# Lecture 9.2: Prim's Algorithm

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MST-Prim(G, w, r)
    Q = V[G];
    for each u ∈ Q
        key[u] = ∞;
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    p[r] = NULL;
    while (Q not empty)
        u = ExtractMin(Q);
        for each v ∈ Adj[u]
            if (v ∈ Q and w(u,v) < key[v])
                p[v] = u;
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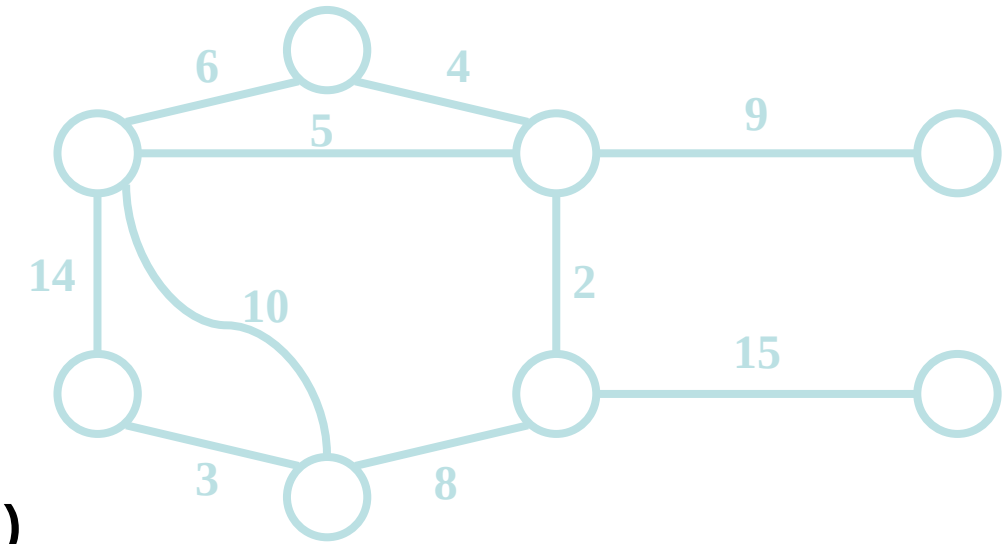


*Run on example graph*

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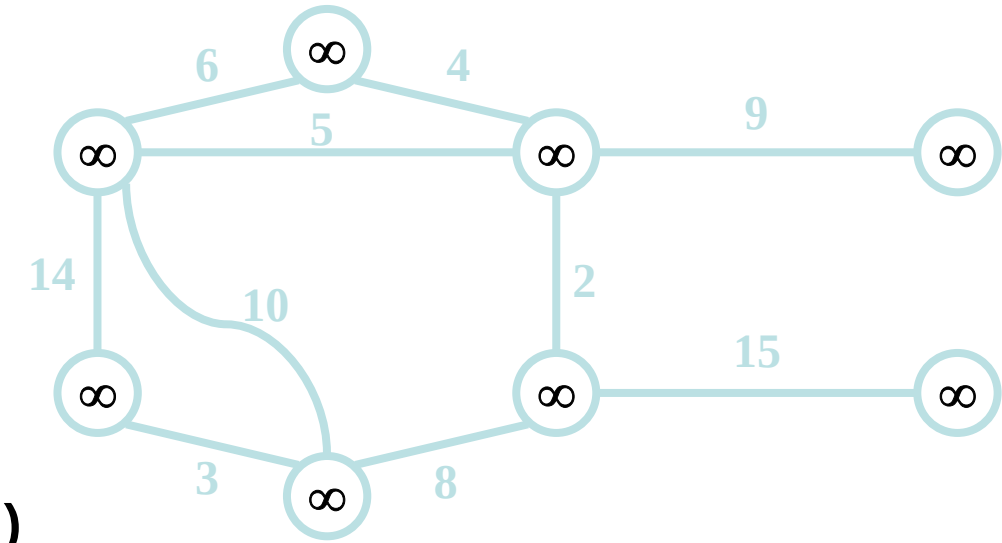


