

VERİ YAPILARILARI VE ALGORİTMALAR

Graph  
Kruskal Algorithm

# Kruskal Algoritması

- Prim's algoritması bir tekil düğümden başlar ve diğer düğümlere erişir.
- Prim's düğüm bazlı düşünür.
- Bunun yerine kenar bazlı düşünülse ne olur?
- Yani en hafif, bir başka ifadeyle en az maliyete sahip kenar ile başlanabilir mi?
- Bu yaklaşım Kruskal algoritmasıdır.

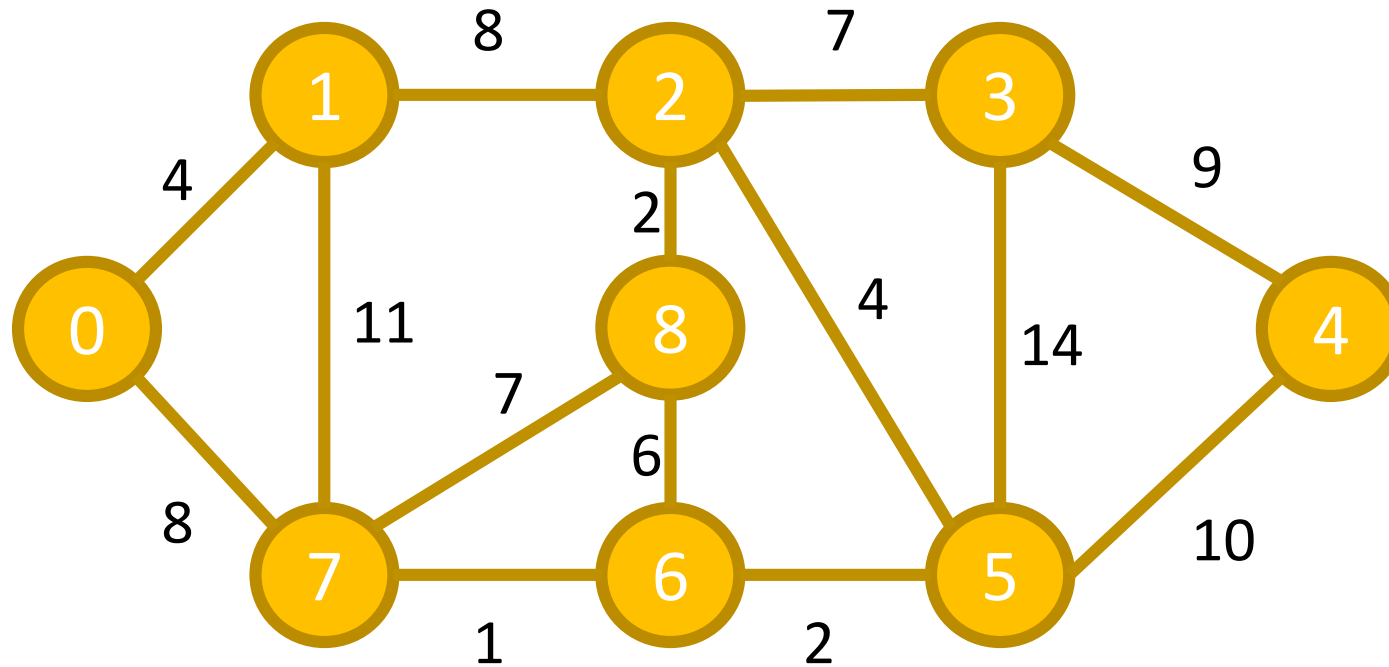
# Kruskal Algoritması

1.  $A \leftarrow \emptyset$
2. **for** each vertex  $v \in V$
3.     **do** MAKE-SET( $v$ )
4. sort  $E$  into non-decreasing order by  $w$
5. **for** each  $(u, v)$  taken from the sorted list
6.     **do if** FIND-SET( $u$ )  $\neq$  FIND-SET( $v$ )
7.         **then**  $A \leftarrow A \cup \{(u, v)\}$
8.         UNION( $u, v$ )
9. **return**  $A$

