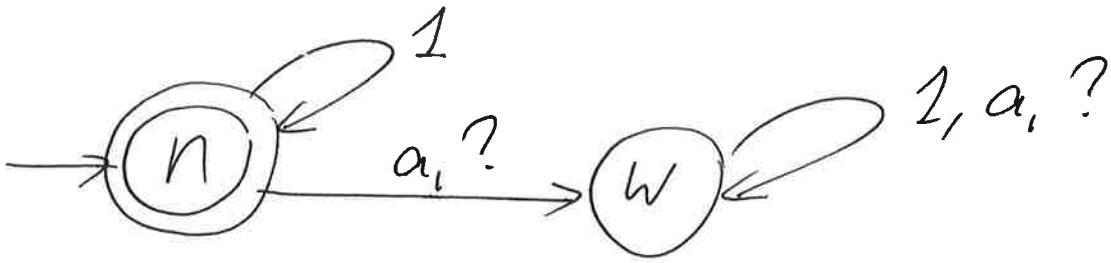
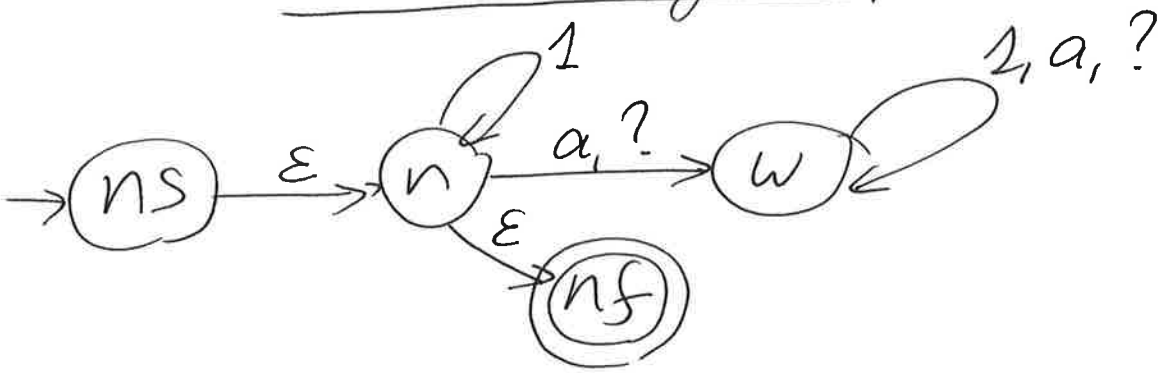
# HW 3, FALL 2024, P. 1



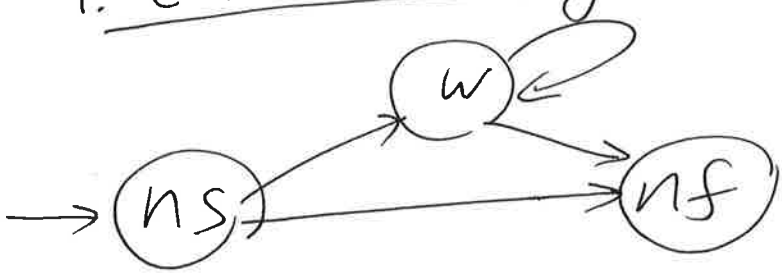

## General formula:

$$R'_{ij} = R_{ij} \cup (R_{ik} R_{kk}^{*} R_{kj})$$

## Preliminary step:




## 1. Eliminating state n:




$$R'_{ns,w} = R_{ns,w} \cup (R_{ns,n} R_{n,n}^{*} R_{n,w}) =$$

$$\emptyset \cup (\wedge 1^{*} (a \vee ?)) =$$

$$1^{*} (a \vee ?)$$

# HW3, FALL 2024 P.2

$$R'_{ns,nf} = R_{ns,nf} \cup (R_{ns,n} R_{n,n}^* R_{n,nf}) =$$

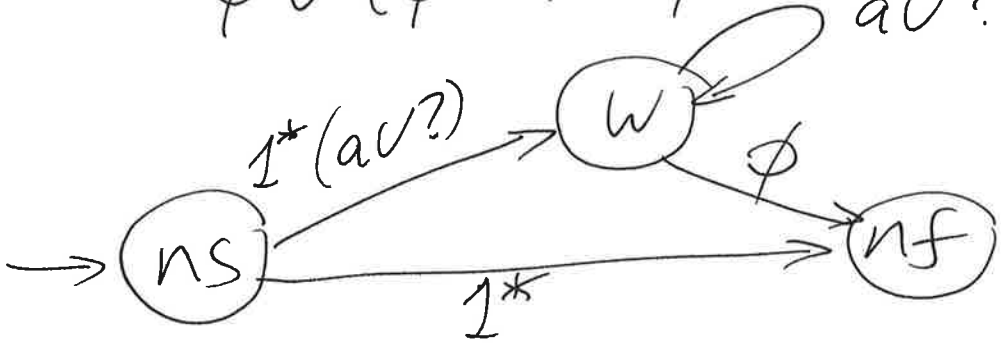
$$\phi \cup (\Lambda 1^* \Lambda) = 1^*$$

$$R'_{w,w} = R_{w,w} \cup (R_{w,n} R_{n,n}^* R_{n,w}) =$$

$$(a \cup ?) \cup (\phi \ldots) = a \cup ?$$

$$R'_{w,nf} = R_{w,nf} \cup (R_{w,n} R_{n,n}^* R_{n,nf}) =$$

$$\phi \cup (\phi \ldots) = \phi$$




## 2. Eliminating state w:

$$R'_{ns,nf} = R_{ns,nf} \cup (R_{ns,w} R_{w,w}^* R_{w,nf}) =$$

$$1^* \cup (1^*(a \cup ?)(a \cup ?)^* \phi) =$$

$$1^* \cup \phi = 1^*$$