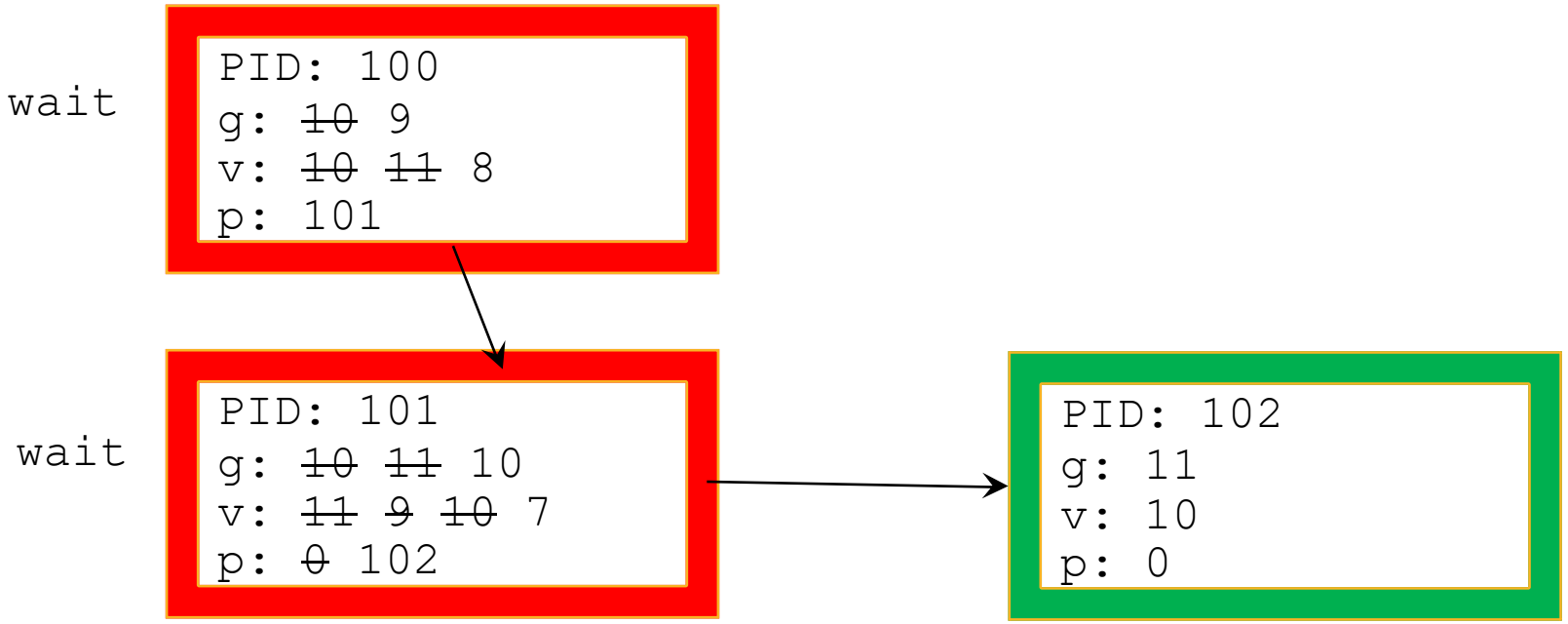
++v

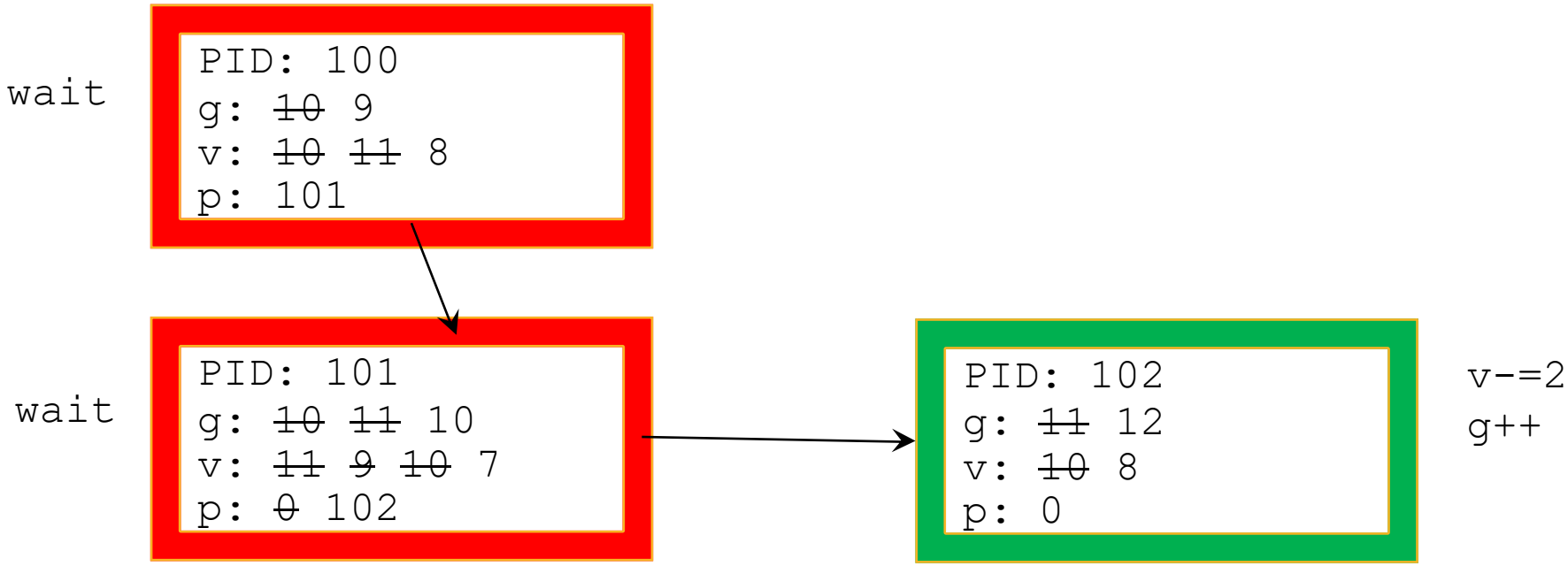

wait
PID: 100
g: 10 9
v: 10 11 8
p: 101
fork
PID: 101
g: 10 11
v: 11 9 10
p: 0 102
PID: 102
g: 11
v: 10
p: 0

