Übung R3: Relationale Algebra

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Aufgabe 1

$A \div B_1 = \{s_1, s_2, s_3, s_4\}$

$A \div B_2 = \{s_1, s_4\}$

$A \div B_3 = \{s1\}$

Aufgabe 2

a)

$\Pi_{\text{sname}}(S \bowtie \Pi_{\text{sid}}(R \bowtie \Pi_{\text{bid}}(\sigma_{\text{color=red}}(B))))$

b)

$\Pi_{\text{color}}(B \bowtie \Pi_{\text{bid}}(R \bowtie \Pi_{\text{sid}}(\sigma_{\text{sname=Lubber}}(S))))$

c)

$\Pi_{\text{sname}}(\Pi_{\text{sid}}(R) \bowtie S)$

Aufgabe 3

a)

$\Pi_{\text{sname}}(S \bowtie \Pi_{\text{sid}}(R \bowtie \Pi_{\text{bid}}(\sigma_{\text{color=red} \vee \text{color=green}}(B))))$

b)

$\Pi_{\text{sid}}(S \bowtie \rho_{\text{redBoat}} \leftarrow \Pi_{\text{bid}}(B) \bowtie \rho_{\text{greenBoat}} \leftarrow \Pi_{\text{bid}}(B)\sigma_{\text{redBoat.color=red} \wedge \text{greenBoat.color=green}})$

c)

$\Pi_{\text{sname}}(S \bowtie \Pi_{\text{sid}}\sigma_{\text{count(sid)>=2}}(R))$

Aufgabe 4

a)

$$\Pi_{\text{sid}}(\sigma_{\text{age}>20}(S)) \setminus \Pi_{\text{sid}}(R \bowtie \sigma_{\text{color}=\text{red}}(B))$$

b)

$$\Pi_{\text{sname}}(S \bowtie \Pi_{\text{sid}}(R \div \Pi_{\text{bid}}(B)))$$

c)

$$\Pi_{\text{sname}}(S \bowtie \Pi_{\text{sid}}(R \div \Pi_{\text{bid}}(\sigma_{\text{bname}=\text{Interlake}}(B))))$$

Aufgabe 5

Siehe Abbildungen 1 bis 9.

