Khrystian Clark

CS-225: Discrete Structures in CS

Homework 10

Exercise set 10.6: 14 &15

14.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Step | V(T) | E(T) | F | L(a) | L(b) | L(c) | L(d) | L(e) | L(f) | L(g) | L(z) |
| 0 | {a} |  | {a} | 0 |  | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ |
| 1 | {a} |  | {b,e} | 0 | **1** | ∞ | ∞ | 4 | ∞ | ∞ | ∞ |
| 2 | {a,b} | {{a,b}} | {b,c,f} | 0 | 1 | 2 | ∞ | 4 | 8 | ∞ | ∞ |
| 3 | {a,b,e} | {{a,e}, {a,b}} | {c,f} | 0 | 1 | 2 | ∞ | 4 | **5** | ∞ | ∞ |
| 4 | {a,b,c,e,f} | {{a,b}{b,c}{a,e}{e,f}} | {g,d} | 0 | 1 | 2 | 3 | 4 | 5 | **6** | ∞ |
| 5 | {a,b,c,d,e,f,g} | {{a.e}{e,f}{f,g}{g,z}{a,b}{b,c}{c,d}} | {z} | 0 | 1 | 2 | 3 | 4 | 5 | 6 | **7** |
| 6 | {a,b,c,d,e,f,g,,z} | {{a.e}{e,f}{f,g}{g,z}{a,b}{b,c}{c,d}{g,z}} |  |  |  |  |  |  |  |  |  |

The shortest path is {a,e,f,g,z}, which equals 7.

15.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Step | V(T) | E(T) | F | L(a) | L(b) | L(c) | L(d) | L(e) | L(g) | L(z) |
| 0 | {a} |  | {a} | 0 |  | ∞ | ∞ | ∞ | ∞ | ∞ |
| 1 | {a} |  | {b,e,g} | 0 | 3 | ∞ | ∞ | 3 | 4 | ∞ |
| 2 | {a,b,e,g} | {{a,b}{a,e}{a,g}} | {c,d,g,z} | 0 | 3 | 10 | 14 | 3 | 4 | **5** |
| 3 | {a,b,c,d,e,g,z} |  |  |  |  |  |  |  |  |  |

The shortest past is {a,g,z}, which is equal to 5.