# Homework 9

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4.6.1 (a)

$S \Rightarrow ABCS \Rightarrow ABCABCS \Rightarrow ABCABCABCT_c \Rightarrow$
$ABACBACBCT_c \Rightarrow AABCABCBCT_c \Rightarrow AABACBCBCT_c \Rightarrow$
$AAABCBCBCT_c \Rightarrow AAABBCBCCT_c \Rightarrow AAABBBCCCT_c \Rightarrow$
$AAABBBT_bccc \Rightarrow AAAT_abbbccc \Rightarrow T_aaaabbbccc \Rightarrow aaabbbccc.$

5.2.1 (a)

So we have the following mapping:
$q_0 \Rightarrow q00$
$q_1 \Rightarrow q01$
$h \Rightarrow q11$
$\sqcup \Rightarrow a000$
$\triangleright \Rightarrow a001$
$\leftarrow\Rightarrow a010$
$\rightarrow\Rightarrow a011$
$a \Rightarrow a100$

Which means that "M" of the Turing machine is equal to $(q00, a100, q01, a000), (q00, a000, q11, a000),$
$(q00, a001, q00, a011), (q01, a100, q00, a100),$
$(q01, a000, q00, a011), (q01, a001, q01, a011)$