Question 1

Describe a TM *M* in both graphical and compositional tabular forms that performs the following computation :

(s, \$w#) |---$_M$ (h, \$u#)*

where *u* is obtained from *w* by compressing (deleting) all blank (#) symbols in *w* and *\$* is a special symbol not used in *w*.

Question 2

Construct a *TM M* (**multitape** and/or **nondeterministic** if necessary!) that decides the language *L** using a *TM M₁* that decides the language *L* .

Question 3

Construct *TMs* in compositional tabular forms (**multitape** and/or **nondeterministic** if necessary!) that perform the following computations :

 (i) (s, #w) |---$_M$ (h, #w^R)*

(ii) (s, #w) |---$_M$ (h, #ww)*

(iii) (s, #w) |---$_M$ (h, #w#w^R)*

(iv) (s, #w) |---$_M$ (h, #a^{n}b^n) where the number of *a*s and *b*s in *w* are both equal to a fixed integer *n > 0*.