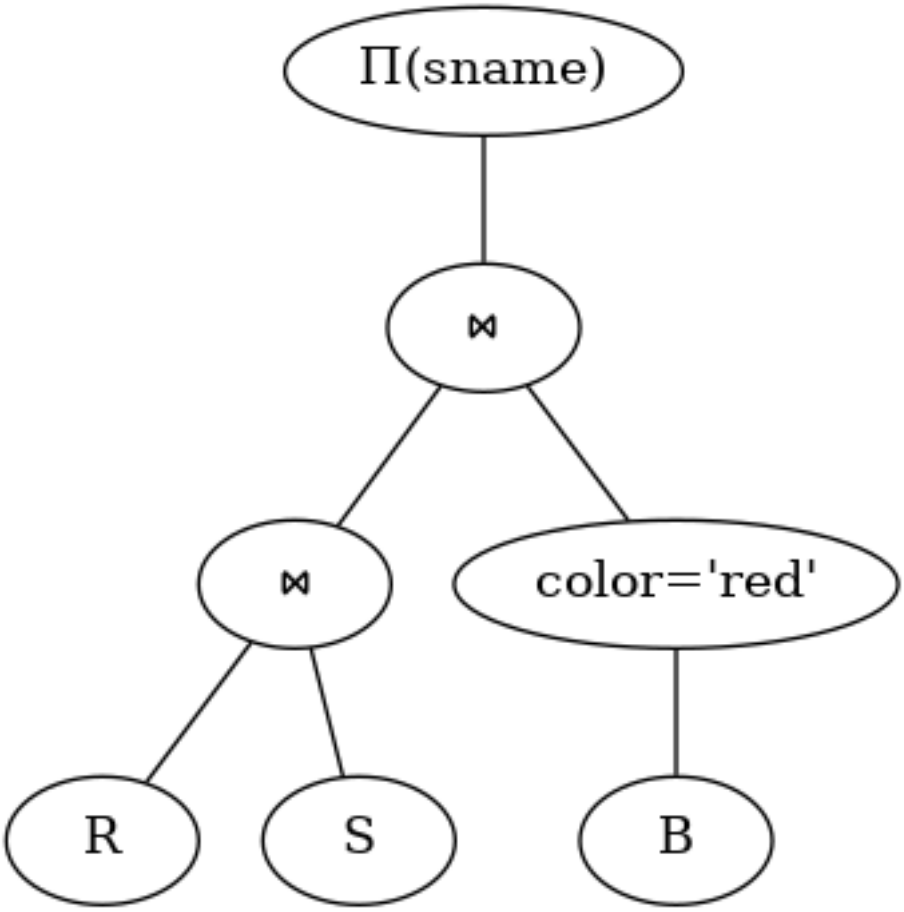

Abbildung 1: 2a

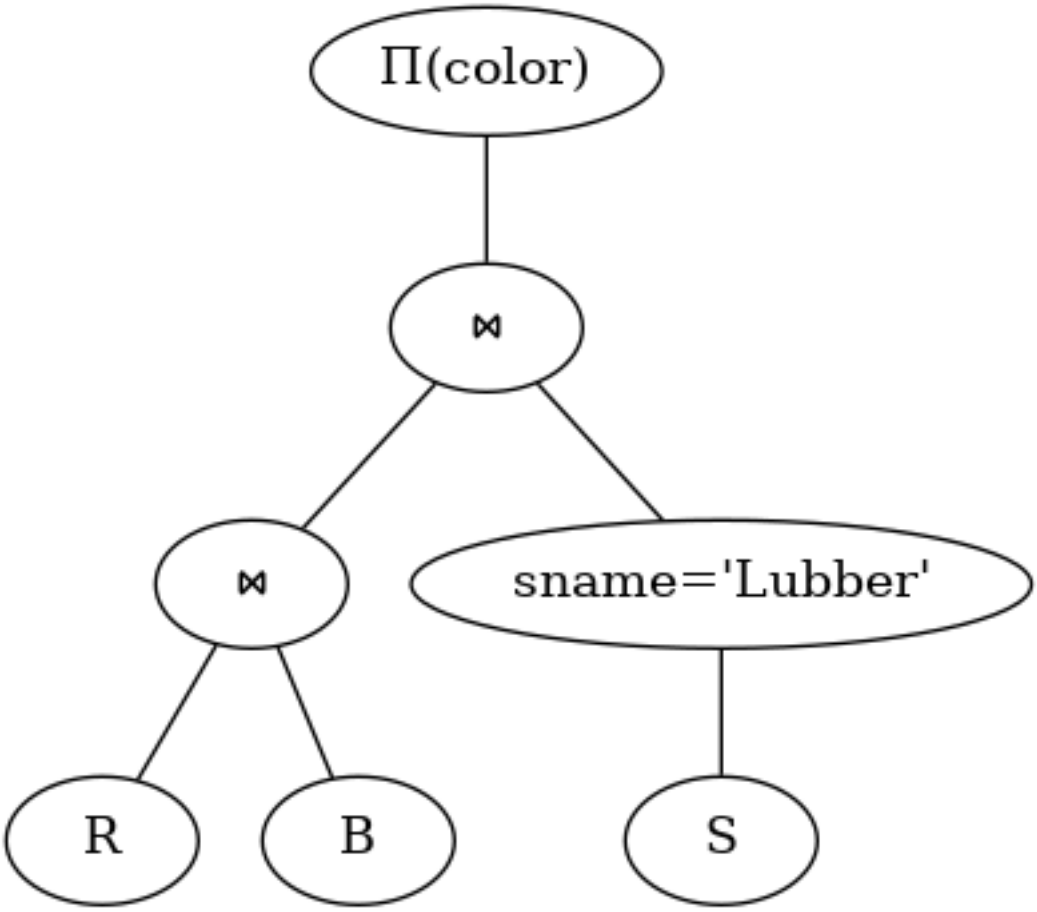