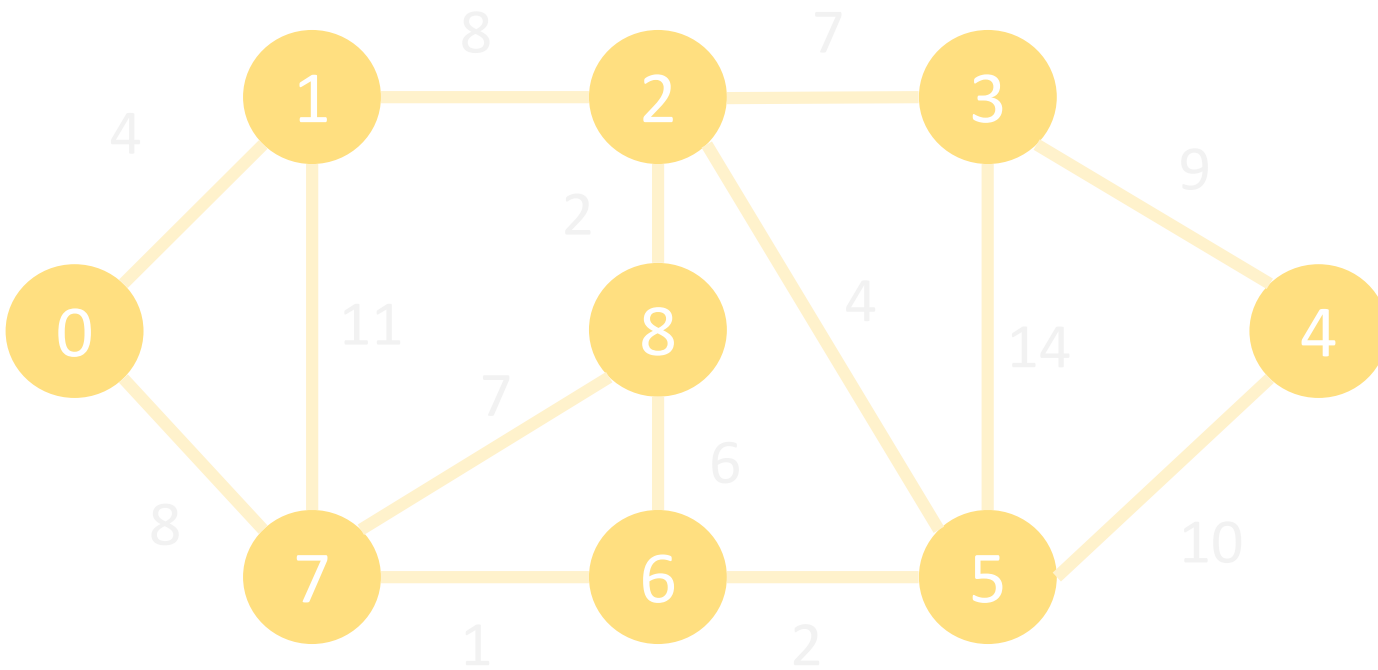
# Kruskal Algoritması

- Bir ağaç: yönsüz, bağlantılı ve çevrimsiz çizgedir.
- Bir ağaç ile Kruskal algoritması inşa edilirken; algoritma bitmeye kadar ilgili yapı ağaç değil; orman (forest) olarak tanımlanabilir.
- Orman (forest) herhangi bir yönsüz ve çevrimi olmayan çizgedir.

# Kruskal Algoritması

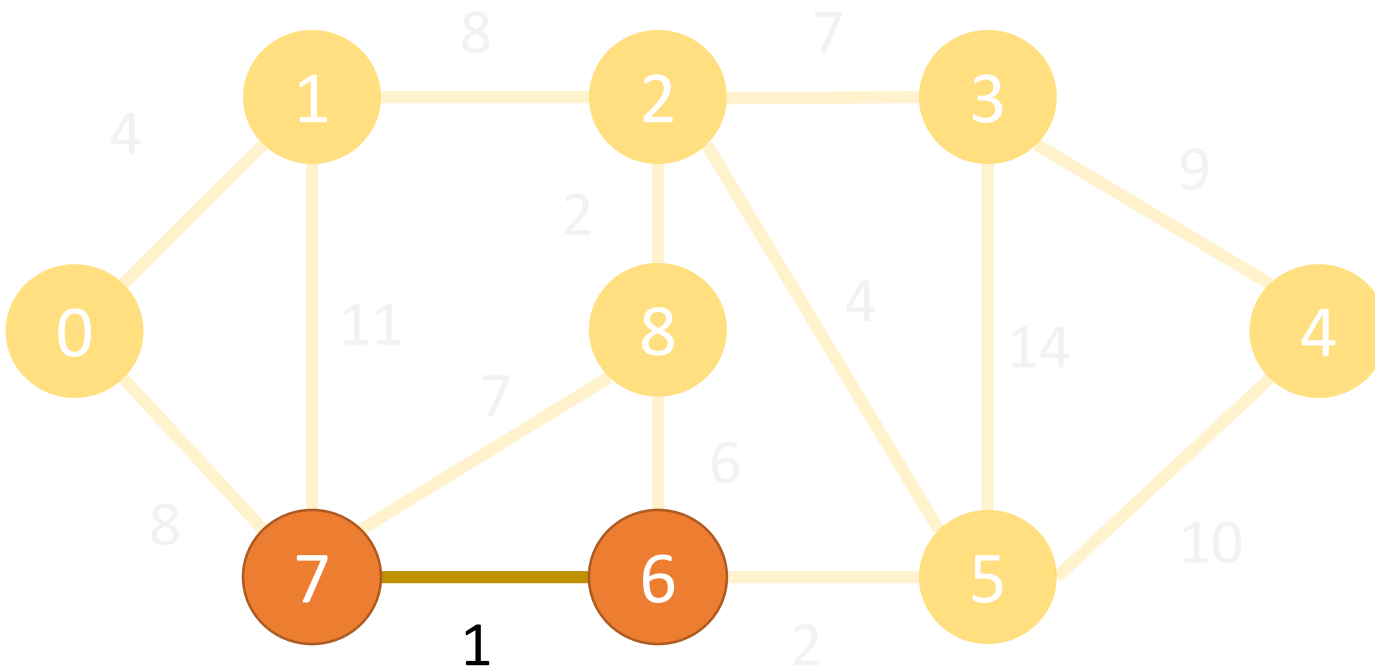


# Kruskal Algoritması



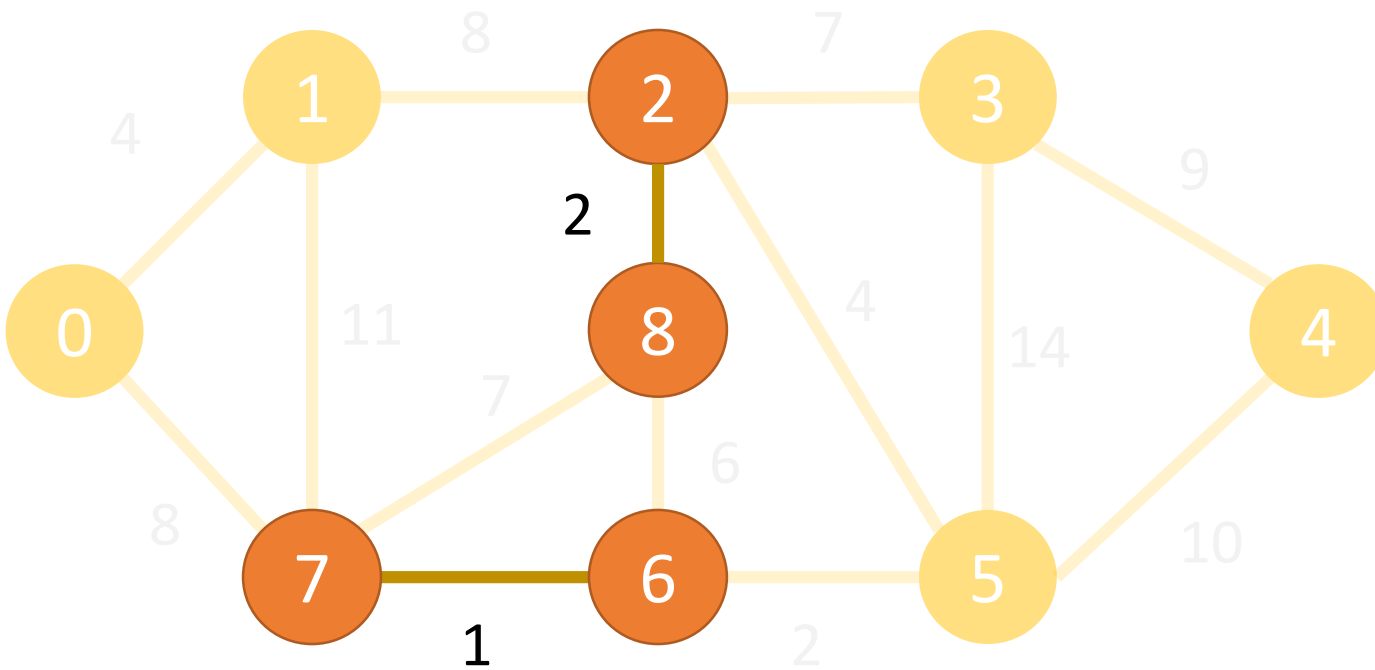
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8	1	2
9	3	4
10	5	4
11	1	7
14	3	5

