

Grammar:

```
S -> CC
C -> cC|d
```

Augmented grammar:

```
S' -> .S
S  -> .CC
C  -> .cC|.d
```

Canonical Collection of LR(1) Items:

Q0:

```
S' -> .S,$
S  -> .CC,$      First($) = {$}
C  -> .cC,c|d    First(C$) = First(C) = {c,d}
      | .d,c|d    First(C$) = First(C) = {c,d}
```

Possible Transitions: S C c d

- For S goto q1
- For C goto q2
- For c goto q3
- For d goto q4

Q1:

```
S' -> S.,$      Final/Complete Item
```

Q2:

```
S -> C.C,$
C -> .cC,$      First($) = {$}
      | .d,$      First($) = {$}
```

Possible Transitions: C c d

- For C goto Q5
- For c goto Q6
- For d goto Q7

Q3:

```
C -> c.C,c|d
C -> .cC,c|d    First(c) and First(d) = {c,d}
      | .d,c|d    First(c) and First(d) = {c,d}
```

Possible Transitions: C c d

- For C goto Q8
- For c goto Q3
- For d goto Q4

Q4:

```
C -> d.,c|d      Final/Complete Item
```

Q5:

$S \rightarrow CC., \$$  Final/Complete Item

Q6:

$C \rightarrow c.C, \$$

$C \rightarrow .cC, \$$

|  $.d, \$$

Possible Transitions: C c d

- For C goto Q9
- For c goto Q6
- For d goto Q7

Q7:

$C \rightarrow d., \$$  Final/Complete Item

Q8:

$C \rightarrow cC., c|d$  Final/Complete Item

Q9:

$C \rightarrow d., c|d$  Final/Complete Item