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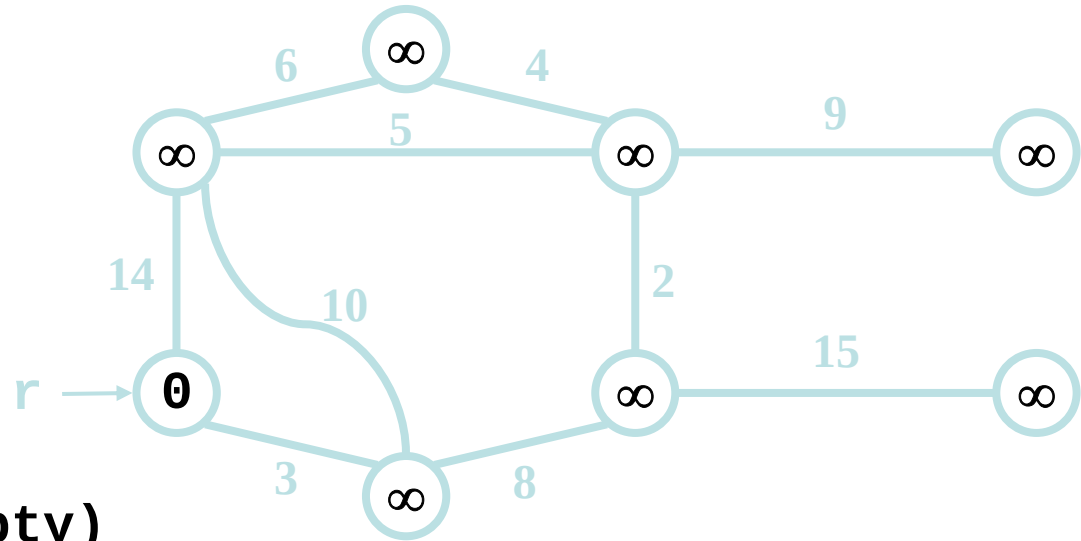


*Pick a start vertex r*

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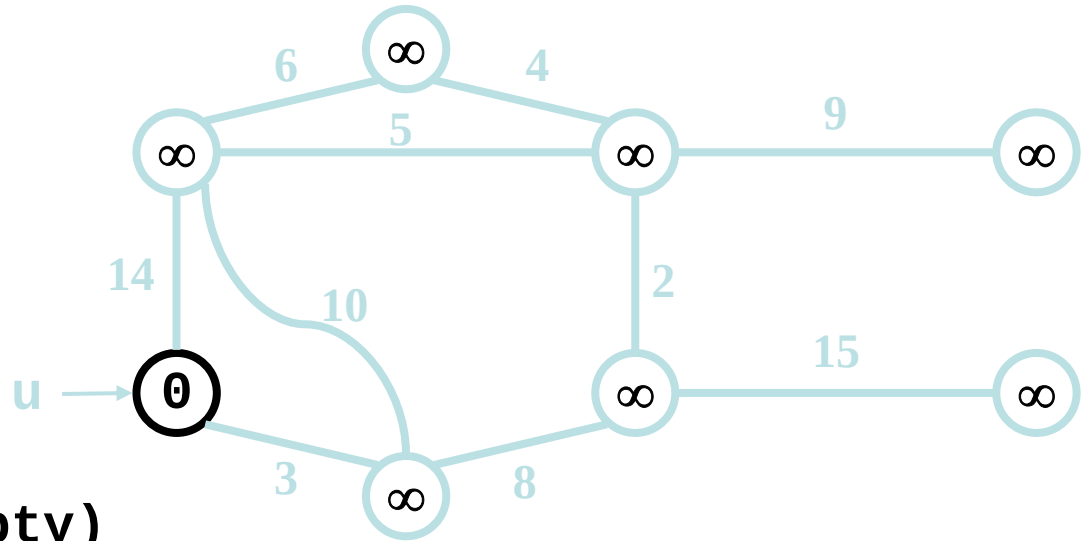