# Kruskal Algoritması



Weight	Src	Dest
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2	8	2
2	6	5
4	0	1
4	2	5
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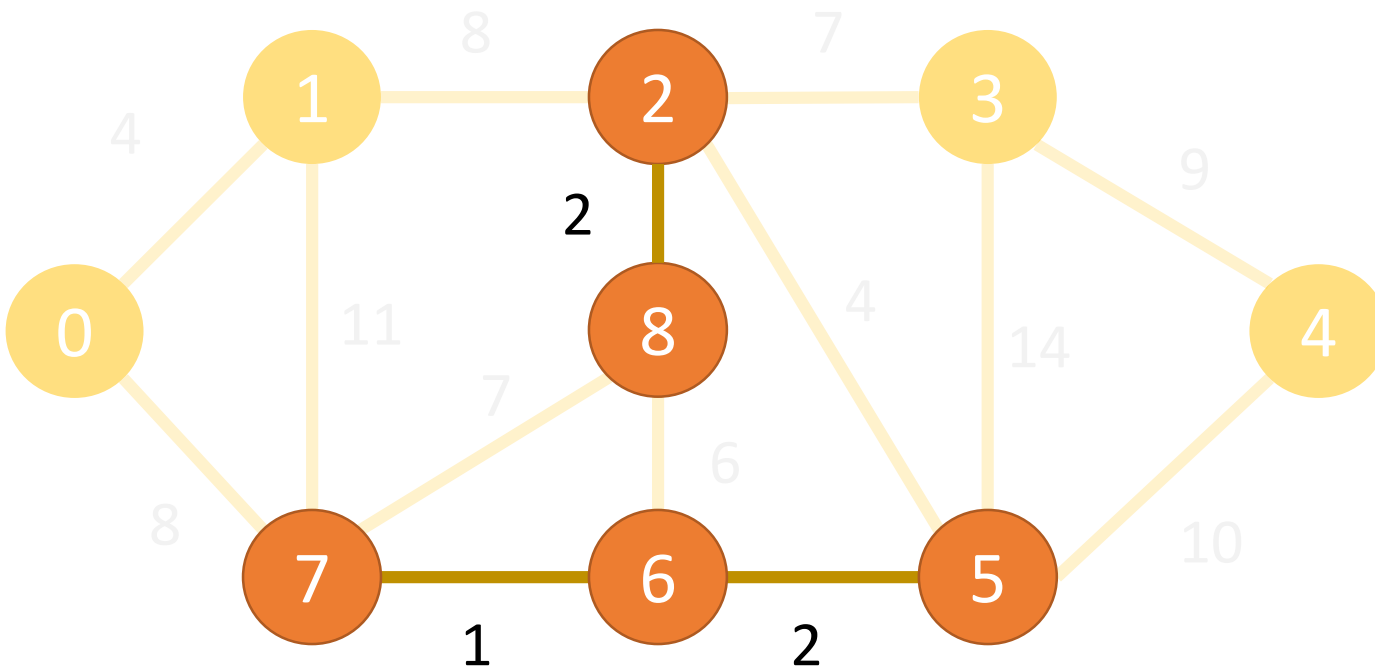
# Kruskal Algoritması



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10	5	4
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14	3	5

