

CPSC 406

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Abstract

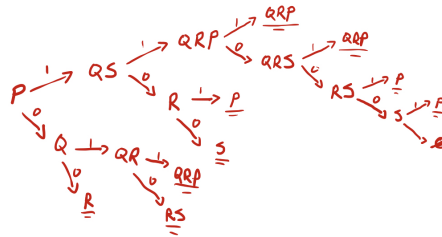
A very short introduction to typesetting in LaTeX for my courses “Programming Languages”, “Compiler Construction” and “Algorithm Analysis”.

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1 Homework

1.1 HW 1



NFA2DFA In order to convert the provided NFA to DFA I considered each possible combination of P, Q, R, S, and considered each possible combination its own state. The included figure details every possible state the NFA/DFA may find itself in.

State	0	1
P	Q	QS
R	S	P
Q	R	QR
S	∅	P
QS	R	QRP
QR	RS	QRP
RS	S	P
QRP	QRS	QRP
QRS	RS	QRP

1.2 HW 2

Question 1:

$$1. f(X, f(X, Y)) \stackrel{?}{=} f(f(Y, a), f(U, b))$$

$$\begin{aligned} X &\stackrel{?}{=} f(Y, a) & f(X, Y) &\stackrel{?}{=} f(U, b) \\ \sigma_1 &= \frac{f(Y, a)}{X} & X &= U & Y &= b \\ & & \sigma_2 &= \frac{U}{X} & \sigma_3 &= \frac{b}{Y} \\ \sigma &= \left[\frac{f(Y, a)}{X}, \frac{U}{X}, \frac{b}{Y} \right] \end{aligned}$$

$$2. f(g(U), f(X, Y)) \stackrel{?}{=} f(X, f(Y, U))$$

$$\begin{aligned} g(U) &\stackrel{?}{=} X & f(X, Y) &\stackrel{?}{=} f(Y, U) \\ X &\stackrel{?}{=} Y & Y &\stackrel{?}{=} U \\ X &\stackrel{?}{=} U \\ \sigma &= \frac{g(X)}{X} \quad \text{Fail} \end{aligned}$$

$$3. h(U, f(g(V), W), g(W)) \stackrel{?}{=} h(f(X, b), U, Z)$$

$$\begin{aligned} U &\stackrel{?}{=} f(X, b) & f(g(V), W) &\stackrel{?}{=} U & g(W) &\stackrel{?}{=} Z \\ f(g(V), W) &\stackrel{?}{=} f(X, b) & \sigma_3 &= \frac{g(W)}{Z} \\ g(V) &\stackrel{?}{=} X & W &\stackrel{?}{=} b \\ \sigma_1 &= \frac{g(V)}{X} & \sigma_2 &= \frac{b}{W} \\ \sigma &= \sigma_1 \circ \sigma_2 \circ \sigma_3 = \left[\frac{g(V)}{X}, \frac{b}{W}, \frac{g(W)}{Z} \right] \end{aligned}$$

Question 2:

?- conn(W,a), conn(a,W)

?- addr(W,a), addr(a,Z), serv(Z), addr(Z,W) ?- twoway(W,a)

?- conn(W,a), conn(a,W)

?- addr(W,a), addr(a,Z), serv(Z), addr(Z,W)

2 Conclusions

In this document, to help you getting started, I gave a first succinct example of typesetting in Latex.

References

[ALG] [Algorithm Analysis](#), Chapman University, 2023.