

# Amortized Analysis

**Multipop**( $S, k$ )

```
1  while not STACK-EMPTY( $S$ ) and  $k \neq 0$ 
2      do POP( $S$ )
3       $k \leftarrow k - 1$ 
```

# Binary Counter

**Increment**( $A$ )

```
1   $i \leftarrow 0$ 
2  while  $i < \text{length}[A]$  and  $A[i] = 1$ 
3      do  $A[i] \leftarrow 0$ 
4           $i \leftarrow i + 1$ 
5  if  $i < \text{length}[A]$ 
6      then  $A[i] \leftarrow 1$ 
```

## Table Insert

**Table-Insert**( $T, x$ )

```
1  if  $size[T] = 0$ 
2      then allocate  $table[T]$  with 1 slot
3           $size[T] \leftarrow 1$ 
4  if  $num[T] = size[T]$ 
5      then allocate  $new-table$  with  $2 \cdot size[T]$  slots
6          insert all items in  $table[T]$  into  $new-table$ 
7          free  $table[T]$ 
8           $table[T] \leftarrow new-table$ 
9           $size[T] \leftarrow 2 \cdot size[T]$ 
10 insert  $x$  into  $table[T]$ 
11  $num[T] \leftarrow num[T] + 1$ 
```