

Grammar and Automaton

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1. Grammar for the Language

Move Name for each State (Paired together for general buttons/functionality):

S is the initial variable for the beginning of a combo

State	Name
S	Neutral State
q_{ss}	Side Smash
q_{os1}	Overhead Smash I
q_{os2}	Overhead Smash II
q_u	Upswing
q_{bb1}	Big Bang I
q_{bb2}	Big Bang II
q_{bb3}	Big Bang III
q_{bb4}	Big Bang IV
q_{bbf}	Big Bang Finisher
q_{sb1}	Spinning Bludgeon (Time 1)
q_{sb2}	Spinning Bludgeon (Time 2)
q_{sb3}	Spinning Bludgeon (Time 3)
q_{sss}	Spinning Side Smash
q_{sfu}	Spinning Follow Up
q_{ssu}	Spinning Strong Upswing
q_{c1}	Charge (Time 1)
q_{c2}	Charge (Time 2)
q_{c3}	Charge (Time 3)
q_{csb}	Charged Side Blow
q_{cu}	Charged Upswing
q_{cbb}	Charged Big Bang
q_{cfu}	Charged Follow-up
q_{mc1}	Mighty Charge (Time 1)
q_{mc2}	Mighty Charge (Time 2)
q_{mcu}	Mighty Charge Upswing
q_{mcs}	Mighty Charge Slam
q_{fben}	Focus Blow: Earthquake (No Wound)
q_{fbew1}	Focus Blow: Earthquake (Wound Option 1)
q_{fbew2}	Focus Blow: Earthquake (Wound Option 2)

$$\begin{aligned}
S &\rightarrow yq_{os1} \mid bq_{bb1} \mid rq_{c1} \mid fq_{fben} \mid fq_{fbew1} \mid yq_{ss} \mid \lambda \\
q_{ss} &\rightarrow yq_{os2} \mid bq_{bb1} \mid rq_{c1} \mid cq_{sb1} \mid \lambda \\
q_{os1} &\rightarrow yq_{os2} \mid bq_{bb1} \mid rq_{c1} \mid cq_{sb1} \mid \lambda \\
q_{os2} &\rightarrow yq_u \mid bq_{bb1} \mid rq_{c1} \mid cq_{sb1} \mid \lambda \\
q_u &\rightarrow bq_{bb1} \mid rq_{c1} \mid cq_{sb1} \mid dq_{mc1} \mid \lambda \\
q_{bb1} &\rightarrow bq_{bb2} \mid rq_{c1} \mid \lambda \\
q_{bb2} &\rightarrow bq_{bb3} \mid rq_{c1} \mid \lambda \\
q_{bb3} &\rightarrow bq_{bb4} \mid rq_{c1} \mid \lambda \\
q_{bb4} &\rightarrow bq_{bbf} \mid dq_{mc1} \mid rq_{c1} \mid \lambda \\
q_{bbf} &\rightarrow rq_{c1} \mid cq_{sb1} \mid \lambda \\
q_{sb1} &\rightarrow q_{sb2} \mid yq_{sss} \\
q_{sb2} &\rightarrow q_{sb3} \mid yq_{sfu} \\
q_{sb3} &\rightarrow \lambda \mid yq_{ssu} \\
q_{sss} &\rightarrow yq_{os2} \mid bq_{bb1} \mid rq_{c1} \mid \lambda \\
q_{sfu} &\rightarrow yq_{os1} \mid bq_{bb1} \mid rq_{c1} \mid \lambda \\
q_{ssu} &\rightarrow yq_{os1} \mid bq_{bb1} \mid rq_{c1} \mid dq_{mc1} \mid \lambda \\
q_{c1} &\rightarrow q_{c2} \mid rq_{csb} \mid yq_{csb} \mid fq_{fben} \mid fq_{fbew1} \\
q_{c2} &\rightarrow q_{c3} \mid rq_{csu} \mid yq_{csu} \mid fq_{fben} \mid fq_{fbew1} \\
q_{c3} &\rightarrow rq_{cbb} \mid yq_{cbb} \mid cq_{mc1} \mid fq_{fben} \mid fq_{fbew1} \\
q_{csb} &\rightarrow yq_{cfu} \mid bq_{ss} \mid rq_{c1} \mid \lambda \\
q_{cu} &\rightarrow yq_{cfu} \mid bq_{bb1} \mid rq_{c1} \mid cq_{sb1} \mid \lambda \\
q_{cbb} &\rightarrow rq_{c1} \mid cq_{sb1} \mid yq_{os1} \mid bq_{bb1} \mid yq_{ss} \mid \lambda \\
q_{cfu} &\rightarrow yq_{os1} \mid bq_{bb1} \mid rq_{c1} \mid cq_{sb1} \mid \lambda \\
q_{mc1} &\rightarrow q_{mc2} \mid rq_{mcu} \mid yq_{mcu} \\
q_{mc2} &\rightarrow rq_{mcs} \mid yq_{mcs} \\
q_{mcu} &\rightarrow yq_{os1} \mid yq_{ss} \mid bq_{bb1} \mid cq_{sb1} \mid \lambda \\
q_{mcs} &\rightarrow cq_{sb1} \mid yq_{os1} \mid yq_{ss} \mid bq_{bb1} \mid \lambda \\
q_{fben} &\rightarrow bq_{bb1} \mid rq_{c1} \mid \lambda \\
q_{fbew1} &\rightarrow rq_{c1} \mid q_{fbew2} \\
q_{fbew2} &\rightarrow rq_{c1} \mid yq_{os2} \mid \lambda
\end{aligned}$$