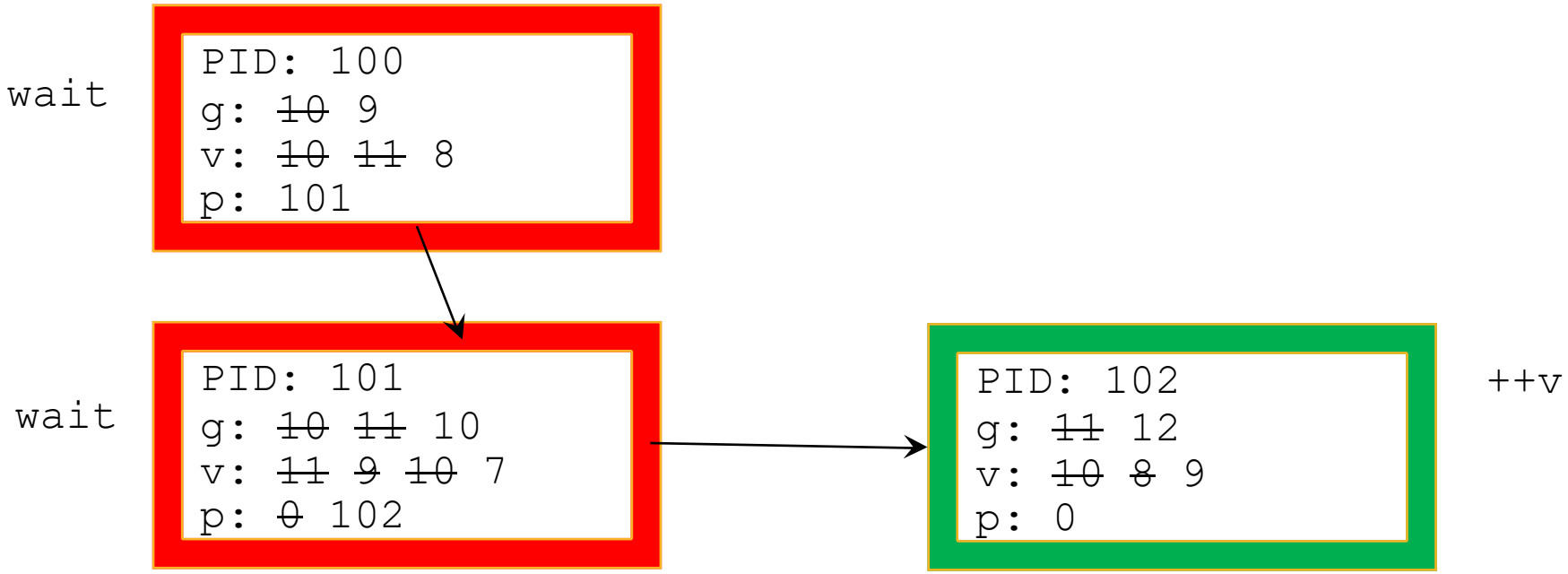
wait

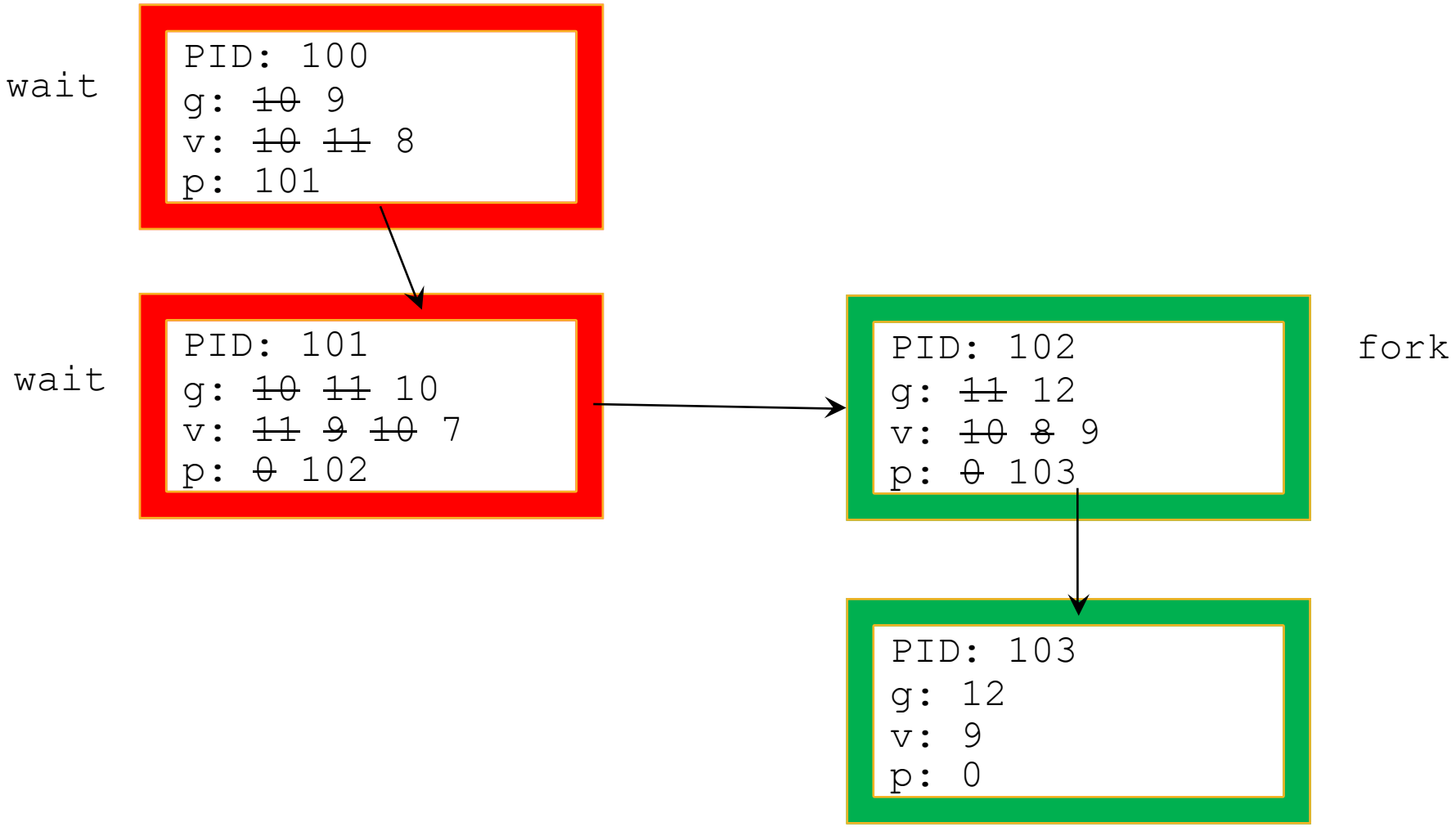

PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101
PID: 101
g: ~~10~~ 11
v: ~~11~~ ~~9~~ 10
p: ~~0~~ 102
PID: 102
g: 11
v: 10
p: 0

