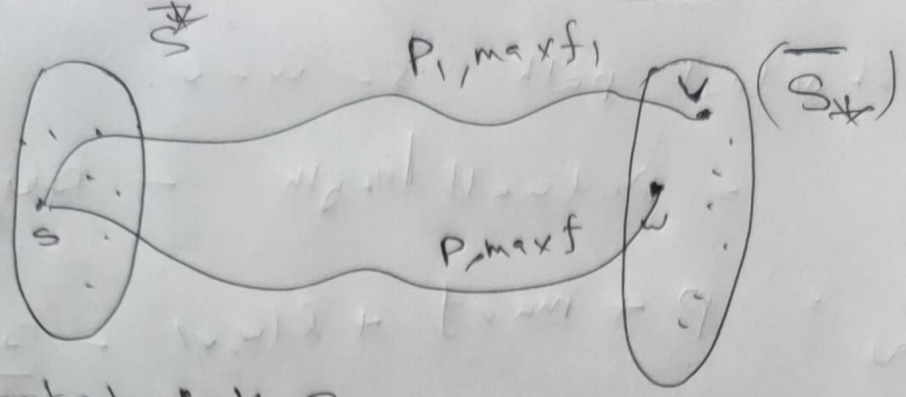
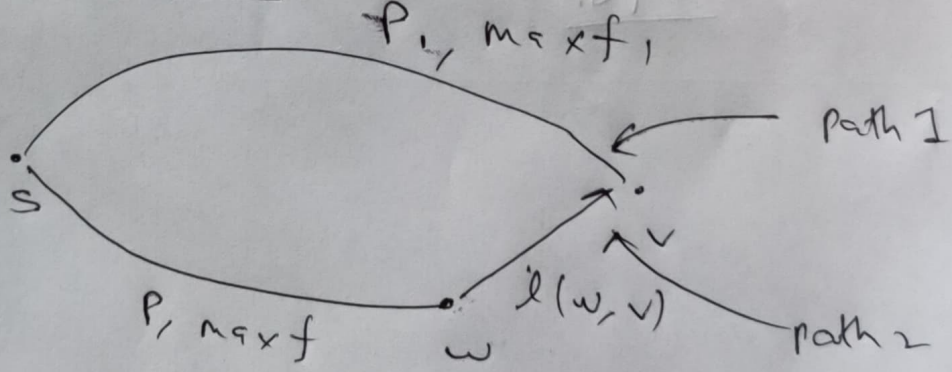


Shortest Path Tree
(Using Coupon)

P_1: shortest path from s to v found till now. [Coupon Used = $maxf_1$]

P: shortest path from s to w.
[Coupon used = maxf]

While Updating



Actual length of path1 = P_1 + $maxf_1$

Actual — — path2 = length(s to w) + l(w,v)
= P + maxf + l(w,v)

⇒ Maximum edge in path s–w–v
= max{ l(w,v), maxf }
Coupons s-w-v

∴ shortest path $s - w - v$

= Actual length − coupon

$P_{new} = p + \max f + l(w,v)$ − coupon

$\max\{\max f, l(w,v)\}$

Now in the Node 'v' if the path P_1 is still shorter we won't update.

But if $P_{new} < P_1$, then we update pathlength to P_{new} & $\max f_v$ to 'coupon'.