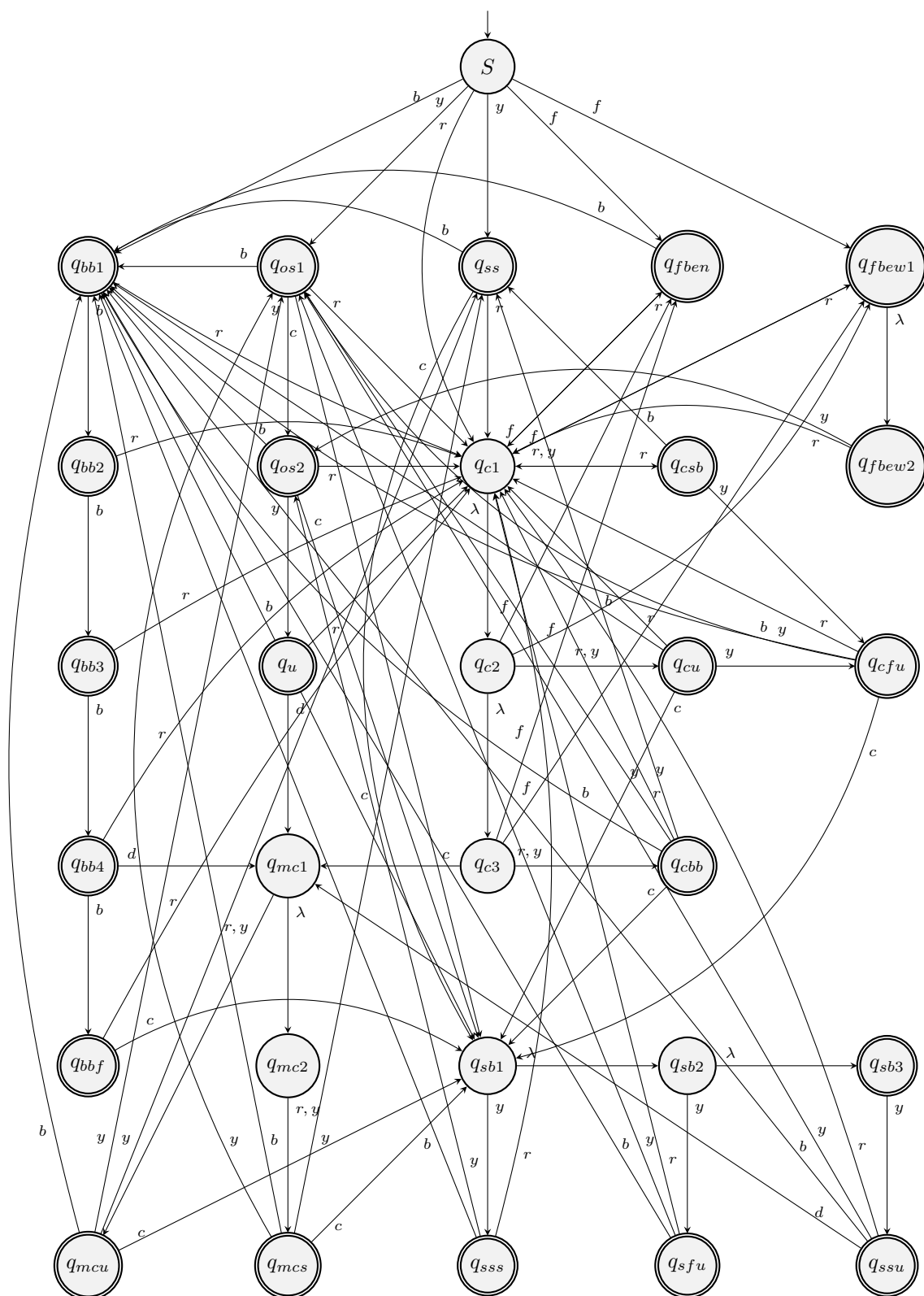


Figure 1: Automaton for Language