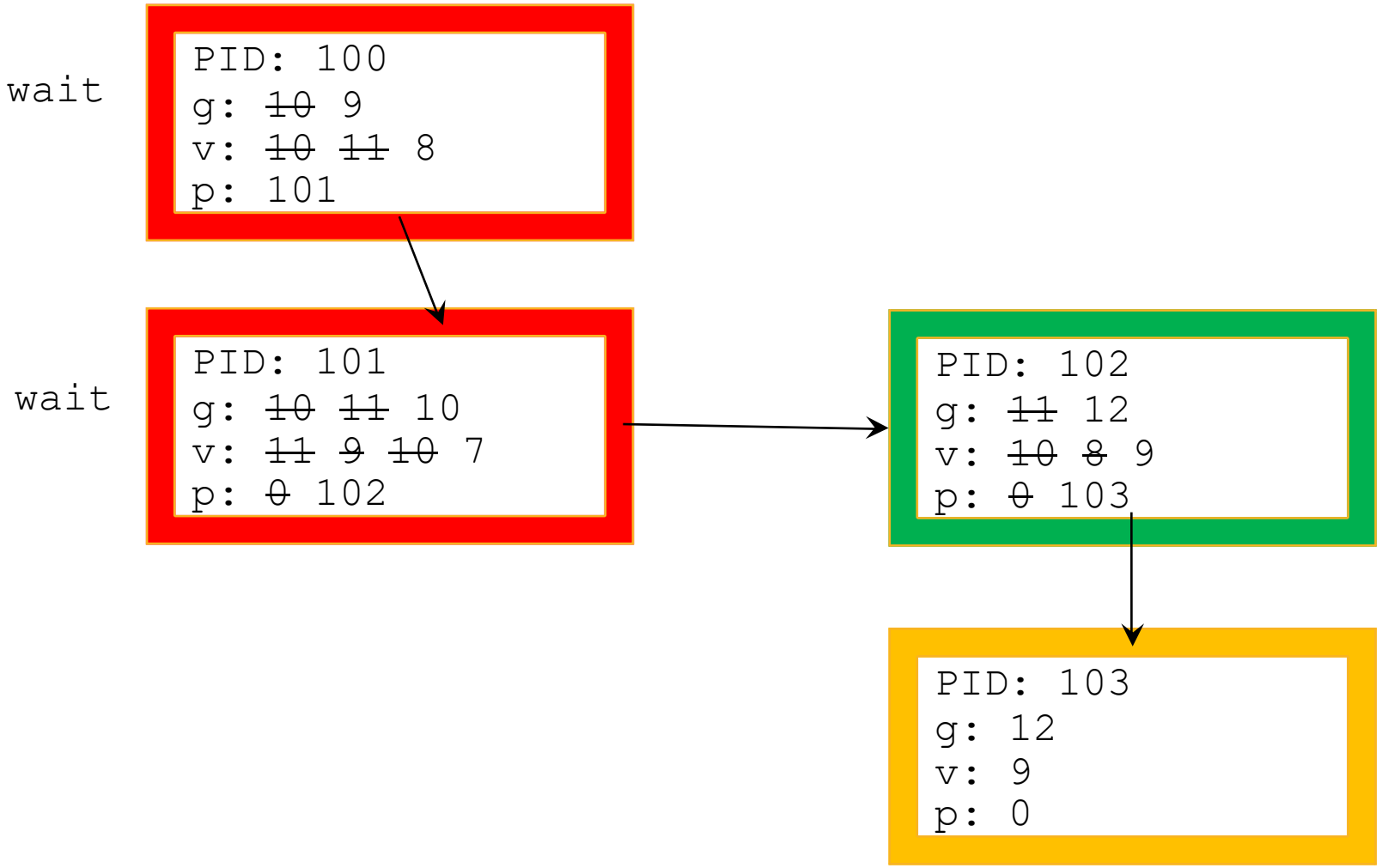

wait
PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101
g—
v-=3
PID: 101
g: ~~10~~ ~~11~~ 10
v: ~~11~~ ~~9~~ ~~10~~ 7
p: ~~0~~ 102
PID: 102
g: 11
v: 10
p: 0

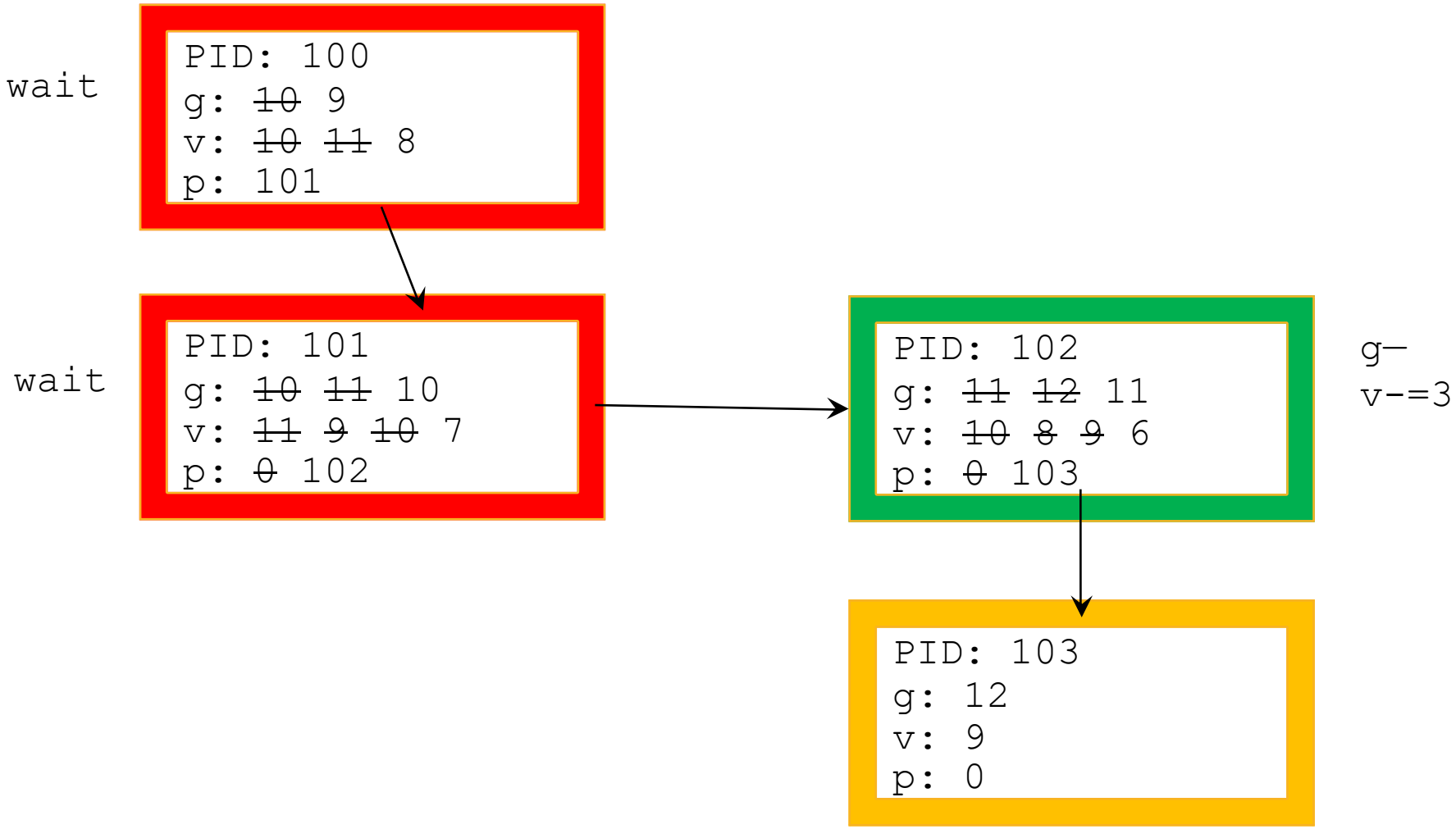

wait
PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101
wait
PID: 101
g: ~~10~~ ~~11~~ 10
v: ~~11~~ ~~9~~ ~~10~~ 7
p: ~~0~~ 102
PID: 102
g: 11
v: 10
p: 0

