Nim Value and Mex Rule: Additional Slides

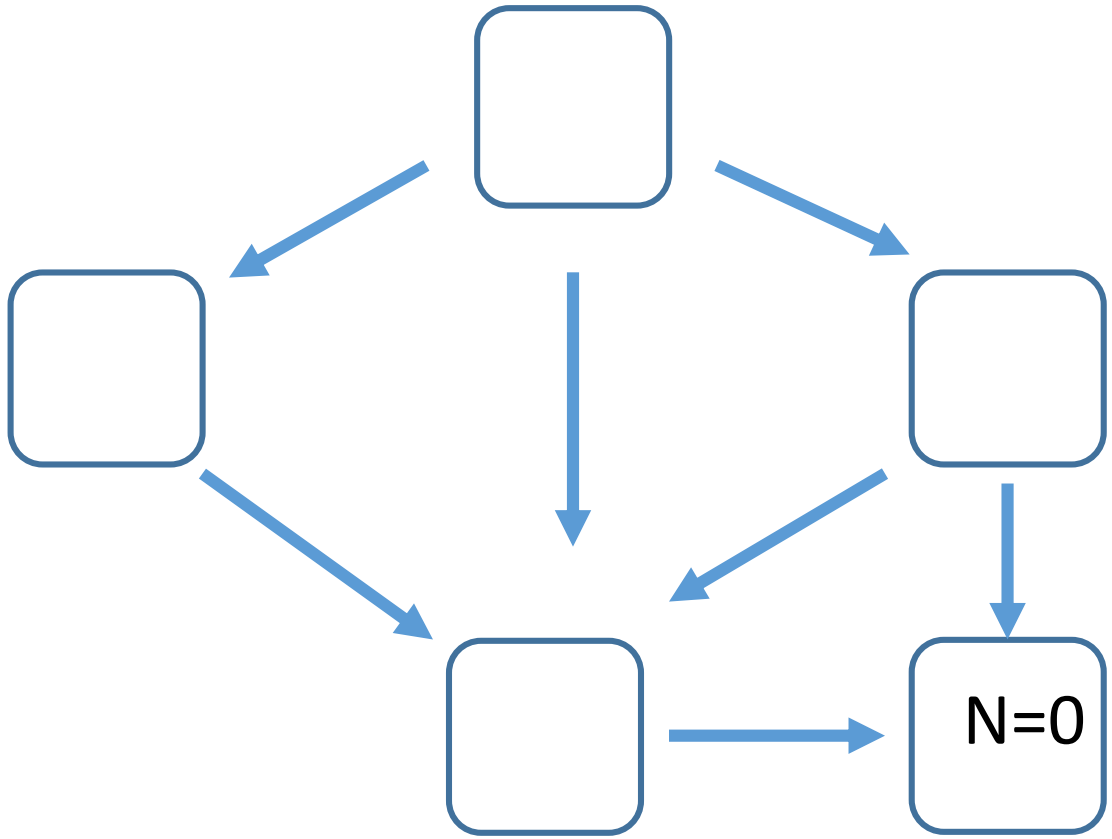
If G≡ *(n), a single heap of n chips, then we say it has nim value n, denoted N(G)=n. So in particular, we have N(*n) = n.

N(G+H)=N(G) $\oplus$ N(H). In particular
N(Nim[3,6]) = N (*3) $\oplus$N(*6)=(1$\oplus$2) + (4$\oplus$2) = 1$\oplus$4=5

If N(G)>0 then W(G)=1 (it is a winning game- the option witn N=0 is losing)
If N(G)=0 then W(G)=0 (it is a losing game)

If G has options G1, G2, …, Gm, then
N(G)= mex(N(G1), N(G2),…,N(Gm)). The nim value of a game is the mex of the nim values of its options.

