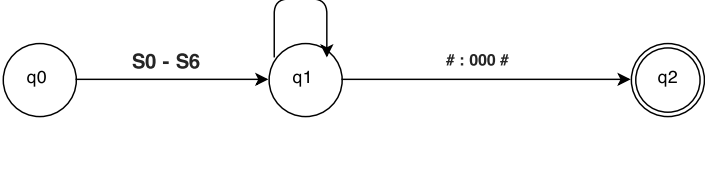
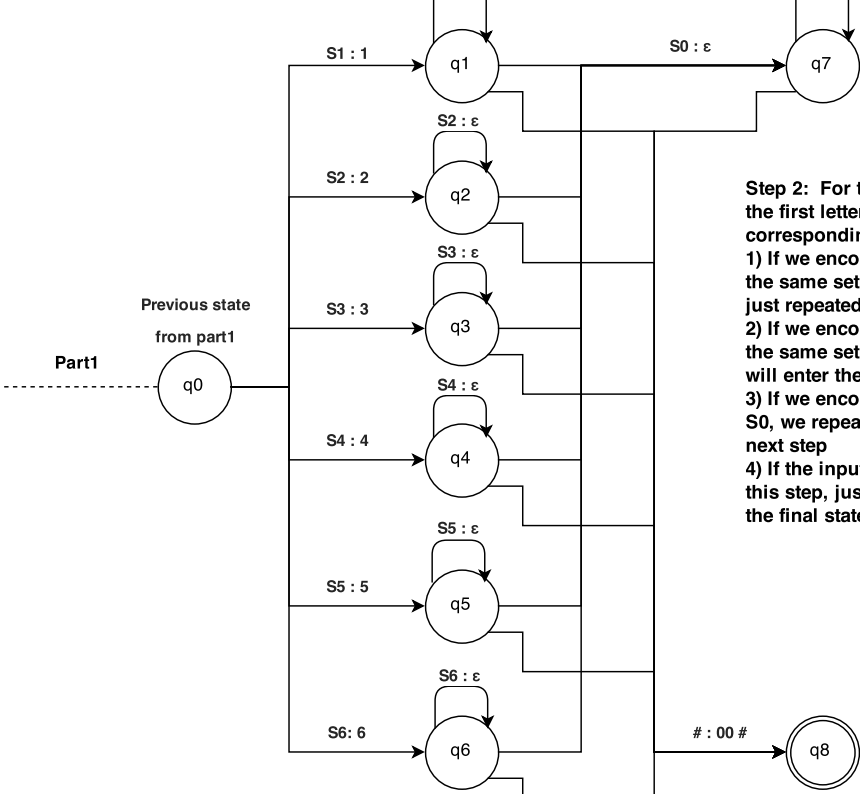