Abbildung 2: 2b

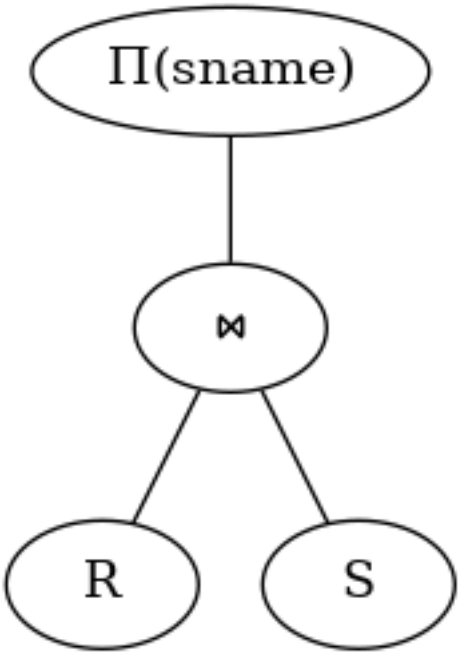

Abbildung 3: 2c

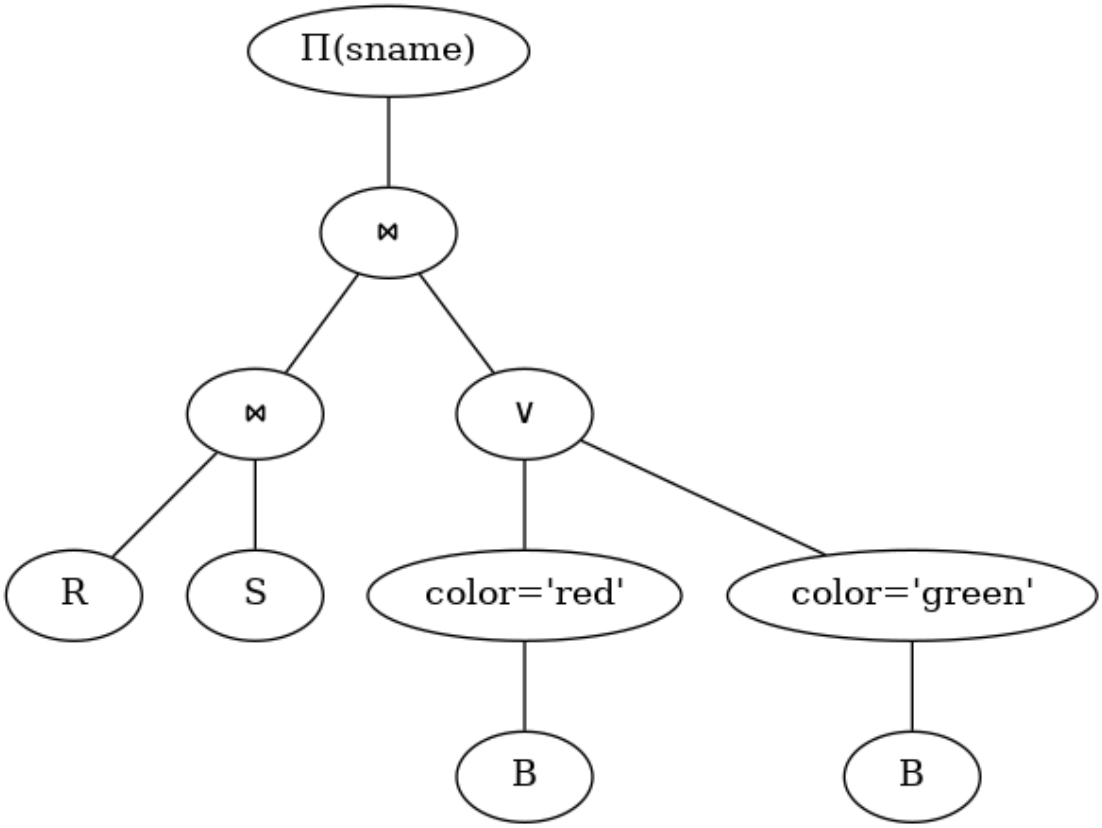

Abbildung 4: 3a

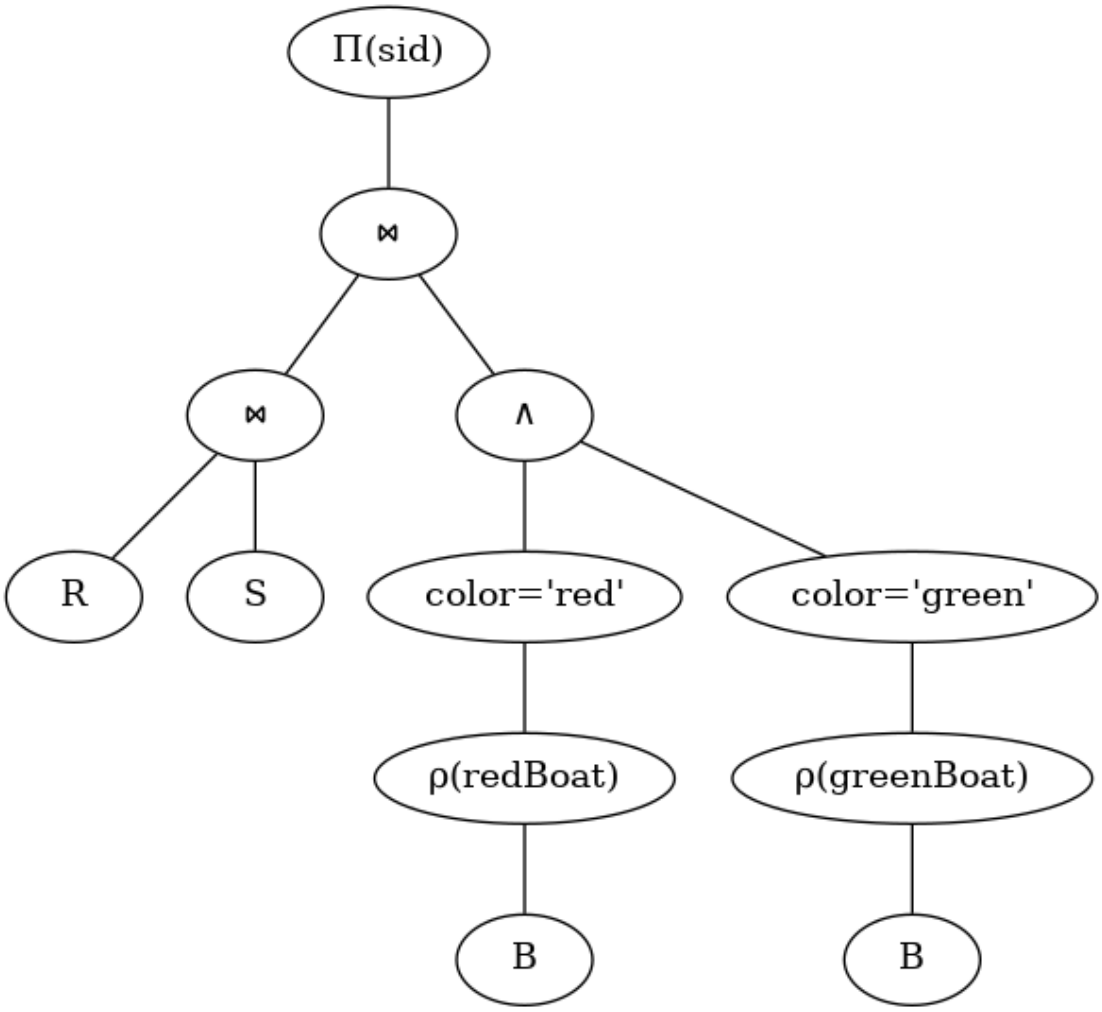

