

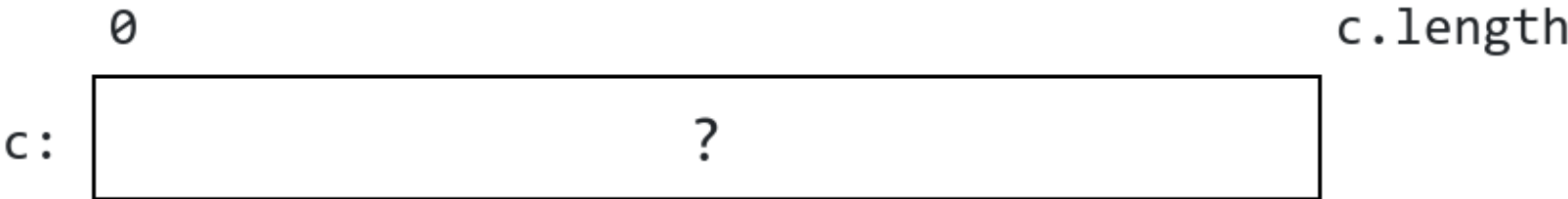


CS 2110, FA23

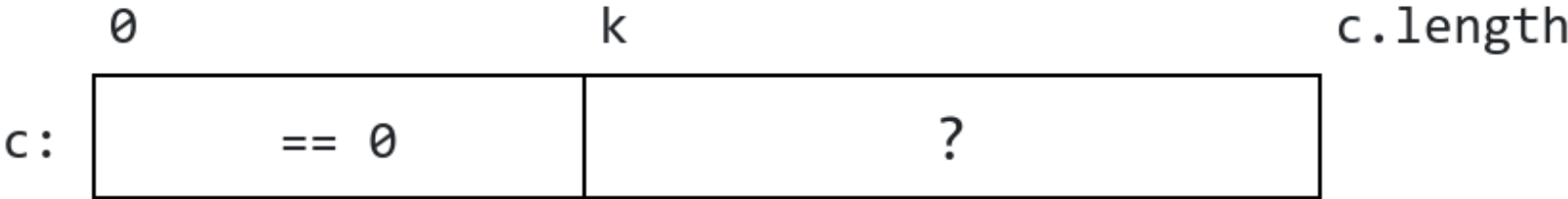
Discussion 8: Loop invariants

Task 1

Precondition:



Invariant:



Loop template

```
/* A: loop initialization */
```

```
// inv: loop invariant (e.g.  $c[0..k] == 0$ )
```

```
while ( /* B: loop guard */ ) {
```

```
    /* C: loop body */
```

```
}
```

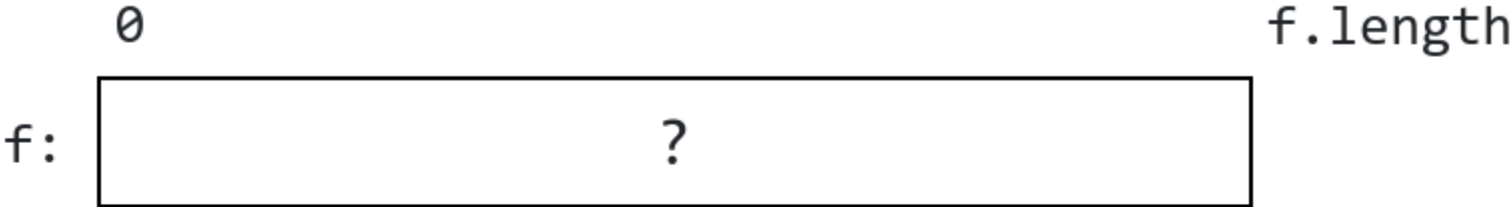
Dutch National Flag

- Problem proposed by **Edsger Dijkstra**, a foundational computer scientist
 - His "shortest path algorithm" will feature prominently later in the course



Task 2

Precondition:



Postcondition:



Loop template

```
/* A: loop initialization */
```

```
// inv: loop invariant
```

```
while ( /* B: loop guard */ ) {
```

```
    /* C: loop body */
```

```
}
```