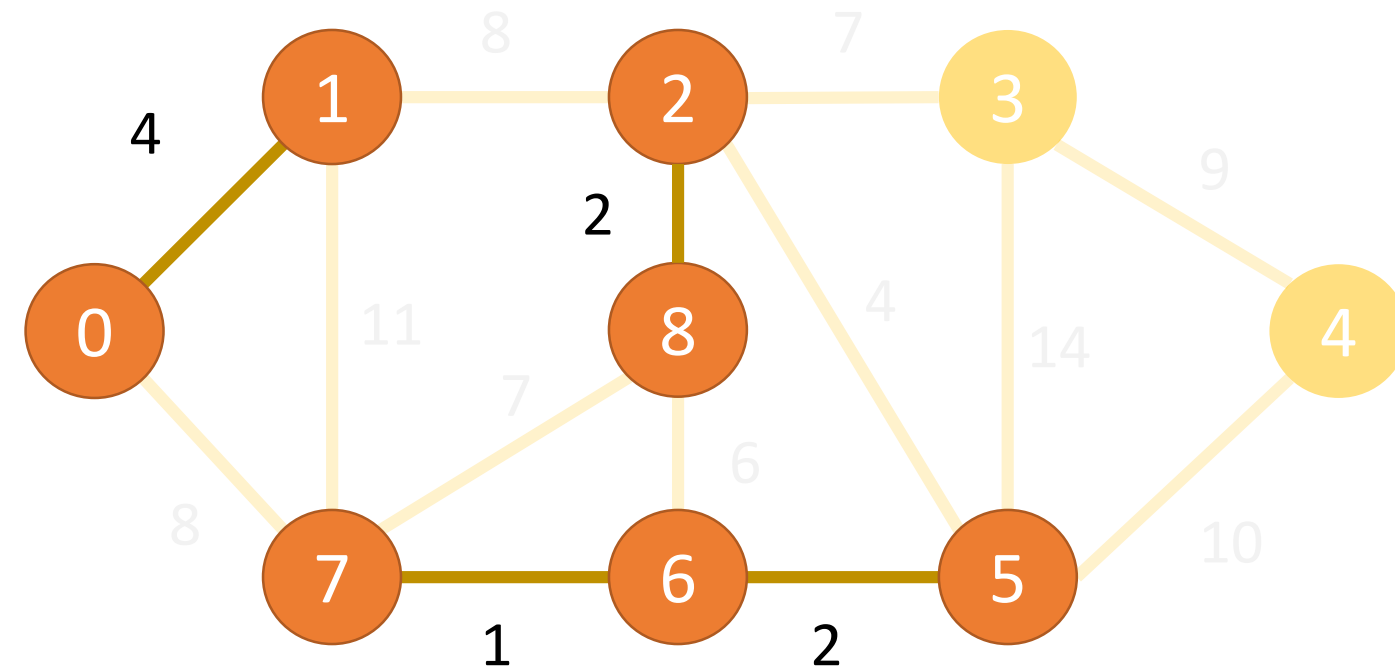


# Kruskal Algoritması



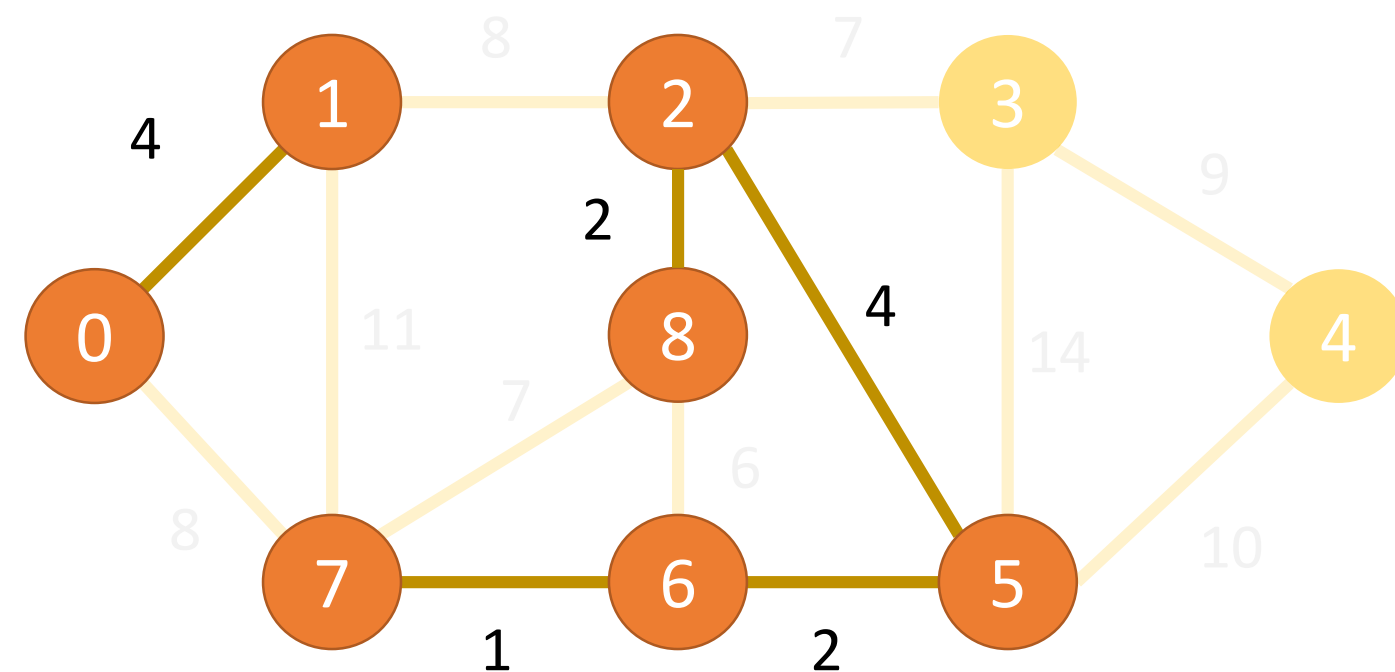
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14	3	5

# Kruskal Algoritması



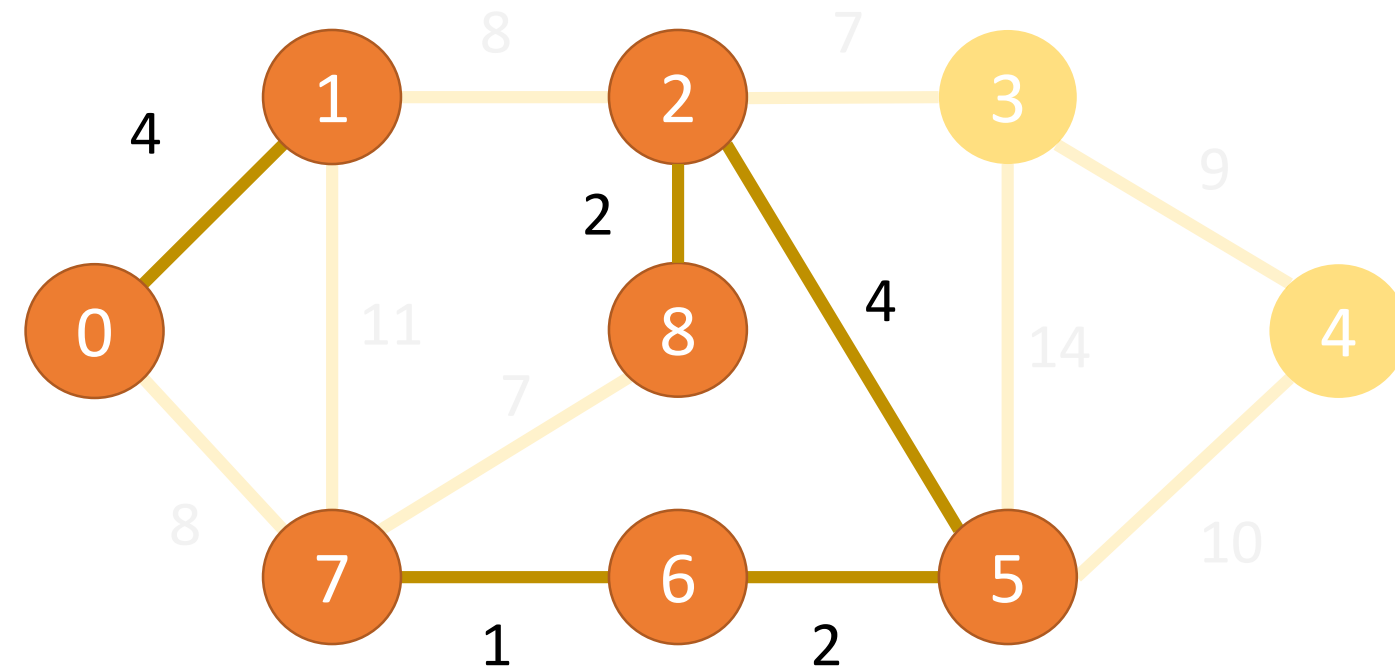
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14	3	5

