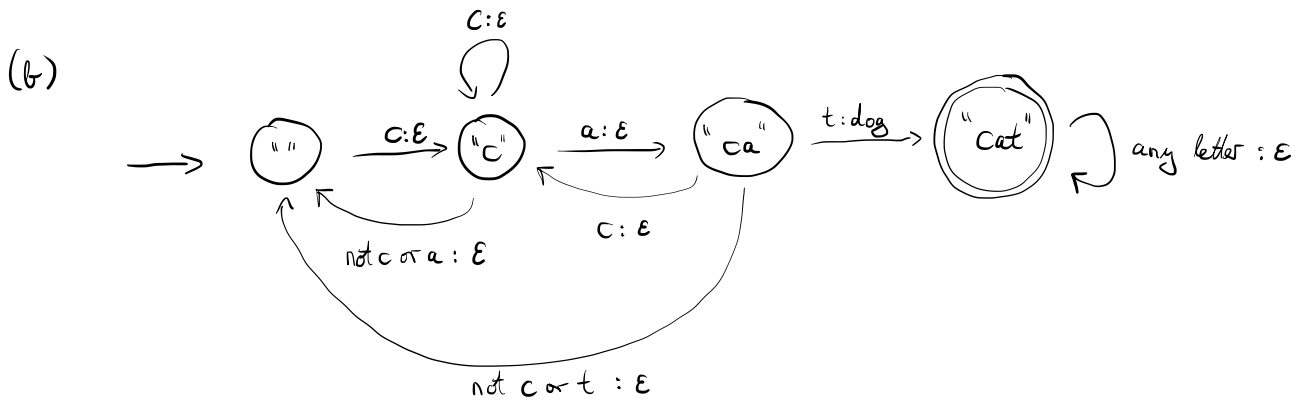


Exercise 7 - Solutions

1. (a) The transducer accepts any string that contains the substring "cat".
If accepted, the string "dog" is output.



2. No, because to sort input of arbitrary length, unbounded memory is required.

3. Recall from class:

$X \leftarrow 0$: while (X):
 decr (X)

$X \leftarrow Y$: $X \leftarrow 0$
 while (Y):
 incr (X)
 decr (Y)

New macro:

$X \Leftarrow Y$: $X \leftarrow 0$
 $Z \leftarrow 0$
 while (Y):
 incr (X)
 incr (Z)
 decr (Y)
 $Y \leftarrow Z$