

Lab6 Q2 & Lab7 Q1

YAO ZHAO

Lab6 Question 2

How to calculate the actual distance?

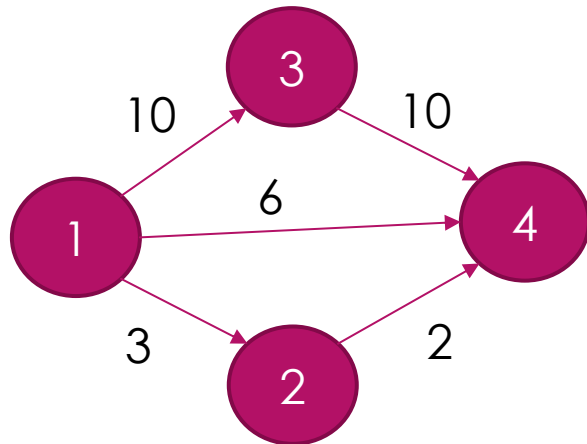
Vertex A to B

Assume you spent x seconds to reach A, and the weight between A and B is w

The time interval of B is (a, b)

$$\text{diff} = (x + w) \% (a + b)$$

If $\text{diff} < a$ actual distance += $a - \text{diff}$

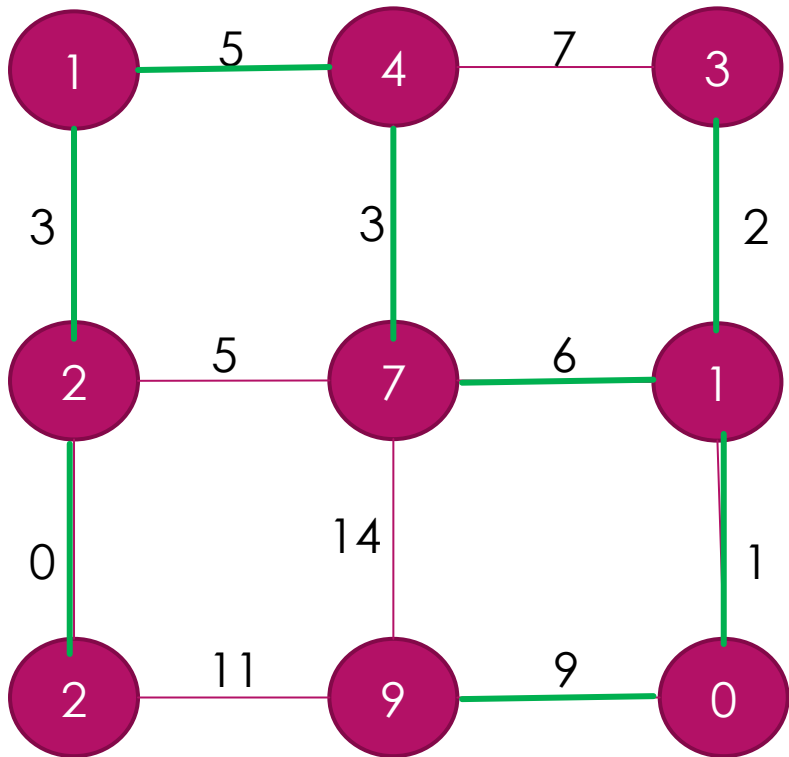


[0,2) bad
[2,3) good
[3,5) bad
[5,6) good

...

See:
Lab6_Q2.java

Lab7 Question 1



0 1 2 3 3 5 6 9 → 29

```
Prim(G, c) {  
    foreach (v ∈ V) a[v] ← ∞  
    Initialize an empty priority queue Q  
    foreach (v ∈ V) insert v onto Q  
    Initialize set of explored nodes S ← ∅  
  
    while (Q is not empty) {  
        u ← delete min element from Q  
        S ← S ∪ { u }  
        foreach (edge e = (u, v) incident to u)  
            if ((v ∉ S) and (ce < a[v]))  
                decrease priority a[v] to ce  
    }  
}
```

```

Kruskal(G, c) {
  Sort edges weights so that  $c_1 \leq c_2 \leq \dots \leq c_m$ .
   $T \leftarrow \phi$ 

  foreach ( $u \in V$ ) make a set containing singleton u

  for i = 1 to m      are u and v in different connected components?
    ( $u, v$ ) =  $e_i$       ↙
    if (u and v are in different sets) {
       $T \leftarrow T \cup \{e_i\}$ 
      merge the sets containing u and v
    }
    ↘ merge two components
  return T
}

```

Lab7 Question 2

	+0	+1	+2
1	1	2	3
2	1	2	
3	1		

How to know all the problems that Yee solved?