# Kruskal Algoritması



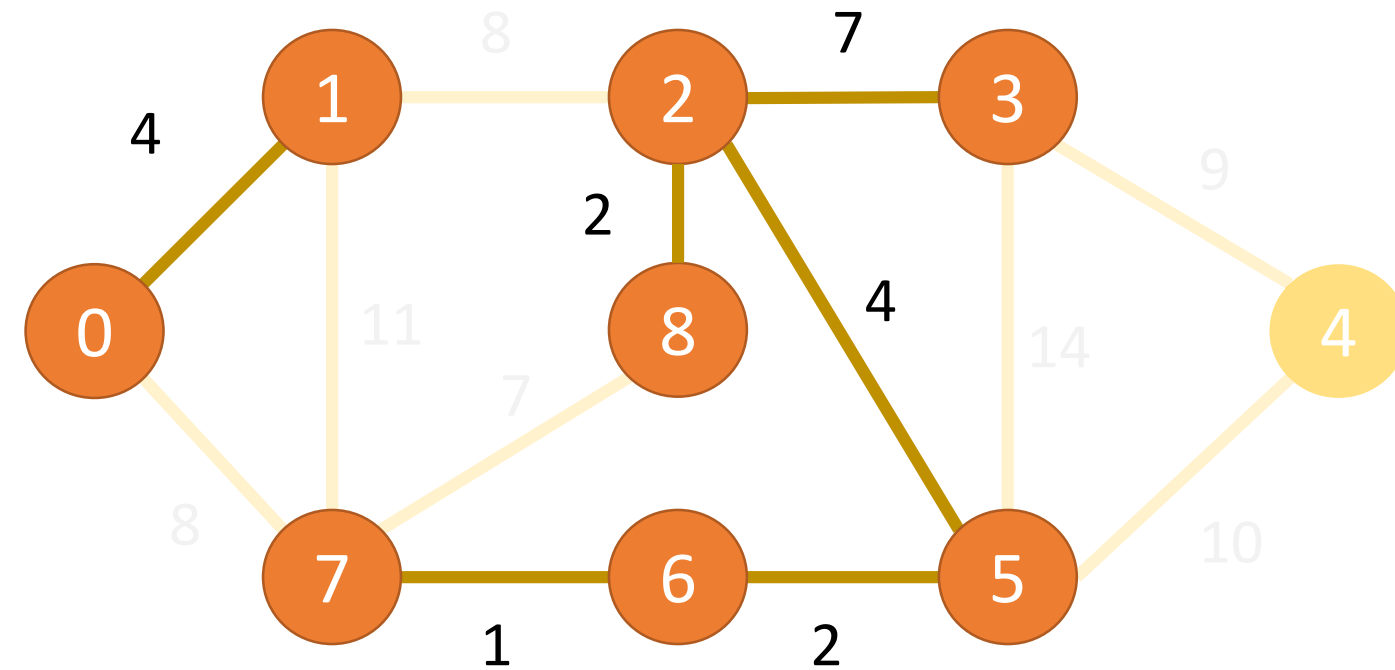
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# Kruskal Algoritması