Calculating Nim Values: Abstract Directed Acyclic Graph Game



because game has no options

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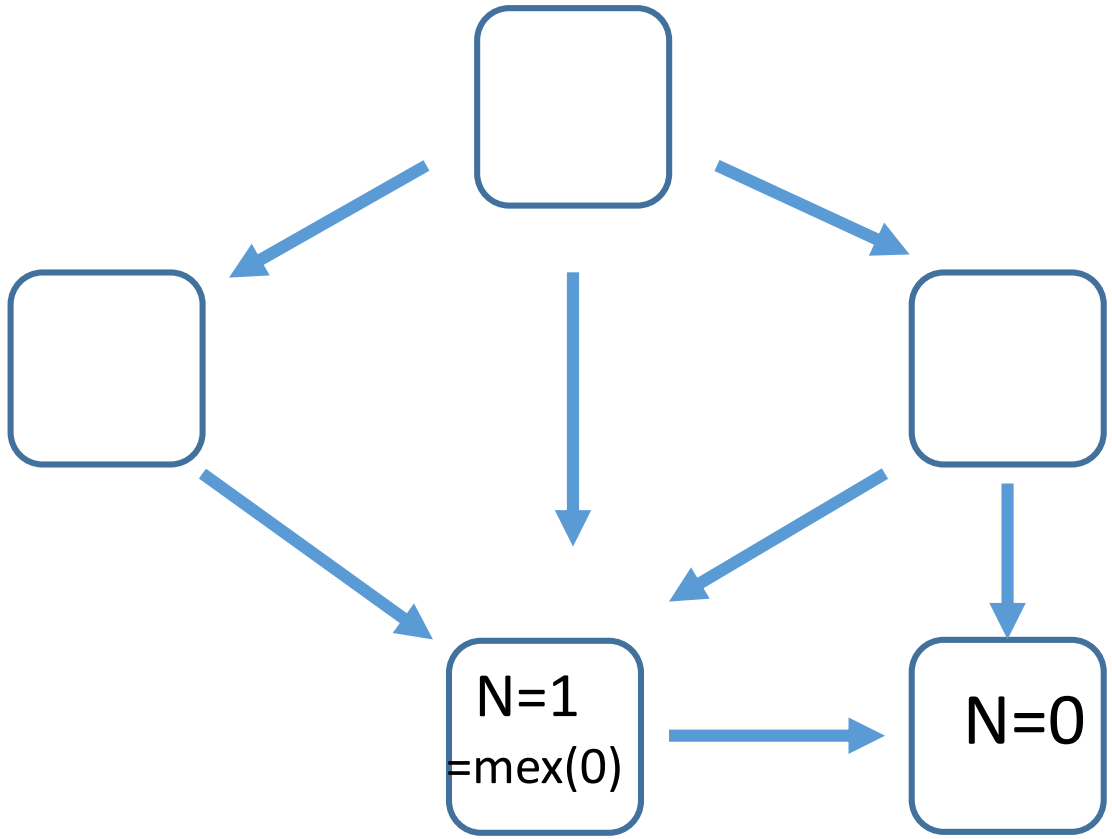

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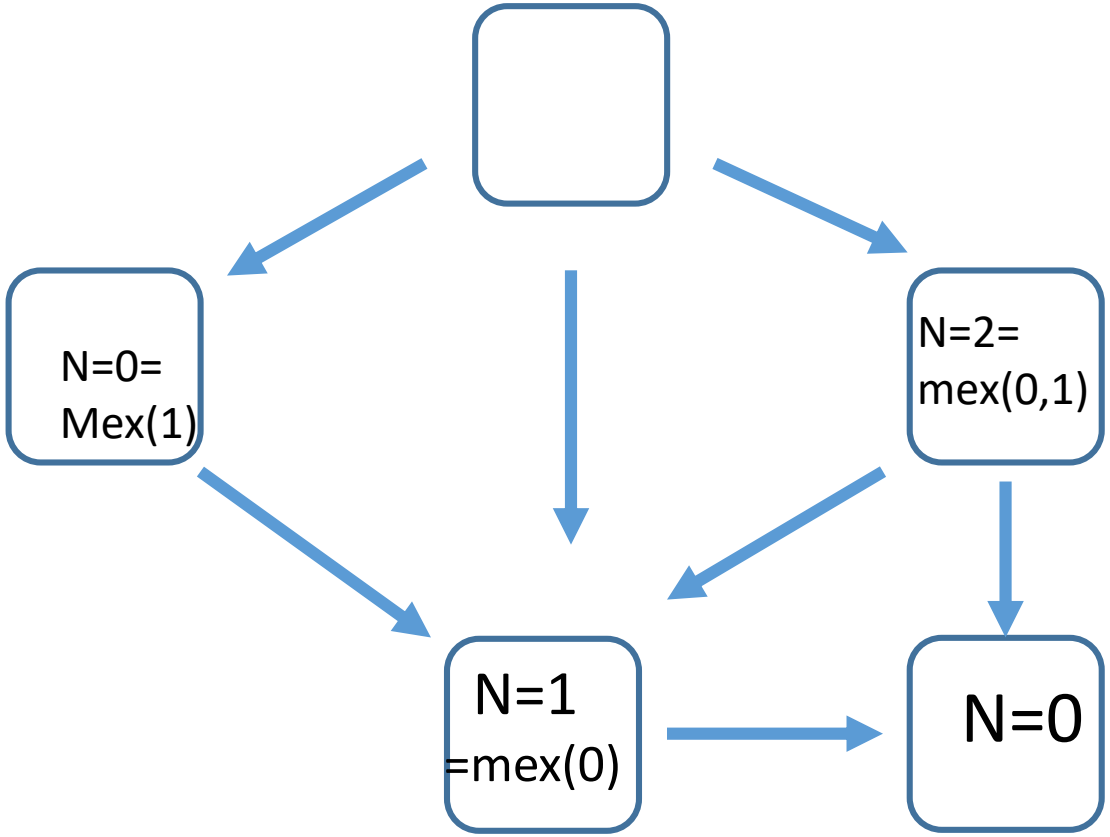