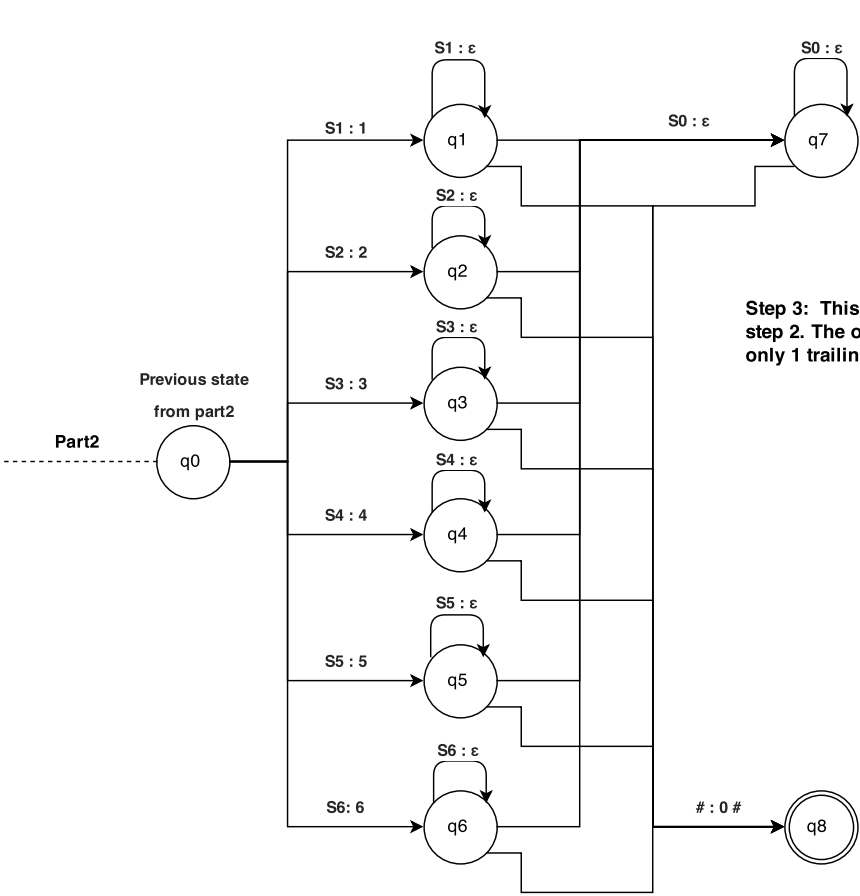
S0 = {a, e, h, i, o, u, w, y}  
S1 = {b, f, p, v}  
S2 = {c, g, j ,k, q, s, x, z}  
S3 = {d, t}  
S4 = {l}  
S5 = {m, n}  
S6 = {r}



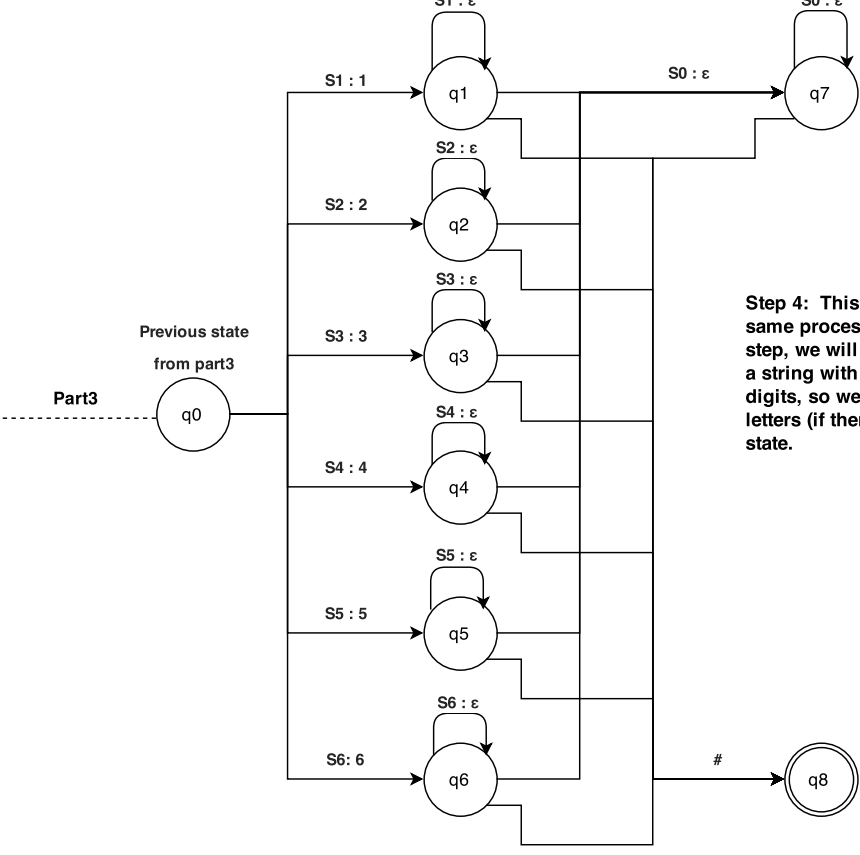
Step 1: For this step, we simply keep the first letter, and remove the subsequent characters from set S0. If the input string reaches the end in this step, just add 3 trailing 0s and enter the final state. Otherwise, enter step 2.