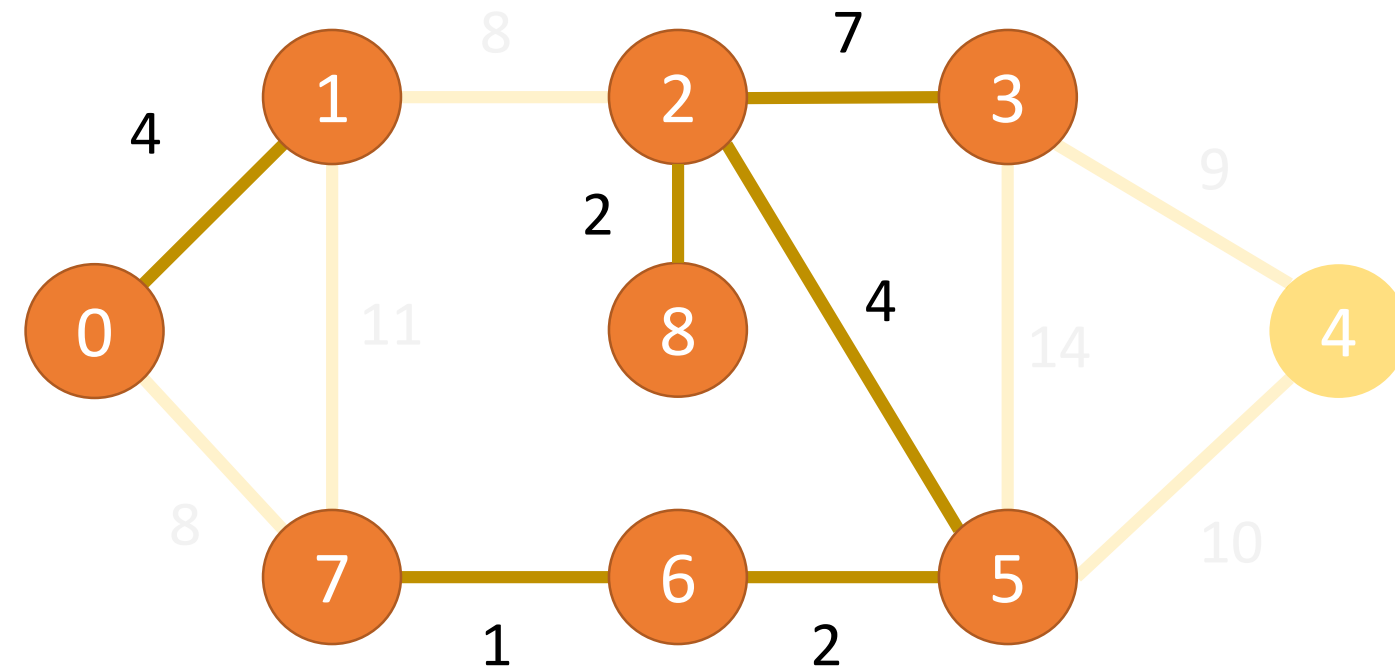
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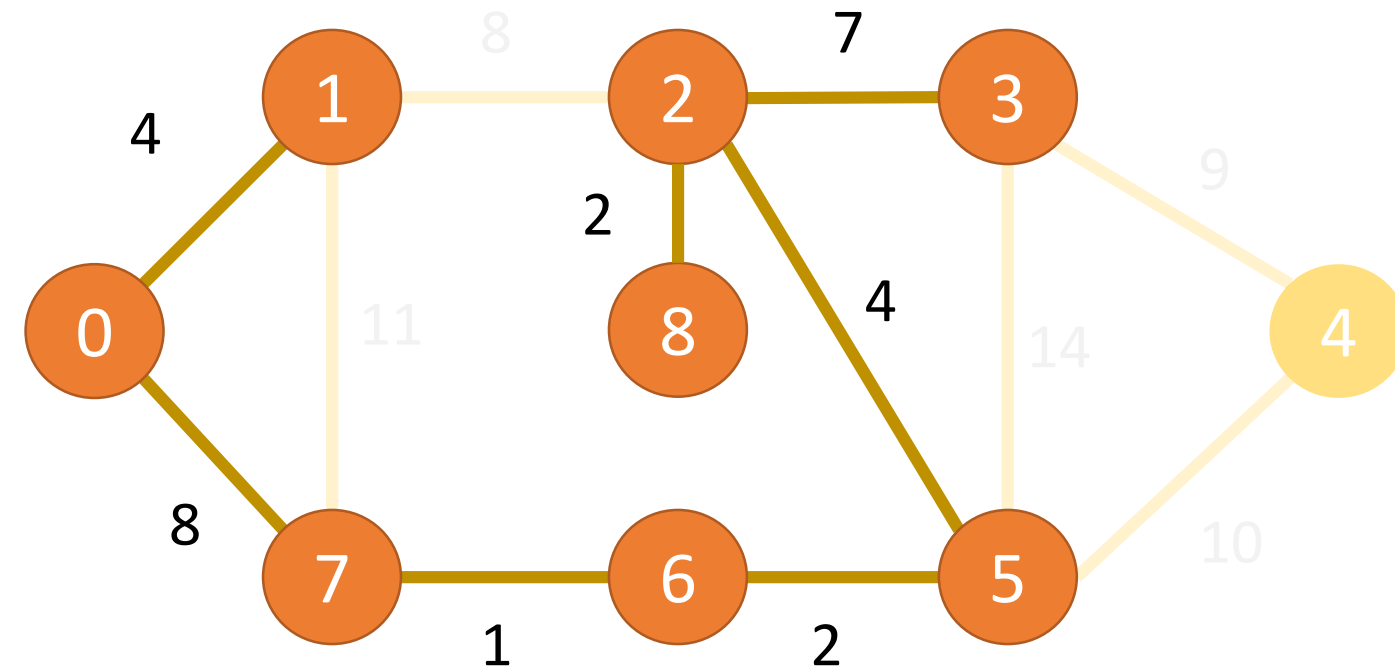
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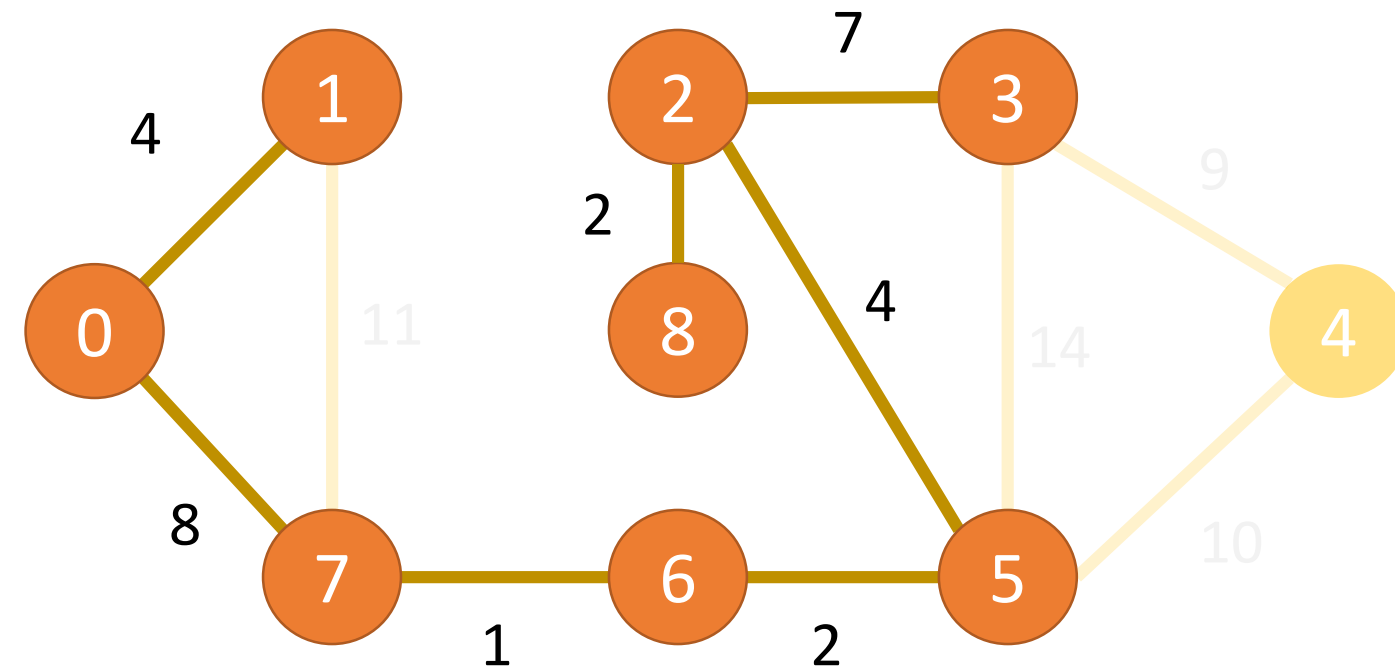
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8	0	7
8	1	2
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Weight	Src	Dest
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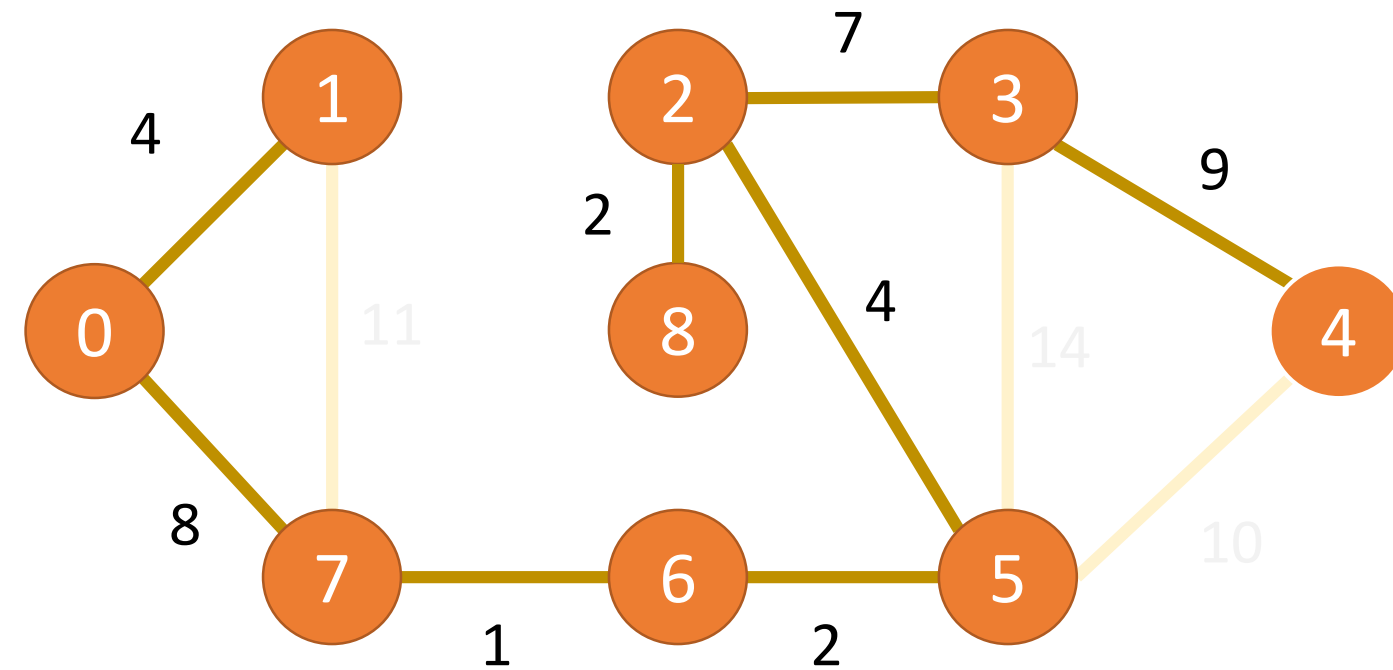