Abbildung 5: 3b

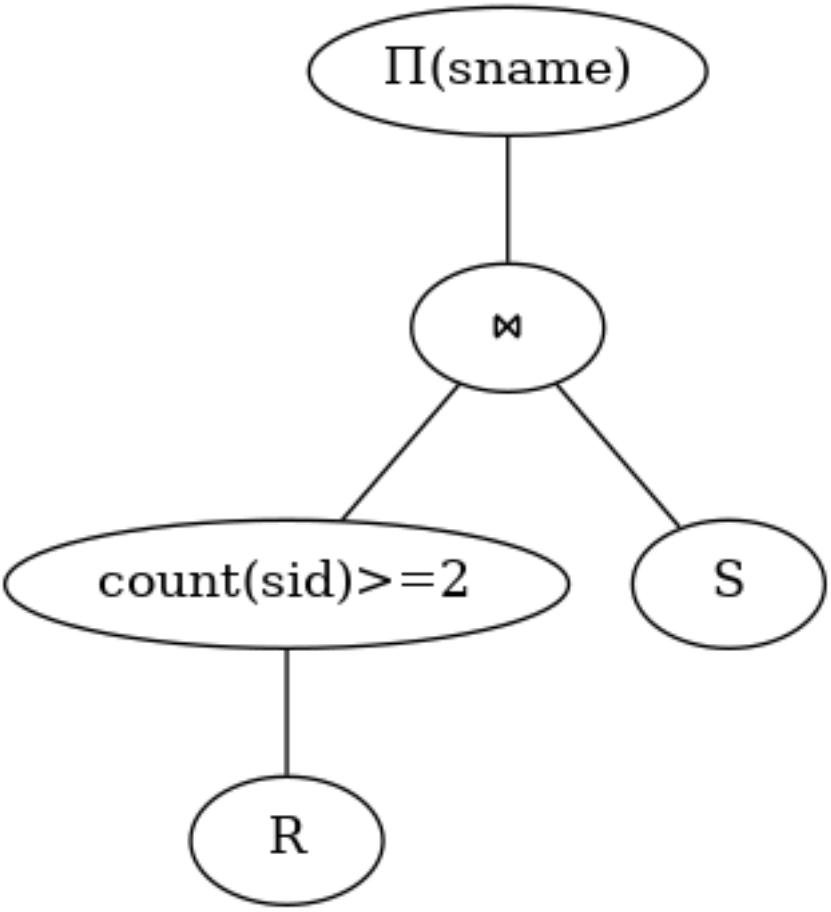

Abbildung 6: 3c