*Black vertices have been removed from Q*

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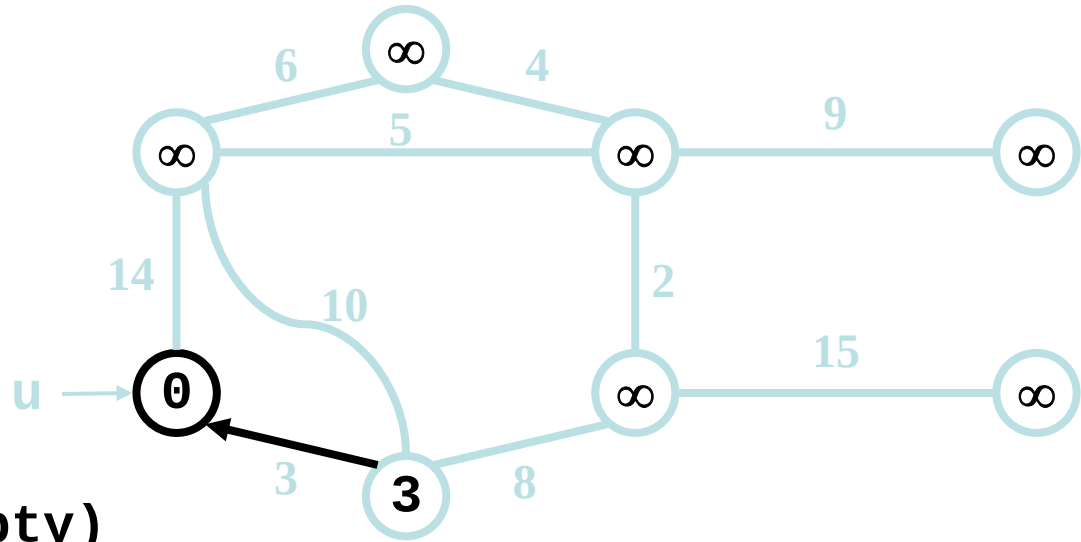


*Black arrows indicate parent pointers*

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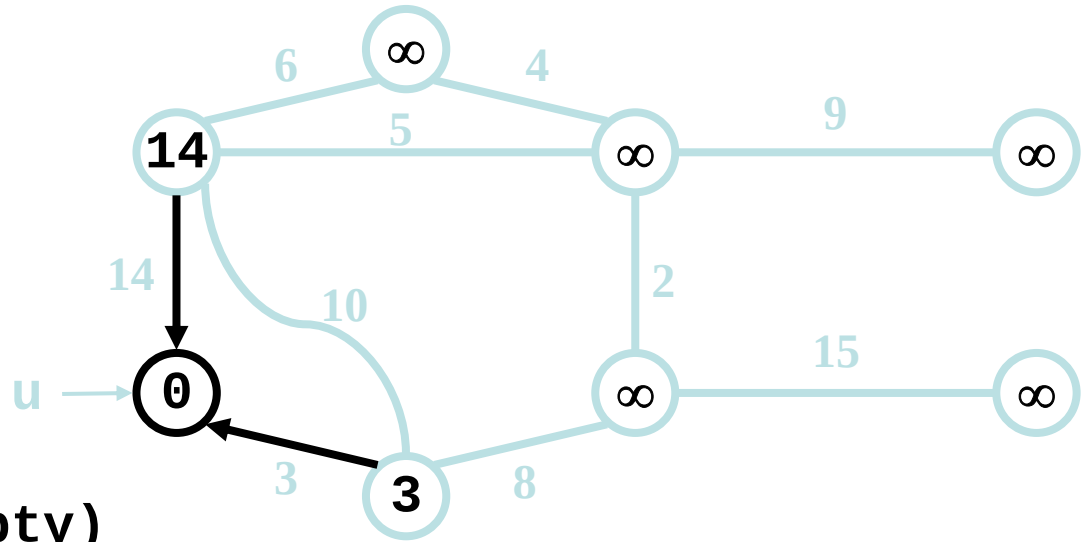