Step 2: For this step, we'll first transform the first letter from set S1 to S6 to its corresponding number. And then,  
1) If we encounter contiguous letters from the same set with the previous letter, we just repeatedly ignore it.  
2) If we encounter a letter which is not in the same set with the previous letter, we will enter the next step.  
3) If we encounter contiguous letters from S0, we repeatedly remove it and enter the next step  
4) If the input string reaches the end in this step, just add 2 trailing 0s and enter the final state.

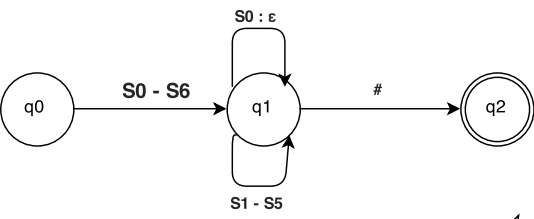


Step 3: This step is almost the same with step 2. The only difference is that we add only 1 trailing 0 instead of 2.

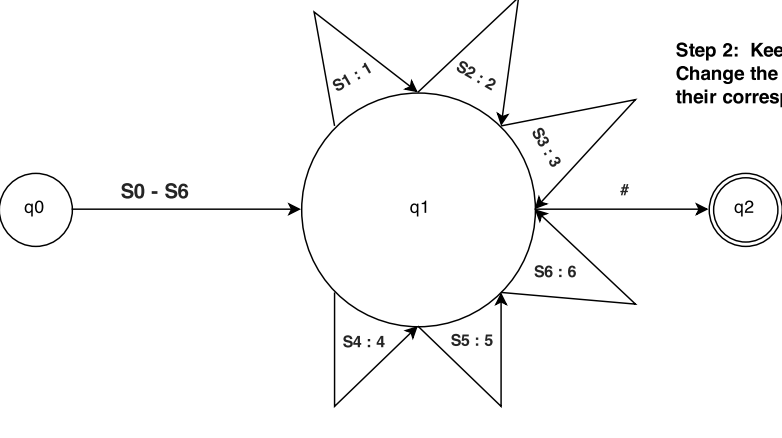


Step 4: This is the last step. We repeat the same process with previous steps. In this step, we will transform the input string to a string with the first letter and trailing digits, so we can discard the rest of the letters (if there are any) and enter the final state.