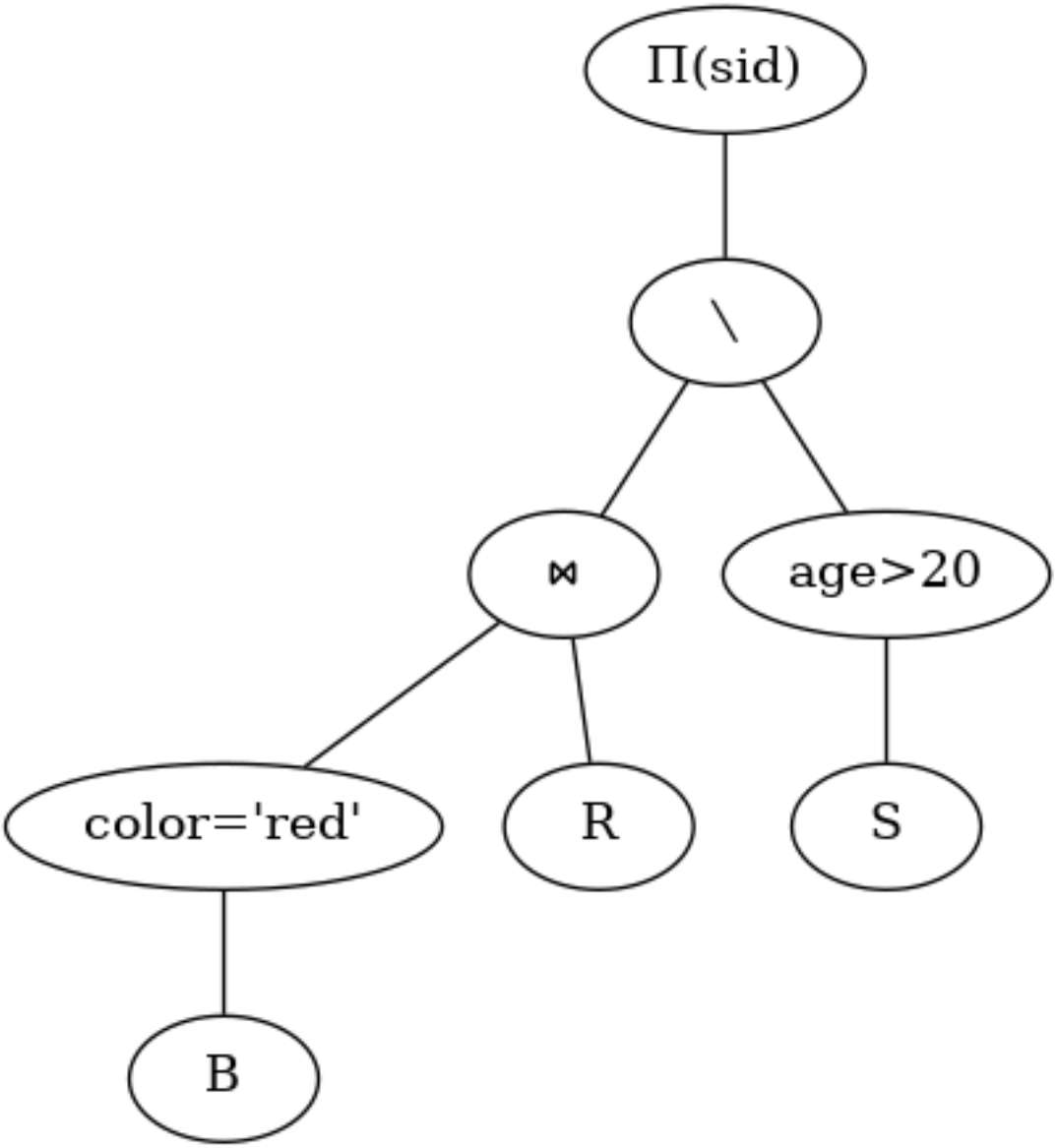

Abbildung 7: 4a

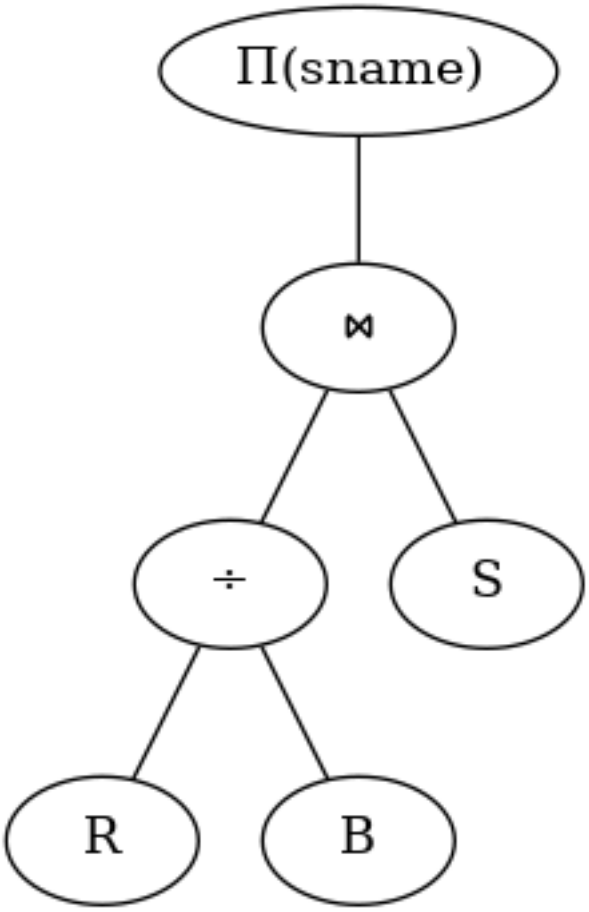