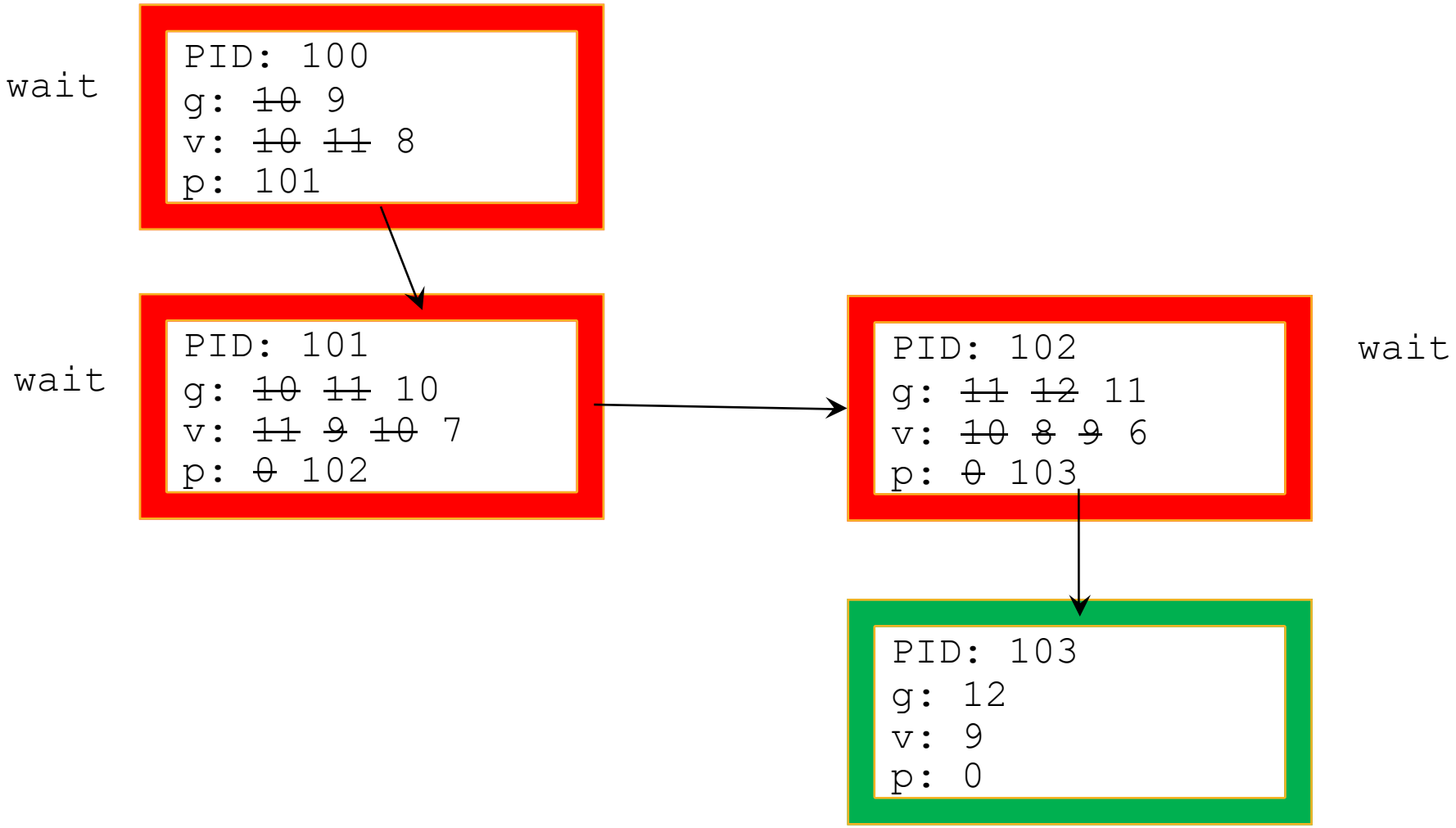

wait
PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101
wait
PID: 101
g: ~~10~~ ~~11~~ 10
v: ~~11~~ ~~9~~ ~~10~~ 7
p: ~~0~~ 102
PID: 102
g: ~~11~~ 12
v: ~~10~~ 8
p: 0
v-=2
g++

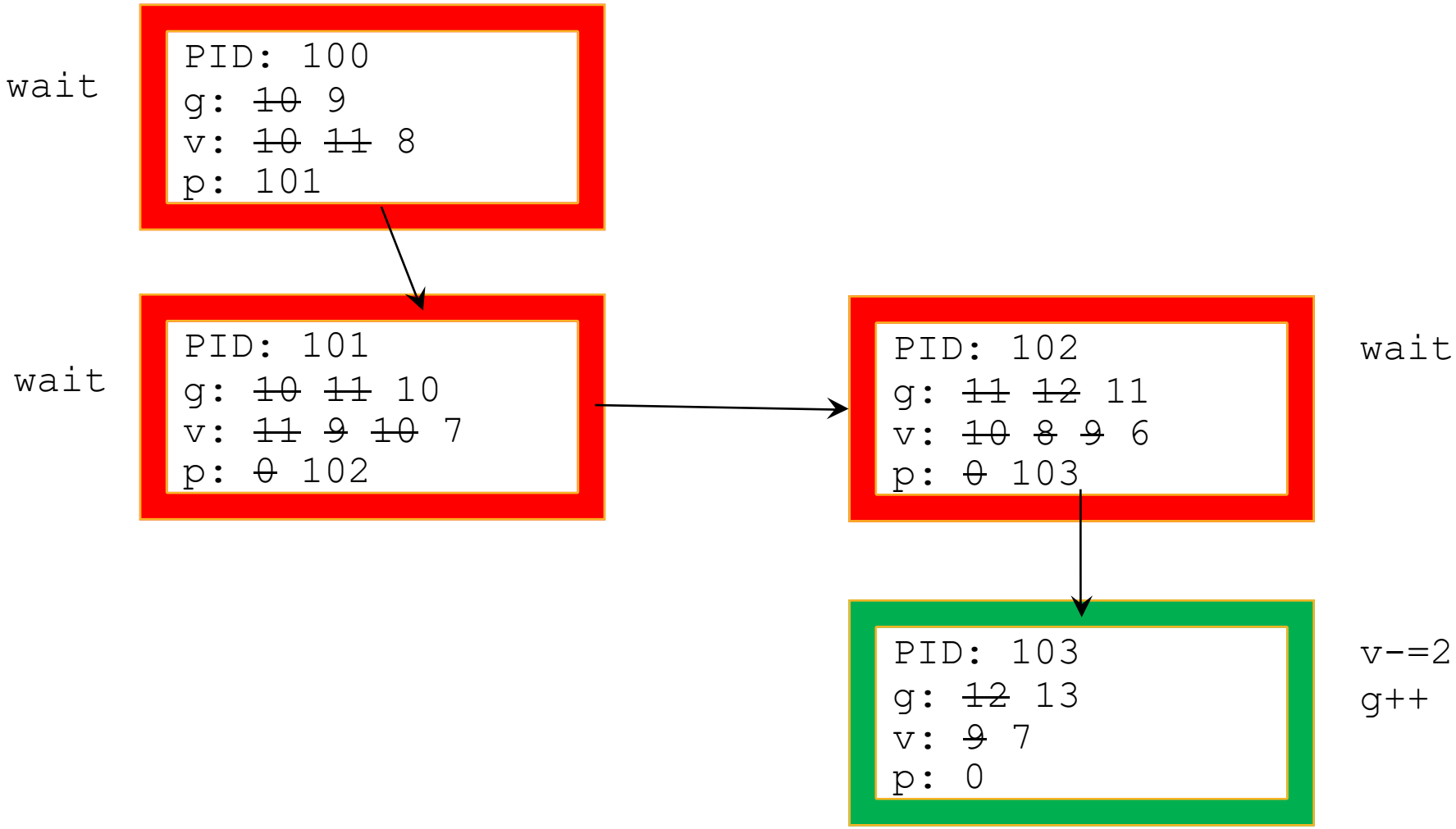

wait
PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101
wait
PID: 101
g: ~~10~~ ~~11~~ 10
v: ~~11~~ ~~9~~ ~~10~~ 7
p: ~~0~~ 102
PID: 102
g: ~~11~~ 12
v: ~~10~~ ~~8~~ 9
p: 0
++v