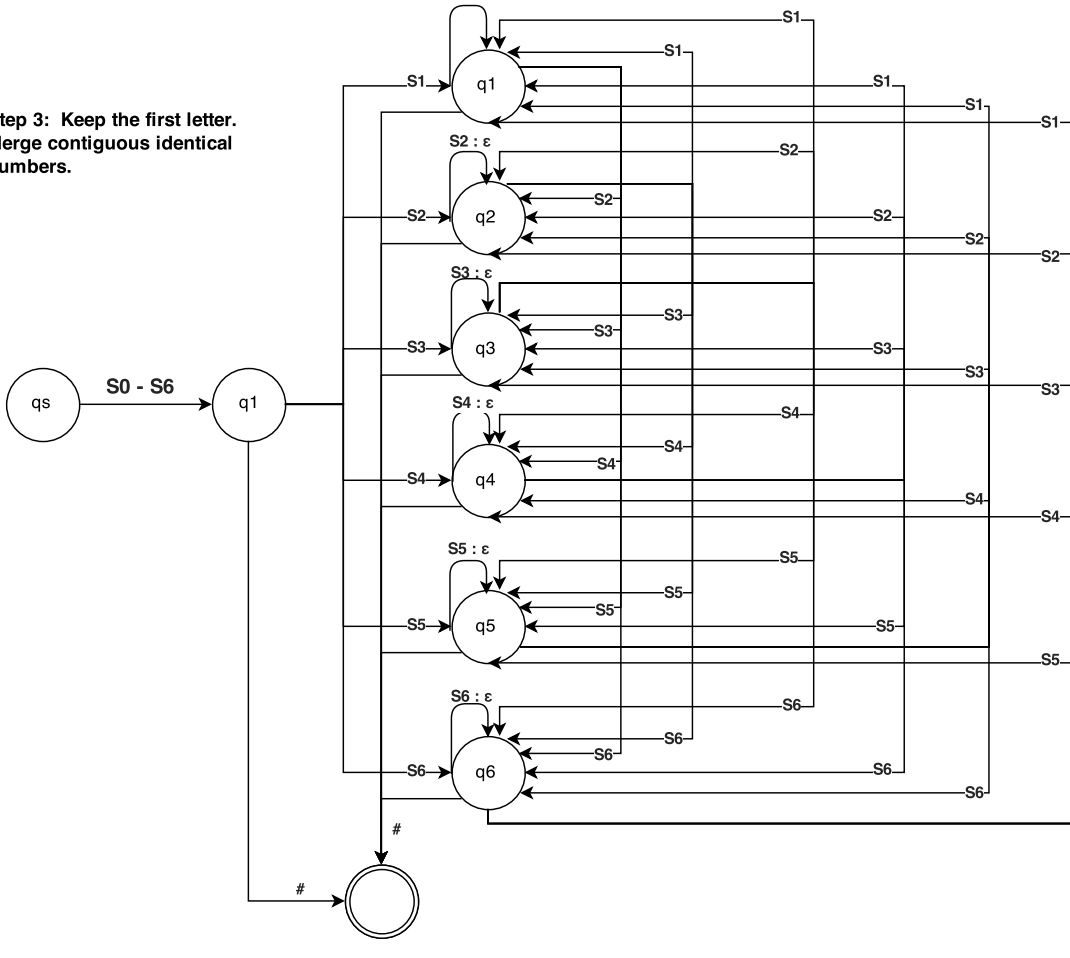
We can also generate 4 separate and independent FSTs for each step as described in the handout, and we can combine them together afterwards.



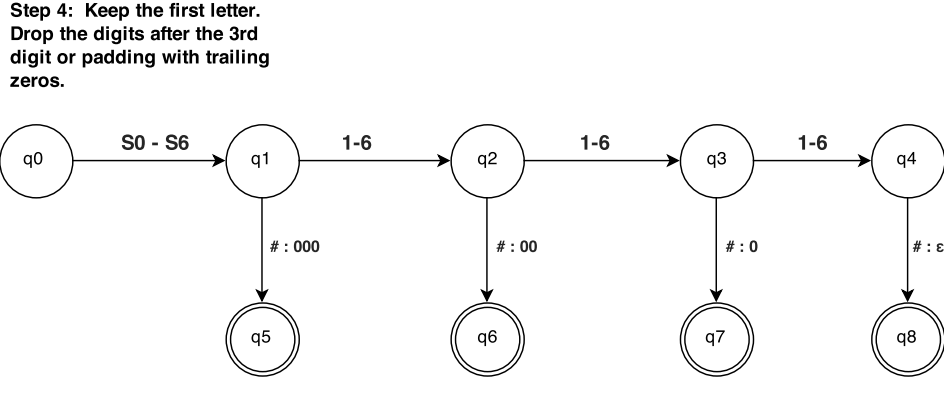
Step 1: Keep the first letter, and remove letters from set s0.



Step 2: Keep the first letter. Change the remaining letters to their corresponding numbers.



Step 3: Keep the first letter. Merge contiguous identical numbers.



Step 4: Keep the first letter. Drop the digits after the 3rd digit or padding with trailing zeros.

After we generate these four separate FSTs, we can combine them in series. Just like what we did to compose FSTs with Lexicon FST and orthographic rules in lecture.

