Comp 302 Assignment 2 Qianyu Huang 260669624

Q2 IH: For all l_1, rev_append l_1 l_2 $\Downarrow$ v
rev_append' l_1 l_2 $\Downarrow$ v

Case l_1 = []

rev_append [] l_2
$\longrightarrow$ l_2 by pattern matching

rev_append' [] l_2
$\longrightarrow$ append (rev []) l_2 $\longrightarrow$ append [] l_2
$\longrightarrow$ l_2 by pattern matching

Case l = h::t

rev_append (h::t) l_2
$\longrightarrow$ rev_append t (h::l_2)

rev_append' (h::t) l_2
$\longrightarrow$ append (rev (h::t)) l_2
$\longrightarrow$ append ((rev t) @ h) l_2
$\longrightarrow$ ~~append~~ rev t @ (append h l_2)
$\longrightarrow$ rev t @ (h::l_2)
$\longrightarrow$ append (rev t) (h::l_2)
$\longrightarrow$ rev_append' ~~(rev t)~~ t (h::l_2)
By IH, rev_append t (h::l_2) $\Downarrow$ v
rev_append' t (h::l_2) $\Downarrow$ v