# Before markemptylines:

#### Current status:

```
All:
```

```
[1-1] —> 1-John, [1-2] —> Smith, [1-3] —> 10/03/02, [2-1] —> 2-John, [2-2] —> Smith, [2-3] —> 10/03/02, [3-1] —> EMPTY, [3-2] —> EMPTY, [3-3] —> EMPTY, [4-1] —> EMPTY, [4-2] —> EMPTY, [4-3] —> EMPTY, [5-1] —> 3-John, [5-2] —> Smith, [5-3] —> 10/03/02, [6-1] —> 4-John, [6-2] —> Smith, [6-3] —> 10/03/02, [7-1] —> EMPTY, [7-2] —> EMPTY, [7-3] —> EMPTY, [8-1] —> 5-John, [8-2] —> Smith, [8-3] —> 10/03/02, [9-1] —> 6-John, [9-2] —> Smith, [9-3] —> 10/03/02, [10-1] —> EMPTY, [10-2] —> EMPTY, [10-3] —> EMPTY, [11-1] —> EMPTY, [11-2] —> EMPTY, [11-3] —> EMPTY, [11-1] —> EMPTY, [11-2] —> EMPTY, [11-3] —> EMPTY, [12-1] —> EMPTY, [12-2] —> EMPTY, [12-3] —> EMPTY,
```

```
\begin{array}{l} [13\text{-}1] \longrightarrow \text{7-Jane, } [13\text{-}2] \longrightarrow \text{Amr, } [13\text{-}3] \longrightarrow \text{03/03/92,} \\ [14\text{-}1] \longrightarrow \text{8-Jane, } [14\text{-}2] \longrightarrow \text{Amr, } [14\text{-}3] \longrightarrow \text{03/03/92,} \\ [15\text{-}1] \longrightarrow \text{EMPTY, } [15\text{-}2] \longrightarrow \text{EMPTY, } [15\text{-}3] \longrightarrow \text{EMPTY,} \\ [16\text{-}1] \longrightarrow \text{EMPTY, } [16\text{-}2] \longrightarrow \text{EMPTY, } [16\text{-}3] \longrightarrow \text{EMPTY,} \\ [16\text{-}3] [16\text{-
```

## After markemptylines:

```
Current status:
```

```
All:
```

```
[1-1] \longrightarrow 1-John, [1-2] \longrightarrow Smith, [1-3] \longrightarrow 10/03/02,
[2-1] \longrightarrow 2-John, [2-2] \longrightarrow Smith, [2-3] \longrightarrow 10/03/02,
[3-1] -> EMPTY, [3-2] -> EMPTY, [3-3] -> EMPTY,
[4-1] —> EMPTY, [4-2] —> EMPTY, [4-3] —> EMPTY,
[5-1] \longrightarrow 3-John, [5-2] \longrightarrow Smith, [5-3] \longrightarrow 10/03/02,
[6-1] \longrightarrow 4-John, [6-2] \longrightarrow Smith, [6-3] \longrightarrow 10/03/02,
[7-1] —> EMPTY, [7-2] —> EMPTY, [7-3] —> EMPTY,
[8-1] \longrightarrow 5-John, [8-2] \longrightarrow Smith, [8-3] \longrightarrow 10/03/02,
[9-1] \longrightarrow 6-John, [9-2] \longrightarrow Smith, [9-3] \longrightarrow 10/03/02,
[10-1] —> EMPTY, [10-2] —> EMPTY, [10-3] —> EMPTY,
[11-1] —> EMPTY, [11-2] —> EMPTY, [11-3] —> EMPTY,
[12-1] —> EMPTY, [12-2] —> EMPTY, [12-3] —> EMPTY,
[13-1] \longrightarrow 7-Jane, [13-2] \longrightarrow Amr, [13-3] \longrightarrow 03/03/92,
[14-1] \longrightarrow 8-Jane, [14-2] \longrightarrow Amr, [14-3] \longrightarrow 03/03/92,
[15-1] —> EMPTY, [15-2] —> EMPTY, [15-3] —> EMPTY,
[16-1] —> EMPTY, [16-2] —> EMPTY, [16-3] —> EMPTY,
EmptyRows: 8 (3, 4, 7, 10, 11, 12, 15, 16, )
NotEmptyRows: 8 (1, 2, 5, 6, 8, 9, 13, 14, )
non-empty: 8
empty: 8
total: 16
```