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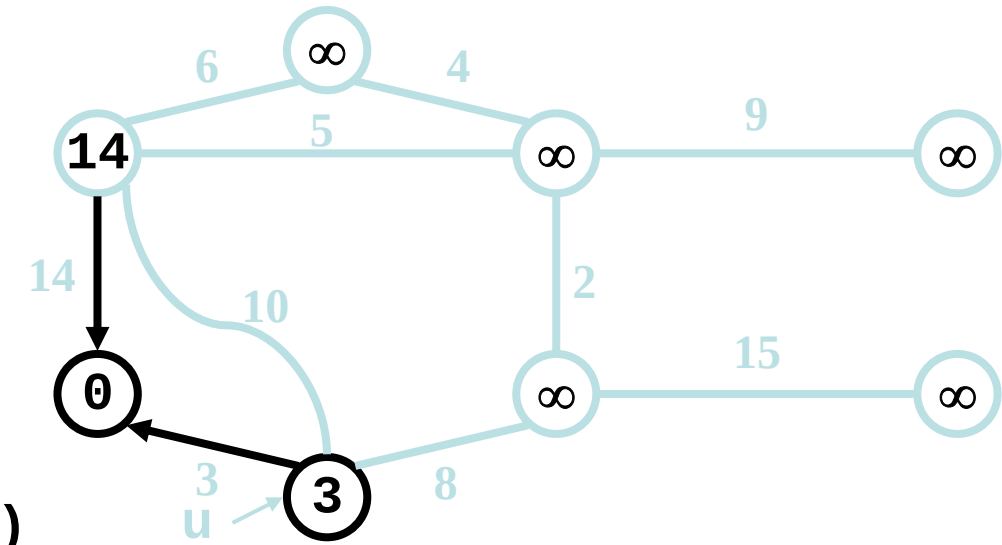

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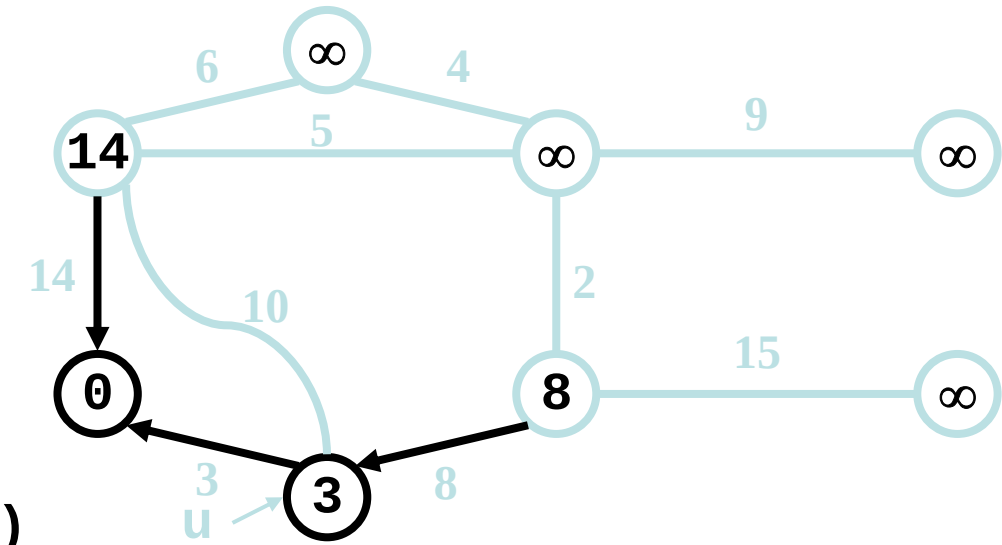