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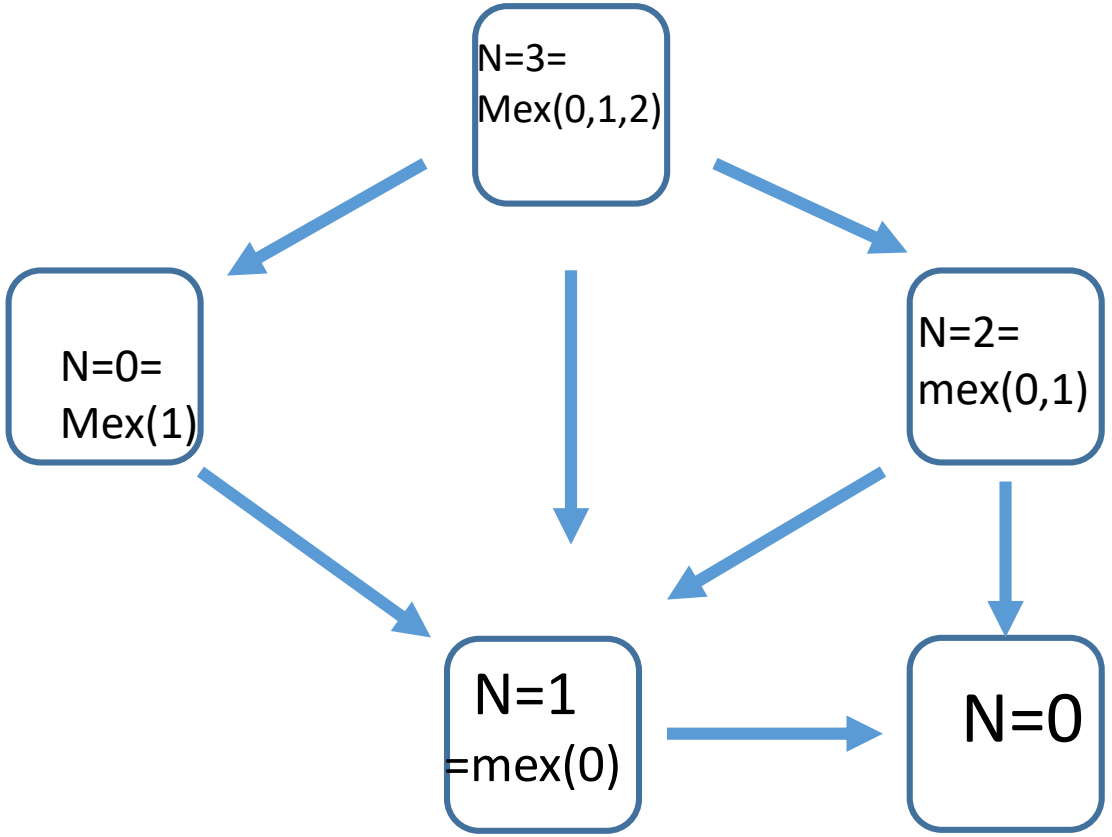

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