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Weight	Src	Dest
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2	6	5
4	0	1
4	2	5
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7	7	8
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8	1	2
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10	5	4
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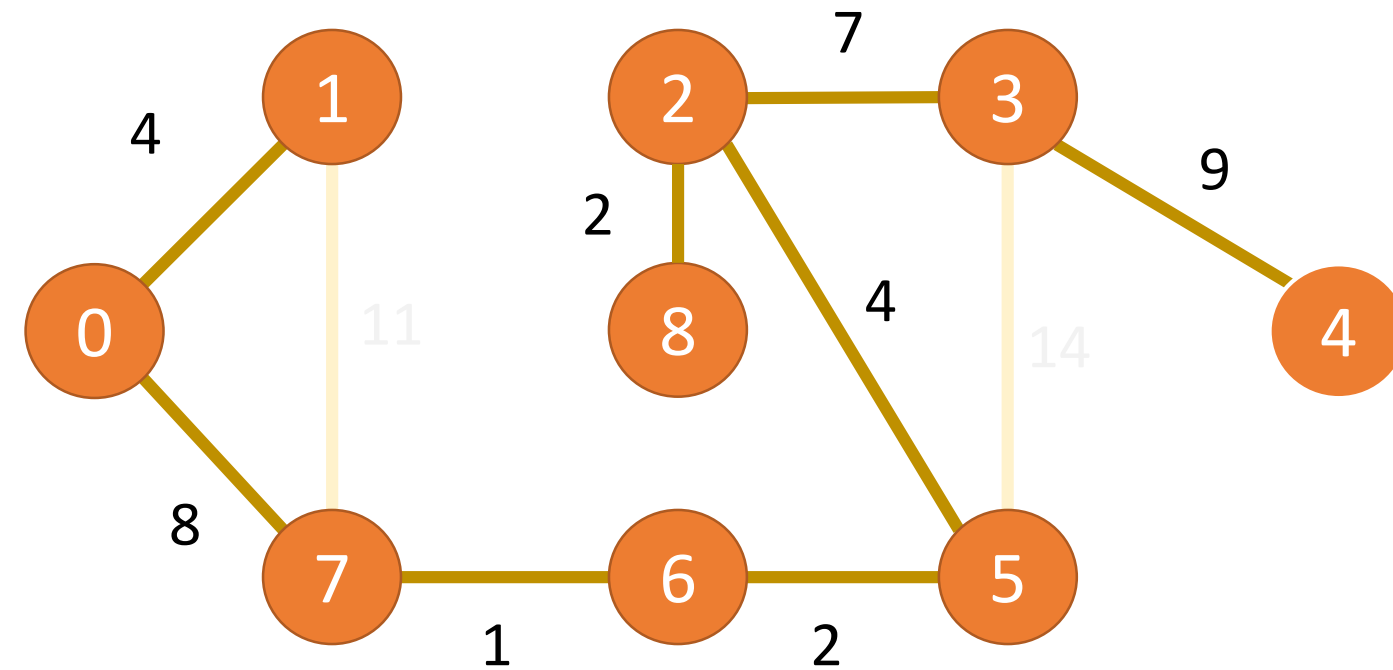