## After notmarkemptylines:

### Current status:

All:

$$[1-1] \longrightarrow 1-John, [1-2] \longrightarrow Smith, [1-3] \longrightarrow 10/03/02,$$

```
[2-1] \longrightarrow 2-John, [2-2] \longrightarrow Smith, [2-3] \longrightarrow 10/03/02,
[3-1] —> EMPTY, [3-2] —> EMPTY, [3-3] —> EMPTY,
[4-1] —> EMPTY, [4-2] —> EMPTY, [4-3] —> EMPTY,
[5-1] \longrightarrow 3-John, [5-2] \longrightarrow Smith, [5-3] \longrightarrow 10/03/02,
[6-1] \longrightarrow 4-John, [6-2] \longrightarrow Smith, [6-3] \longrightarrow 10/03/02,
[7-1] —> EMPTY, [7-2] —> EMPTY, [7-3] —> EMPTY,
[8-1] \longrightarrow 5-John, [8-2] \longrightarrow Smith, [8-3] \longrightarrow 10/03/02,
[9-1] \longrightarrow 6-John, [9-2] \longrightarrow Smith, [9-3] \longrightarrow 10/03/02,
[10-1] —> EMPTY, [10-2] —> EMPTY, [10-3] —> EMPTY,
[11-1] -> EMPTY, [11-2] -> EMPTY, [11-3] -> EMPTY,
[12-1] —> EMPTY, [12-2] —> EMPTY, [12-3] —> EMPTY,
[13-1] \longrightarrow 7-Jane, [13-2] \longrightarrow Amr, [13-3] \longrightarrow 03/03/92,
[14-1] \longrightarrow 8-Jane, [14-2] \longrightarrow Amr, [14-3] \longrightarrow 03/03/92,
[15-1] —> EMPTY, [15-2] —> EMPTY, [15-3] —> EMPTY,
[16-1] —> EMPTY, [16-2] —> EMPTY, [16-3] —> EMPTY,
EmptyRows: 0 ()
NotEmptyRows: 16 (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, )
non-empty: 16
empty: 0
total: 16
```

### AND NOW WE REMOVE EMPTY LINES:

### BEFORE REMOWING:

```
Current status:
```

```
All:
```

```
 \begin{array}{l} [1\text{-}1] \longrightarrow 1\text{-}\mathrm{John}, \ [1\text{-}2] \longrightarrow \mathrm{Smith}, \ [1\text{-}3] \longrightarrow 10/03/02, \\ [2\text{-}1] \longrightarrow 2\text{-}\mathrm{John}, \ [2\text{-}2] \longrightarrow \mathrm{Smith}, \ [2\text{-}3] \longrightarrow 10/03/02, \\ [3\text{-}1] \longrightarrow \mathrm{EMPTY}, \ [3\text{-}2] \longrightarrow \mathrm{EMPTY}, \ [3\text{-}3] \longrightarrow \mathrm{EMPTY}, \\ [4\text{-}1] \longrightarrow \mathrm{EMPTY}, \ [4\text{-}2] \longrightarrow \mathrm{EMPTY}, \ [4\text{-}3] \longrightarrow \mathrm{EMPTY}, \\ [5\text{-}1] \longrightarrow 3\text{-}\mathrm{John}, \ [5\text{-}2] \longrightarrow \mathrm{Smith}, \ [5\text{-}3] \longrightarrow 10/03/02, \\ [6\text{-}1] \longrightarrow 4\text{-}\mathrm{John}, \ [6\text{-}2] \longrightarrow \mathrm{Smith}, \ [6\text{-}3] \longrightarrow 10/03/02, \\ [7\text{-}1] \longrightarrow \mathrm{EMPTY}, \ [7\text{-}2] \longrightarrow \mathrm{EMPTY}, \ [7\text{-}3] \longrightarrow \mathrm{EMPTY}, \\ [8\text{-}1] \longrightarrow 5\text{-}\mathrm{John}, \ [8\text{-}2] \longrightarrow \mathrm{Smith}, \ [8\text{-}3] \longrightarrow 10/03/02, \\ [9\text{-}1] \longrightarrow 6\text{-}\mathrm{John}, \ [9\text{-}2] \longrightarrow \mathrm{Smith}, \ [9\text{-}3] \longrightarrow 10/03/02, \\ [10\text{-}1] \longrightarrow \mathrm{EMPTY}, \ [10\text{-}2] \longrightarrow \mathrm{EMPTY}, \ [10\text{-}3] \longrightarrow \mathrm{EMPTY}, \\ [11\text{-}1] \longrightarrow \mathrm{EMPTY}, \ [11\text{-}2] \longrightarrow \mathrm{EMPTY}, \ [11\text{-}3] \longrightarrow \mathrm{EMPTY}, \\ [12\text{-}1] \longrightarrow \mathrm{EMPTY}, \ [12\text{-}2] \longrightarrow \mathrm{EMPTY}, \ [12\text{-}3] \longrightarrow \mathrm{EMPTY}, \\ [13\text{-}1] \longrightarrow 7\text{-}\mathrm{Jane}, \ [13\text{-}2] \longrightarrow \mathrm{Amr}, \ [13\text{-}3] \longrightarrow 03/03/92, \\ \end{array}
```

```
[14-1] \longrightarrow 8-Jane, [14-2] \longrightarrow Amr, [14-3] \longrightarrow 03/03/92,
[15-1] —> EMPTY, [15-2] —> EMPTY, [15-3] —> EMPTY,
[16-1] —> EMPTY, [16-2] —> EMPTY, [16-3] —> EMPTY,
EmptyRows: 0 ()
NotEmptyRows: 16 (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, )
non-empty: 16
empty: 0
total: 16
```

