Suppose that m is known and n is allowed to range over all positive integers; let U_m be the average number of time that step E1 is executed in Algorithm E. Show that U_m is well defined. Is U_m in any way related to T_m?

if $n > m$ n and m will be swapped and therefore the problem becomes $1 + T_m$, therefore U_m is well defined.
if $m \geq n$ U_m becomes the sum of every repetition of E1 $\forall n < m$ divided by m, which is well defined as a finite quantity.