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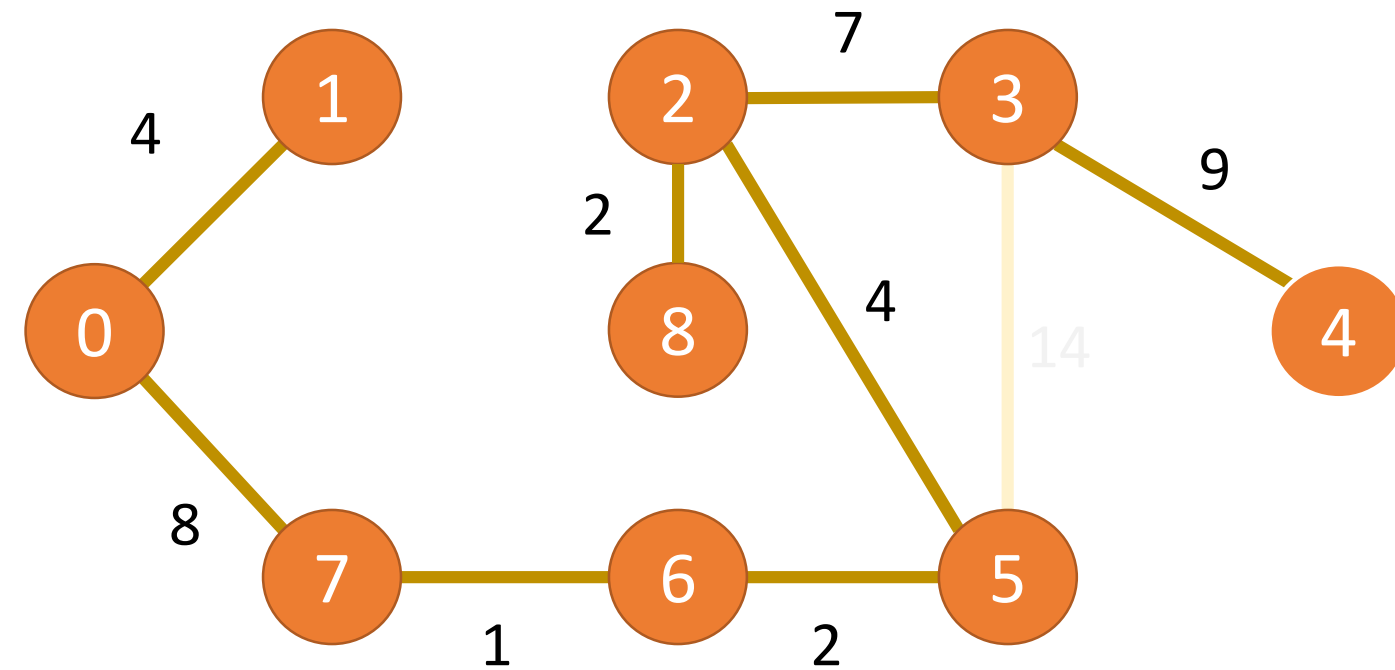
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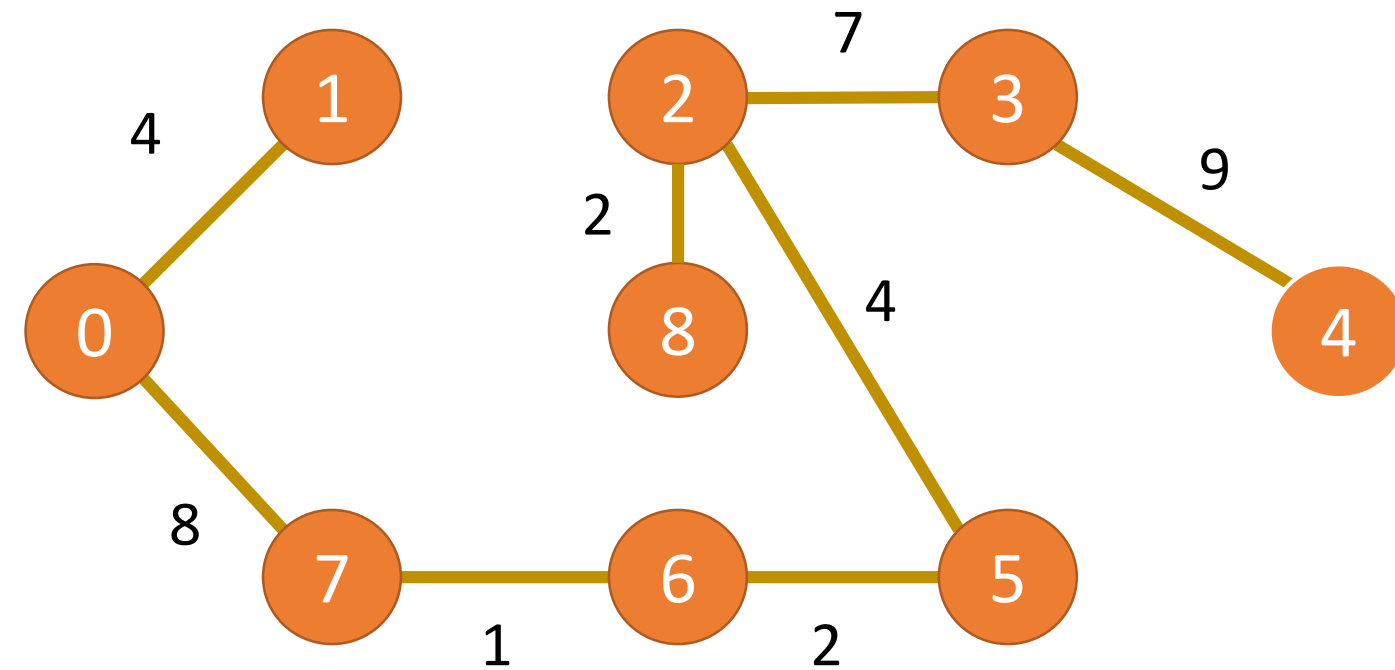
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6	8	6
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8	1	2
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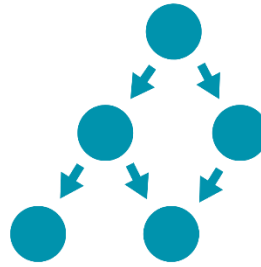


Weight	Src	Dest
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2	6	5
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10	5	4
11	1	7
14	3	5



Veri Yapıları ve Algoritmalar

**ZAFER CÖMERT**

Öğretim Üyesi