Abbildung 8: 4b

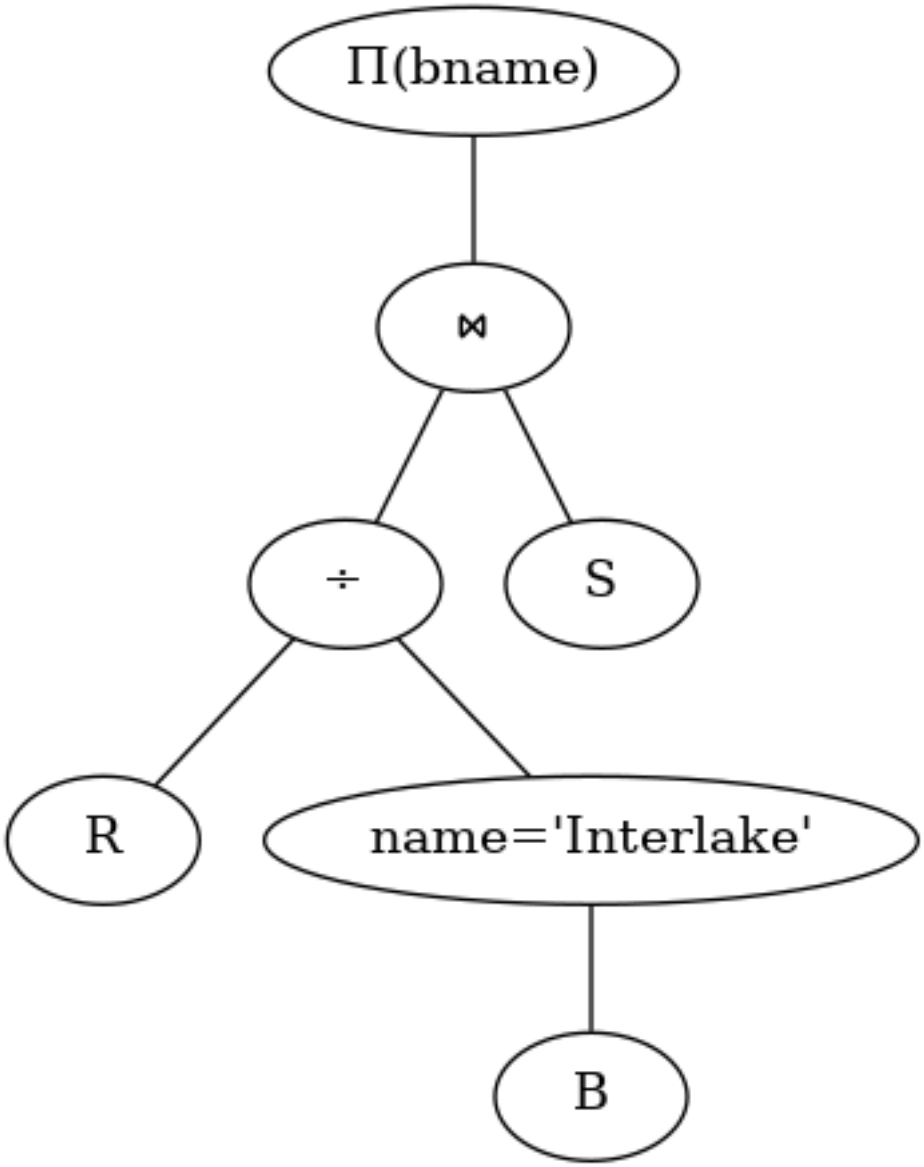

Abbildung 9: 4c