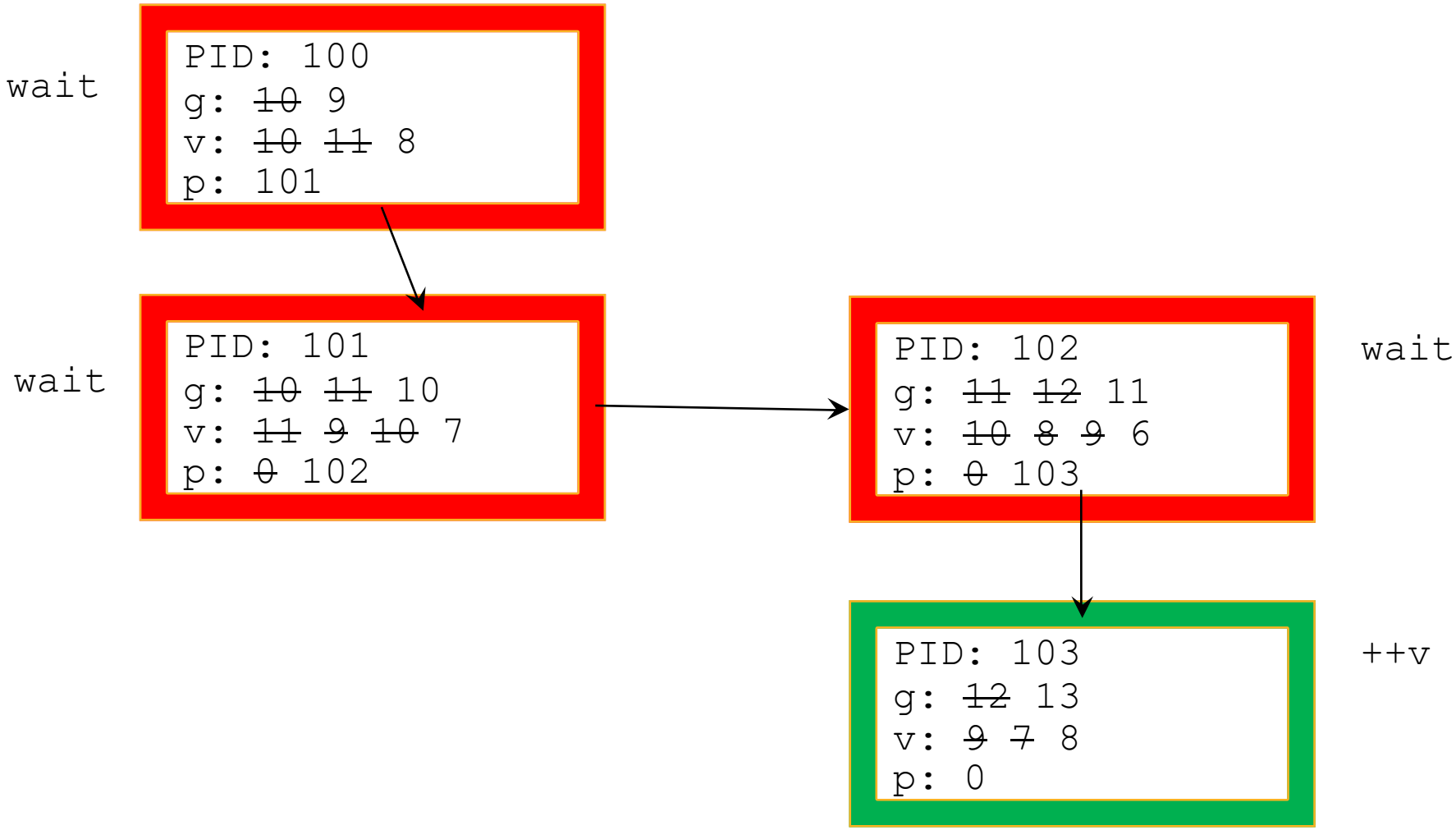

wait
PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101
wait
PID: 101
g: ~~10~~ ~~11~~ 10
v: ~~11~~ ~~9~~ ~~10~~ 7
p: ~~0~~ 102
PID: 102
g: ~~11~~ 12
v: ~~10~~ ~~8~~ 9
p: ~~0~~ 103
fork
PID: 103
g: 12
v: 9
p: 0

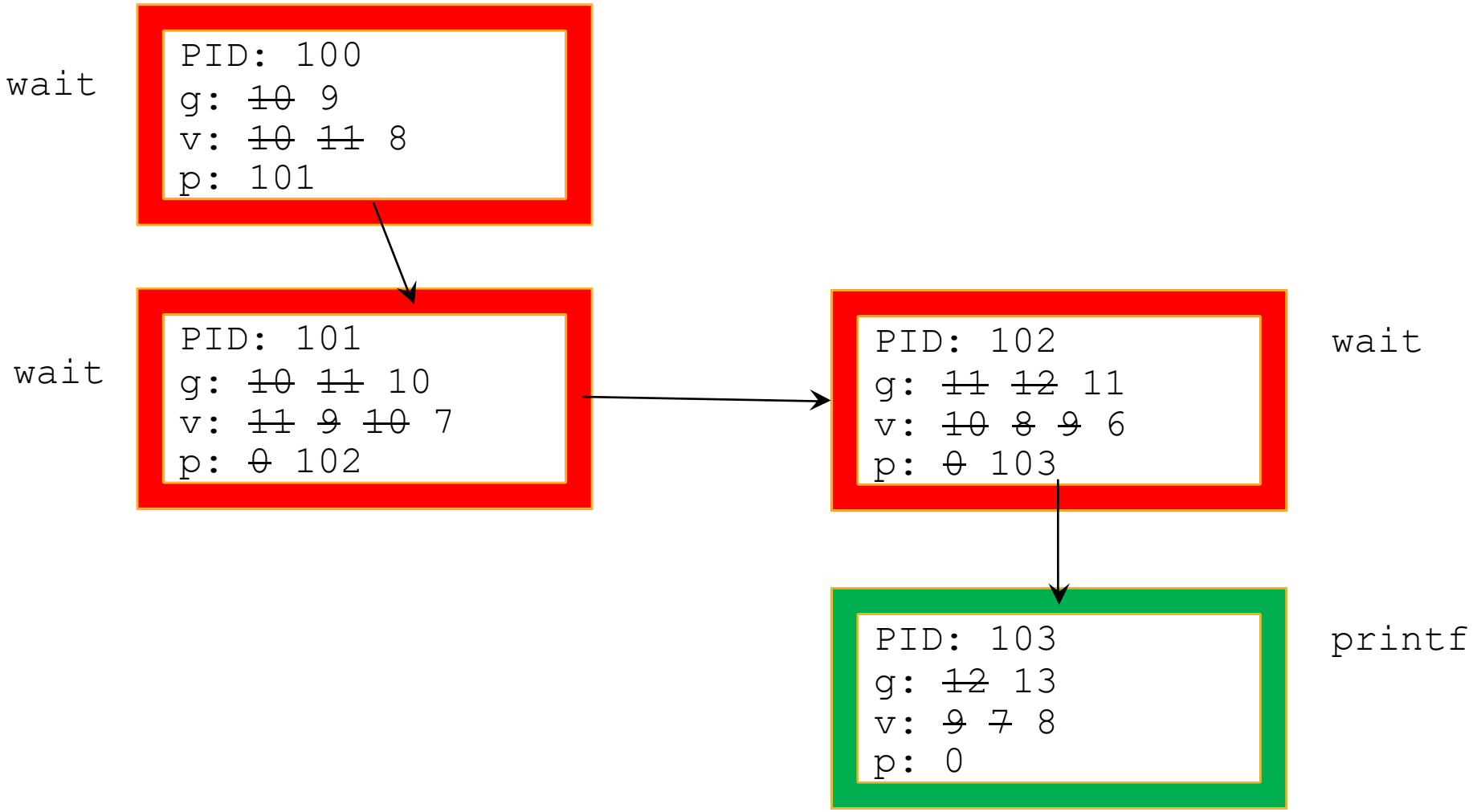

wait
PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101
wait
PID: 101
g: ~~10~~ ~~11~~ 10
v: ~~11~~ ~~9~~ ~~10~~ 7
p: ~~0~~ 102
PID: 102
g: ~~11~~ 12
v: ~~10~~ ~~8~~ 9
p: ~~0~~ 103
PID: 103
g: 12
v: 9
p: 0


wait
PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101
wait
PID: 101
g: ~~10~~ ~~11~~ 10
v: ~~11~~ ~~9~~ ~~10~~ 7
p: ~~0~~ 102
PID: 102
g: ~~11~~ ~~12~~ 11
v: ~~10~~ ~~8~~ ~~9~~ 6
p: ~~0~~ 103
g—
v-=3
PID: 103
g: 12
v: 9
p: 0