### AFTER REMOWING:

#### Current status:

All:

```
[1-1] \longrightarrow 1-John, [1-2] \longrightarrow Smith, [1-3] \longrightarrow 10/03/02,
[2-1] \longrightarrow 2-John, [2-2] \longrightarrow Smith, [2-3] \longrightarrow 10/03/02,
[3-1] \longrightarrow 3-John, [3-2] \longrightarrow Smith, [3-3] \longrightarrow 10/03/02,
[4-1] \longrightarrow 4-John, [4-2] \longrightarrow Smith, [4-3] \longrightarrow 10/03/02,
[5-1] \longrightarrow 5-John, [5-2] \longrightarrow Smith, [5-3] \longrightarrow 10/03/02,
[6-1] \longrightarrow 6-John, [6-2] \longrightarrow Smith, [6-3] \longrightarrow 10/03/02,
[7-1] \longrightarrow 7-Jane, [7-2] \longrightarrow Amr, [7-3] \longrightarrow 03/03/92,
[8-1] \longrightarrow 8-Jane, [8-2] \longrightarrow Amr, [8-3] \longrightarrow 03/03/92,
EmptyRows: 0 ()
NotEmptyRows: 8 ()
non-empty: 8
empty: 0
total: 8
```

# Status without closing CSV file:

#### Current status:

```
All:
```

```
[1-1] \longrightarrow 1-John, [1-2] \longrightarrow Smith, [1-3] \longrightarrow 10/03/02,
[2-1] \longrightarrow 2-John, [2-2] \longrightarrow Smith, [2-3] \longrightarrow 10/03/02,
[3-1] \longrightarrow 3-John, [3-2] \longrightarrow Smith, [3-3] \longrightarrow 10/03/02,
[4-1] \longrightarrow 4-John, [4-2] \longrightarrow Smith, [4-3] \longrightarrow 10/03/02,
[5-1] \longrightarrow 5-John, [5-2] \longrightarrow Smith, [5-3] \longrightarrow 10/03/02,
[6-1] \longrightarrow 6-John, [6-2] \longrightarrow Smith, [6-3] \longrightarrow 10/03/02,
[7-1] \longrightarrow 7-Jane, [7-2] \longrightarrow Amr, [7-3] \longrightarrow 03/03/92,
[8-1] \longrightarrow 8-Jane, [8-2] \longrightarrow Amr, [8-3] \longrightarrow 03/03/92,
EmptyRows: 0 ()
NotEmptyRows: 8 (1, 2, 3, 4, 5, 6, 7, 8, )
```

```
non-empty: 8 empty: 0 total: 8
```

