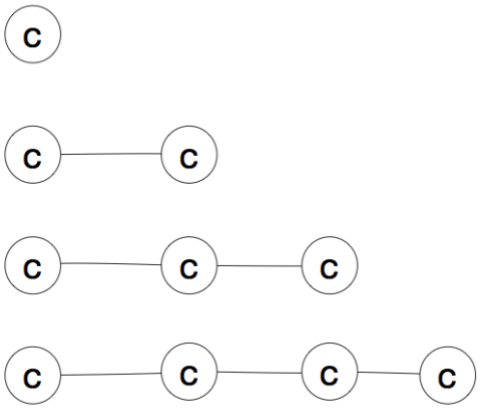
Question 1

(1)pattern g can be:



Question 2

(1)By applying the function

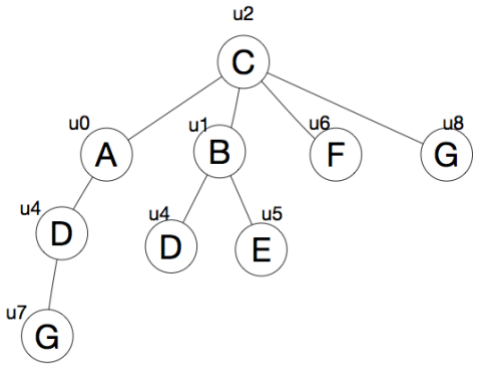
$$Rank(u) = \frac{freq(g, L(u))}{deg(u)}$$

We can calculate the rank from query q which are

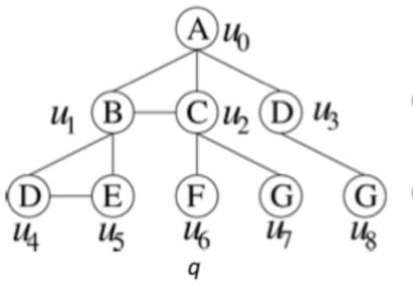
Rank(u0) =$\frac{1}{3}$ Rank(u1) = $\frac{2}{4}$ Rank(u2) = $\frac{1}{4}$ Rank(u3) = $\frac{2}{2}$ Rank(u4) = $\frac{2}{2}$ Rank(u5) = $\frac{1}{2}$

Rank(u6) = $\frac{2}{1}$ Rank(u7) = $\frac{3}{1}$ Rank(u8) = $\frac{3}{1}$

Hence, u2 can be selected as the root node



(2)



The core set: u_0, u_1, u_2 , u_4, u_5

The forest set: u_3

The leaf set: u_6, u_7, u_8

Question 3

From the example ,

$$w(v_0) = 1,\ w(v_2) = 0.2, \text{ and } w(v_3) = 0.2 * 0.1 = 0.02$$

we can know that the possibility is depending on the first relation , so choosing the largest possibility at first relation could be the largest influence spreads, So v3 can be the activated seed s, w(v3) = 1, w(v9) = 0.5, w(v2) = 0.4 and w(v7) = 0.3 which is largest possibility in the first relation in this graph G1.