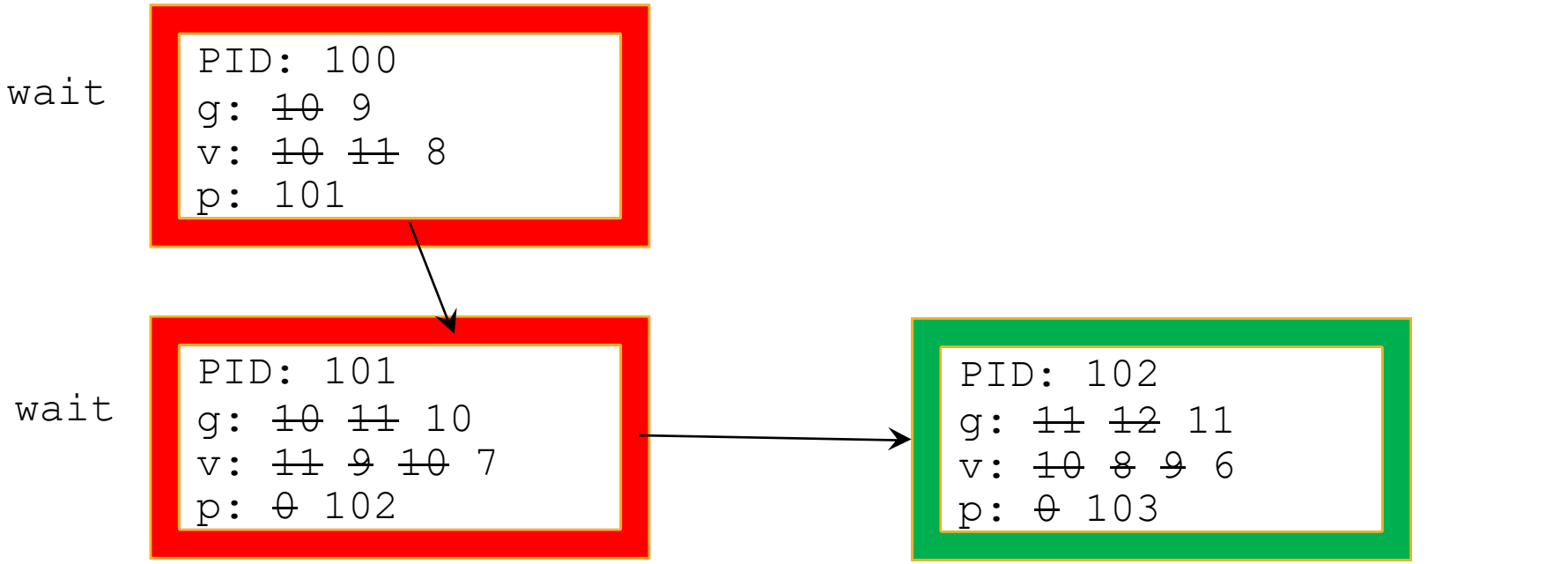

wait
PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101
wait
PID: 101
g: ~~10~~ ~~11~~ 10
v: ~~11~~ ~~9~~ ~~10~~ 7
p: ~~0~~ 102
PID: 102
g: ~~11~~ ~~12~~ 11
v: ~~10~~ ~~8~~ ~~9~~ 6
p: ~~0~~ 103
wait
PID: 103
g: 12
v: 9
p: 0


wait
PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101
wait
PID: 101
g: ~~10~~ ~~11~~ 10
v: ~~11~~ ~~9~~ ~~10~~ 7
p: ~~0~~ 102
PID: 102
g: ~~11~~ ~~12~~ 11
v: ~~10~~ ~~8~~ ~~9~~ 6
p: ~~0~~ 103
wait
PID: 103
g: ~~12~~ 13
v: ~~9~~ 7
p: 0
v-=2
g++

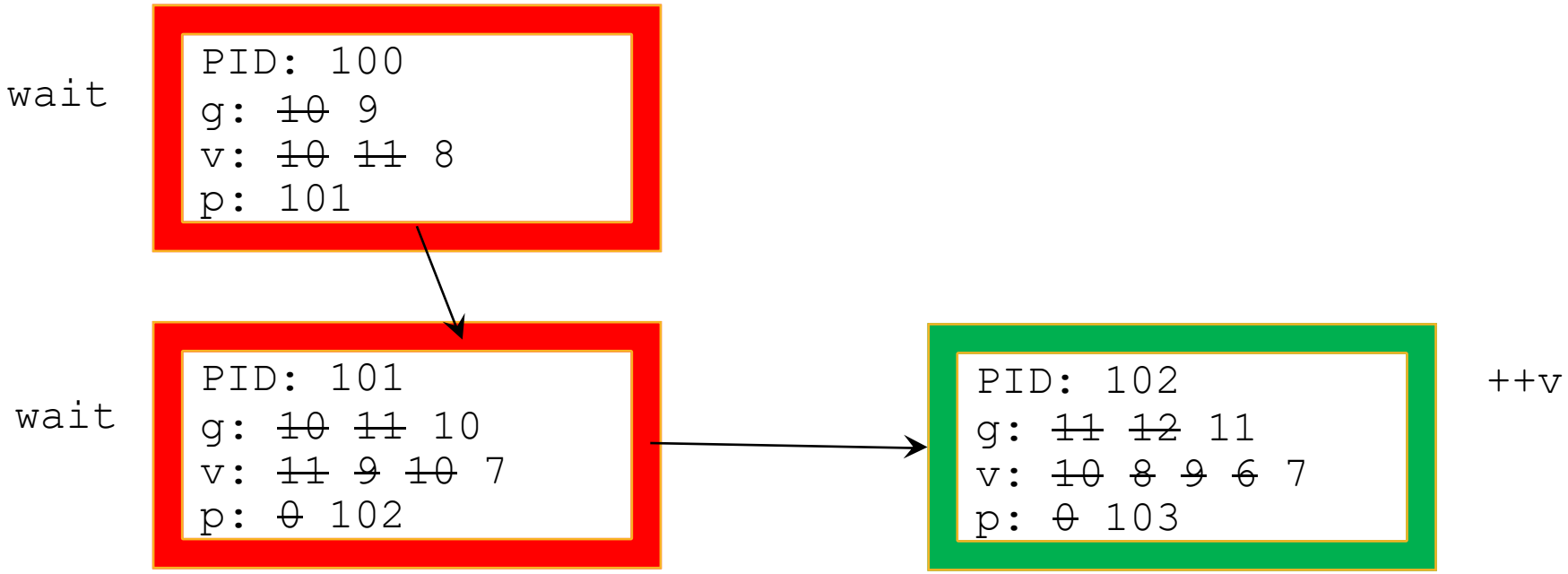

wait
PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101
wait
PID: 101
g: ~~10~~ ~~11~~ 10
v: ~~11~~ ~~9~~ ~~10~~ 7
p: ~~0~~ 102
PID: 102
g: ~~11~~ ~~12~~ 11
v: ~~10~~ ~~8~~ ~~9~~ 6
p: ~~0~~ 103
wait
PID: 103
g: ~~12~~ 13
v: ~~9~~ ~~7~~ 8
p: 0
++v



