Algorithm 1 K Modes Algorithm

Input: $A_1 \dots A_N$
Output: $Clusters(C_1, C_2, ...C_n)$

```
function MAIN(MSA)
    C[k] = null
    Select random k ← 1 : N
    while k > 2 do
        for i ∈ [0, N) do
            i ∉ k
            distance G=0
            for j ∈ [l, k] do
                rii att[i], att[j]
                if rii > rii G then
                    rii G = max rii
                    assignment[i.l] = j
                    assignment[i.b] = rii G
                end if
                if rii G > C_n[b] then
                    set C_n index and value
                end if
            end for
        end for
    end while
    return Clusters
end function
```