## And now status after closing and reopening of CSV file:

```
Current status:
```

```
All:
[1-1] \longrightarrow 1-John, [1-2] \longrightarrow Smith, [1-3] \longrightarrow 10/03/02,
[2-1] \longrightarrow 2-John, [2-2] \longrightarrow Smith, [2-3] \longrightarrow 10/03/02,
[3-1] —> EMPTY, [3-2] —> EMPTY, [3-3] —> EMPTY,
[4-1] —> EMPTY, [4-2] —> EMPTY, [4-3] —> EMPTY,
[5-1] \longrightarrow 3-John, [5-2] \longrightarrow Smith, [5-3] \longrightarrow 10/03/02,
[6-1] \longrightarrow 4-John, [6-2] \longrightarrow Smith, [6-3] \longrightarrow 10/03/02,
[7-1] —> EMPTY, [7-2] —> EMPTY, [7-3] —> EMPTY,
[8-1] \longrightarrow 5-John, [8-2] \longrightarrow Smith, [8-3] \longrightarrow 10/03/02,
[9-1] \longrightarrow 6-John, [9-2] \longrightarrow Smith, [9-3] \longrightarrow 10/03/02,
[10-1] —> EMPTY, [10-2] —> EMPTY, [10-3] —> EMPTY,
[11-1] —> EMPTY, [11-2] —> EMPTY, [11-3] —> EMPTY,
[12-1] —> EMPTY, [12-2] —> EMPTY, [12-3] —> EMPTY,
[13-1] \longrightarrow 7-Jane, [13-2] \longrightarrow Amr, [13-3] \longrightarrow 03/03/92,
[14-1] \longrightarrow 8-Jane, [14-2] \longrightarrow Amr, [14-3] \longrightarrow 03/03/92,
[15-1] —> EMPTY, [15-2] —> EMPTY, [15-3] —> EMPTY,
[16-1] —> EMPTY, [16-2] —> EMPTY, [16-3] —> EMPTY,
EmptyRows: 0 ()
NotEmptyRows: 16 (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, )
non-empty: 16
empty: 0
total: 16
```

## And after markemptylines:

#### Current status:

```
All:
```

```
[1-1] —> 1-John, [1-2] —> Smith, [1-3] —> 10/03/02,

[2-1] —> 2-John, [2-2] —> Smith, [2-3] —> 10/03/02,

[3-1] —> EMPTY, [3-2] —> EMPTY, [3-3] —> EMPTY,

[4-1] —> EMPTY, [4-2] —> EMPTY, [4-3] —> EMPTY,

[5-1] —> 3-John, [5-2] —> Smith, [5-3] —> 10/03/02,

[6-1] —> 4-John, [6-2] —> Smith, [6-3] —> 10/03/02,

[7-1] —> EMPTY, [7-2] —> EMPTY, [7-3] —> EMPTY,
```

```
 [8\text{-}1] \longrightarrow 5\text{-John, } [8\text{-}2] \longrightarrow \text{Smith, } [8\text{-}3] \longrightarrow 10/03/02, \\ [9\text{-}1] \longrightarrow 6\text{-John, } [9\text{-}2] \longrightarrow \text{Smith, } [9\text{-}3] \longrightarrow 10/03/02, \\ [10\text{-}1] \longrightarrow \text{EMPTY, } [10\text{-}2] \longrightarrow \text{EMPTY, } [10\text{-}3] \longrightarrow \text{EMPTY, } \\ [11\text{-}1] \longrightarrow \text{EMPTY, } [11\text{-}2] \longrightarrow \text{EMPTY, } [11\text{-}3] \longrightarrow \text{EMPTY, } \\ [12\text{-}1] \longrightarrow \text{EMPTY, } [12\text{-}2] \longrightarrow \text{EMPTY, } [12\text{-}3] \longrightarrow \text{EMPTY, } \\ [13\text{-}1] \longrightarrow 7\text{-Jane, } [13\text{-}2] \longrightarrow \text{Amr, } [13\text{-}3] \longrightarrow 03/03/92, \\ [14\text{-}1] \longrightarrow 8\text{-Jane, } [14\text{-}2] \longrightarrow \text{Amr, } [14\text{-}3] \longrightarrow 03/03/92, \\ [15\text{-}1] \longrightarrow \text{EMPTY, } [15\text{-}2] \longrightarrow \text{EMPTY, } [15\text{-}3] \longrightarrow \text{EMPTY, } \\ [16\text{-}1] \longrightarrow \text{EMPTY, } [16\text{-}2] \longrightarrow \text{EMPTY, } [16\text{-}3] \longrightarrow \text{EMPTY, } \\ \text{EmptyRows: } 8 \ (3, 4, 7, 10, 11, 12, 15, 16, ) \\ \text{NotEmptyRows: } 8 \ (1, 2, 5, 6, 8, 9, 13, 14, ) \\ \text{non-empty: } 8 \\ \text{empty: } 8 \\ \text{total: } 16 \\ \\
```