The result of [1,1] [2,2], [3,3] = 3

The result of [1,1] [1,2], [1,3] = 6

The result of [1,1] [2,2], [2,3] = 4

The result of [1,1] [1,2], [3,3] = 4

The result of [1,1] [1,3], [3,3] = 5

.....

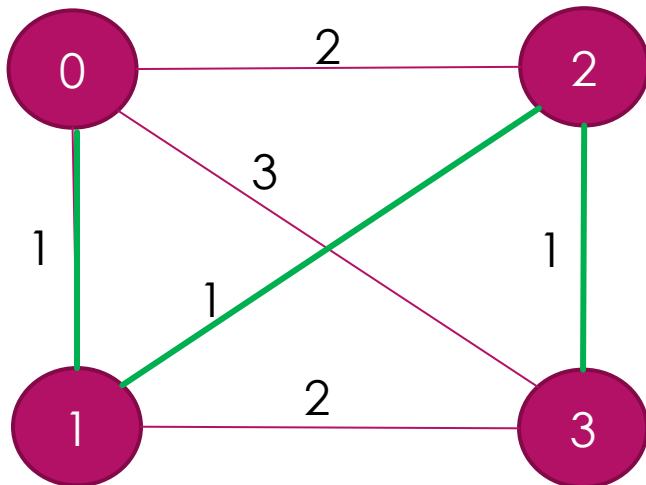
Least Time: 3

Lab7 Question 2 Hint

	+0	+1	+2
1	1	2	3
2	1	2	
3	1		



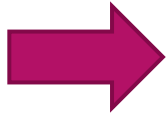
	0	1	2	3
0	-	1	2	3
1	1	-	1	2
2	2	1	-	3
3	3	2	3	-



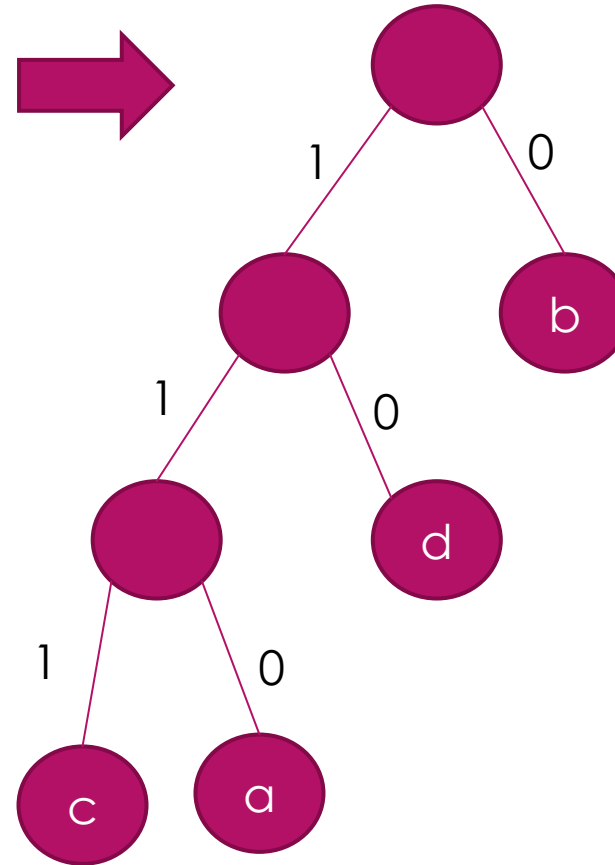
3

Lab8 Question 1

abbbbcdd



char	count
a	1
b	3
c	1
d	2



Lab8 Question 2

4

1 1 2

2 2 2

1 2 3

1 3 1