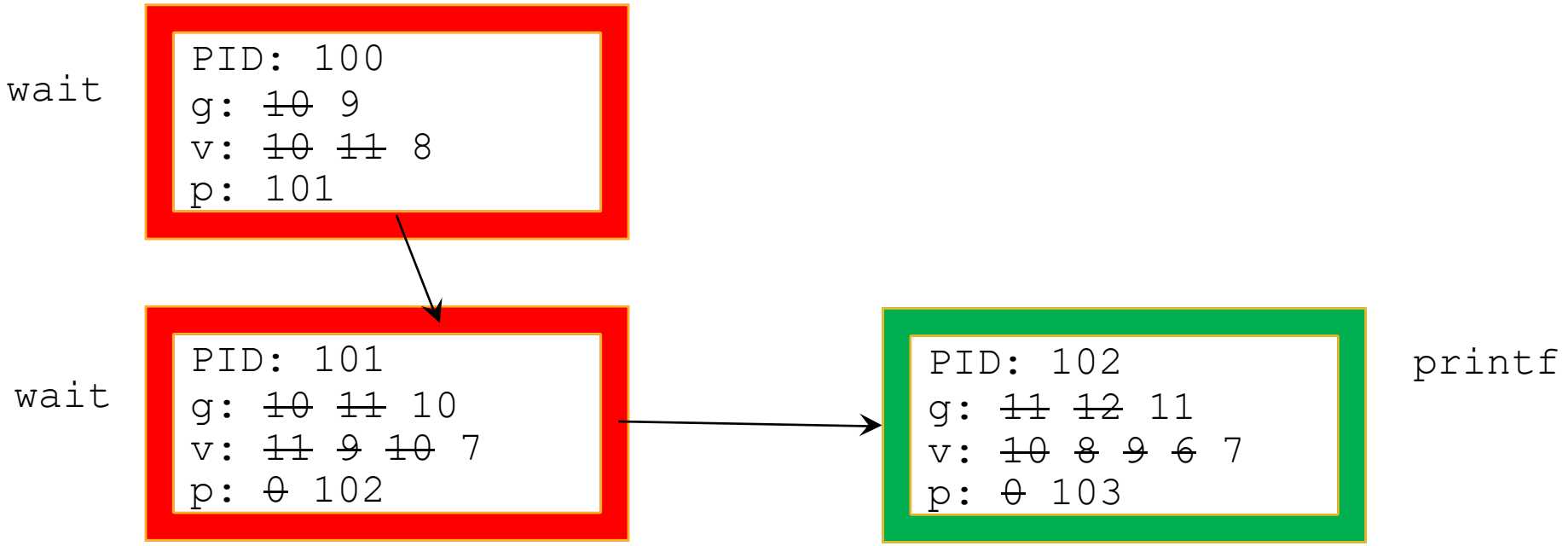
mypid = 103 parentpid = 102 p = 0 v = 8 g = 13



mypid = 103 parentpid = 102 p = 0 v = 8 g = 13

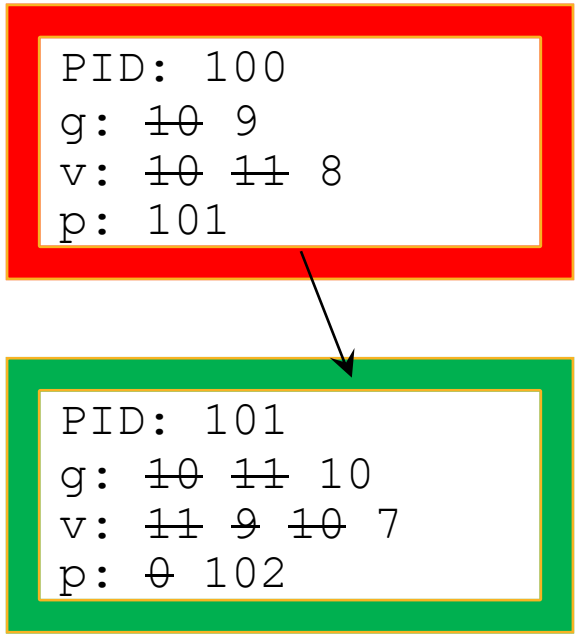


mypid = 103 parentpid = 102 p = 0 v = 8 g = 13




```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
```

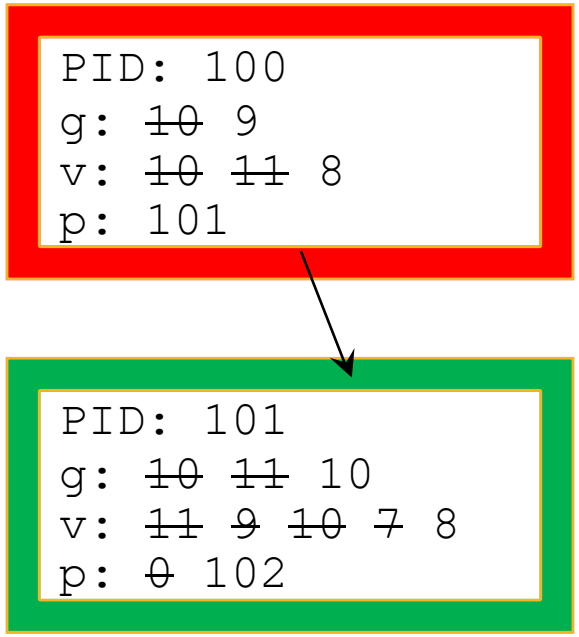
wait



exit

```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
```

wait



++v

```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
```

wait

PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101

printf

PID: 101
g: ~~10~~ ~~11~~ 10
v: ~~11~~ ~~9~~ ~~10~~ ~~7~~ 8
p: ~~0~~ 102

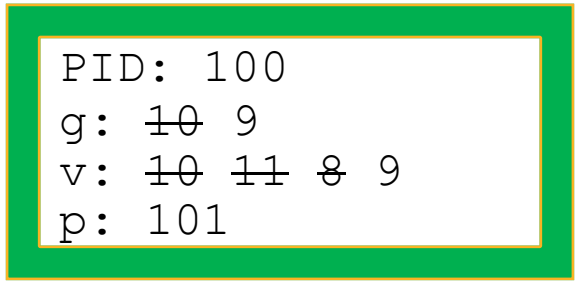
```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
```

PID: 100
g: ~~10~~ 9
v: ~~10~~ ~~11~~ 8
p: 101

exit

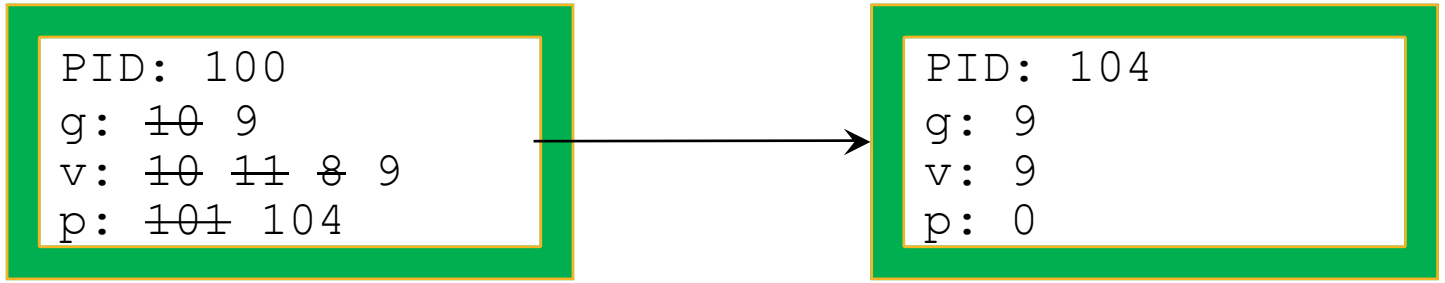
```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
```

++v

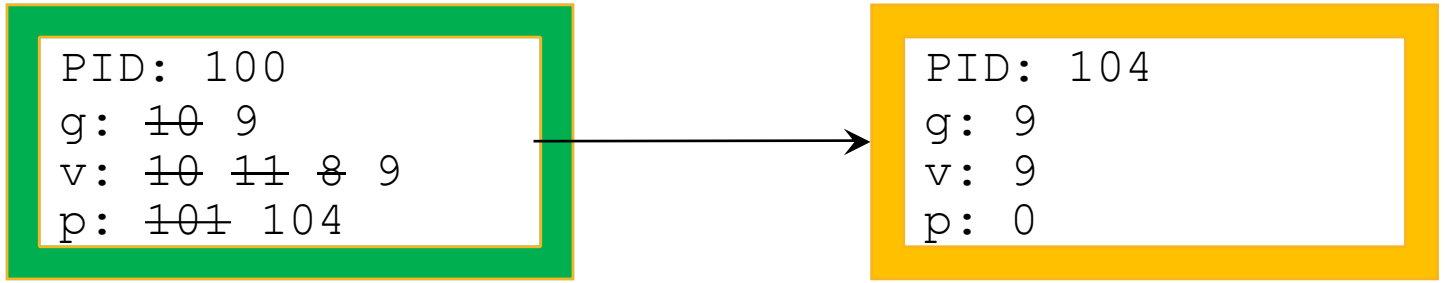



```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
```

fork

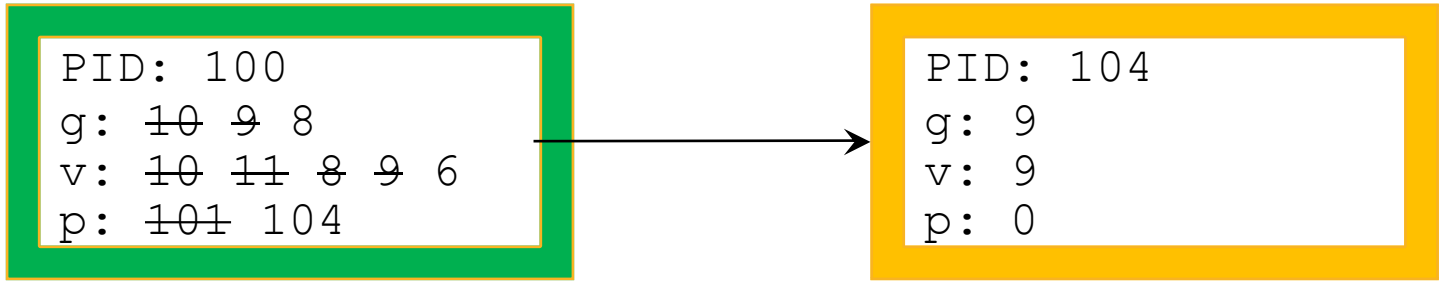



```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
```

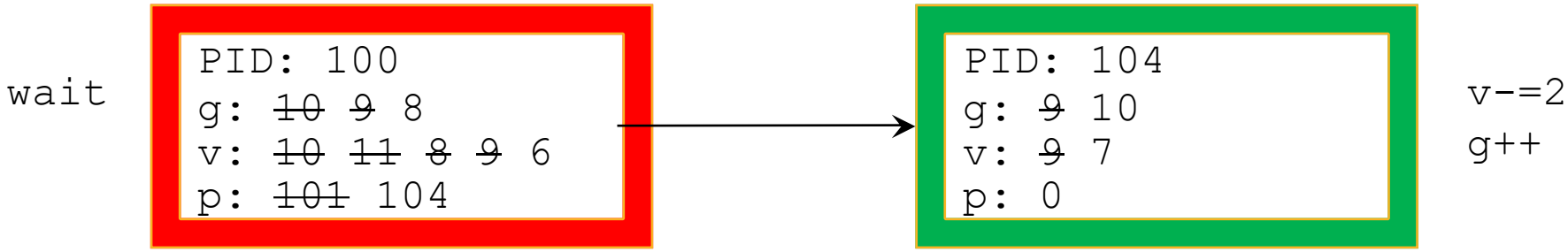



```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
```

g–
v-=3

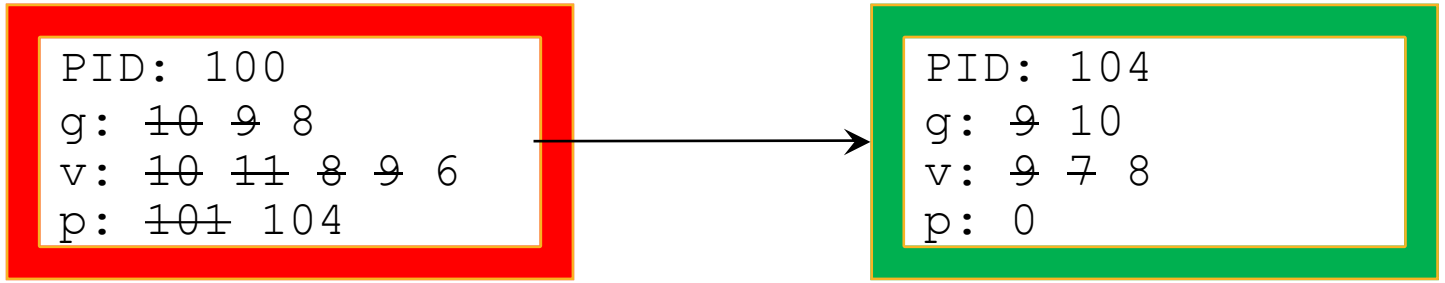



```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
```




```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
```

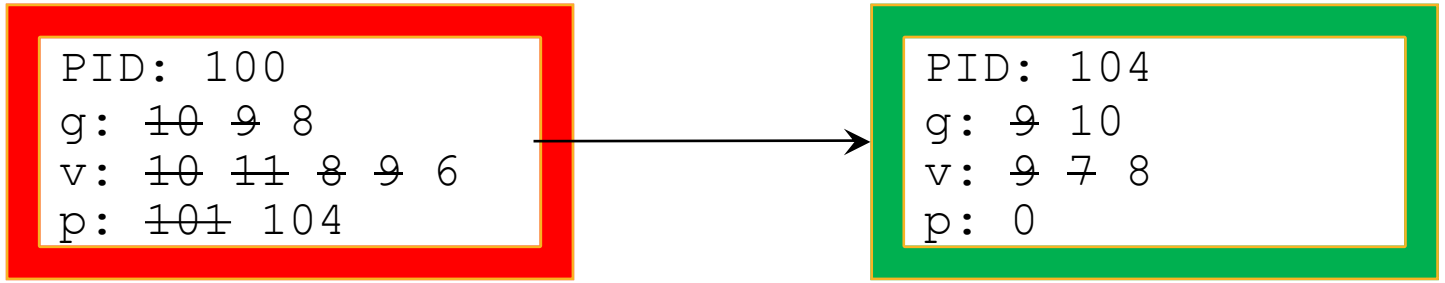
wait



++v

```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
```

wait



printf

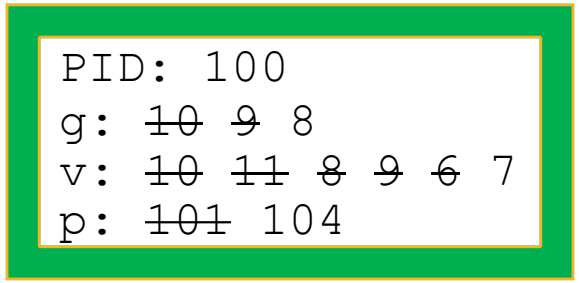
```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
mypid = 104  parentpid = 100  p =   0  v = 8  g = 10
```

PID: 100
g: ~~10~~ ~~9~~ 8
v: ~~10~~ ~~11~~ ~~8~~ ~~9~~ 6
p: ~~101~~ 104

exit

```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
mypid = 104  parentpid = 100  p =   0  v = 8  g = 10
```

++v




```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
mypid = 104  parentpid = 100  p =   0  v = 8  g = 10
```

printf

```
PID: 100
g: 10 9 8
v: 10 11 8 9 6 7
p: 101 104
```

```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
mypid = 104  parentpid = 100  p =   0  v = 8  g = 10
mypid = 100  parentpid =  59  p = 104  v = 7  g =  8
```

```
exit
```

```
mypid = 103  parentpid = 102  p =   0  v = 8  g = 13
mypid = 102  parentpid = 101  p = 103  v = 7  g = 11
mypid = 101  parentpid = 100  p = 102  v = 8  g = 10
mypid = 104  parentpid = 100  p =   0  v = 8  g = 10
mypid = 100  parentpid =  59  p = 104  v = 7  g =  8
```