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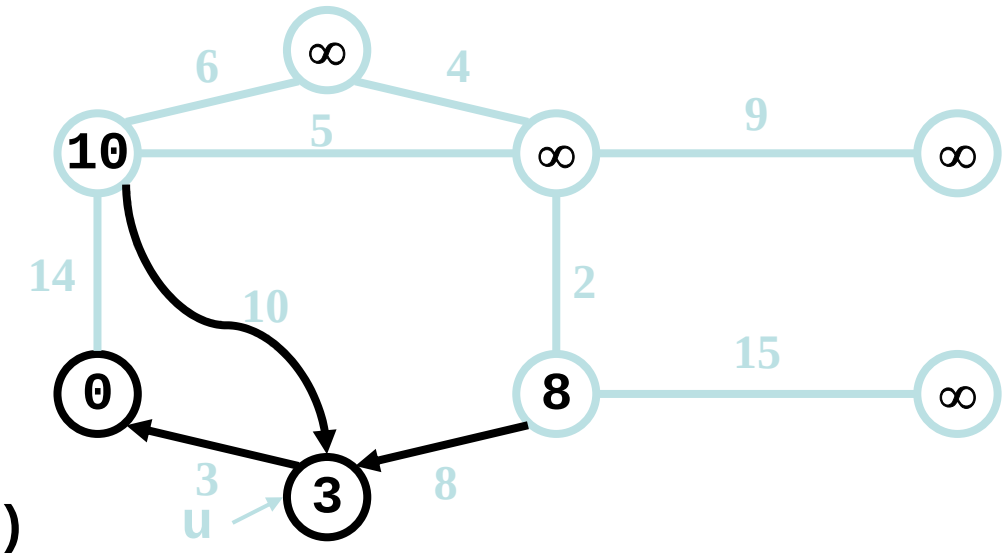

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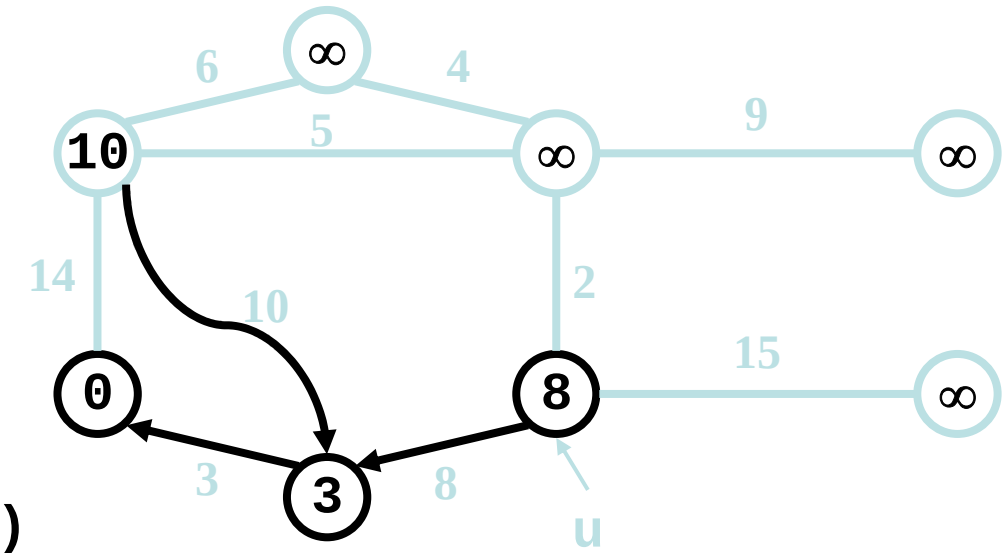

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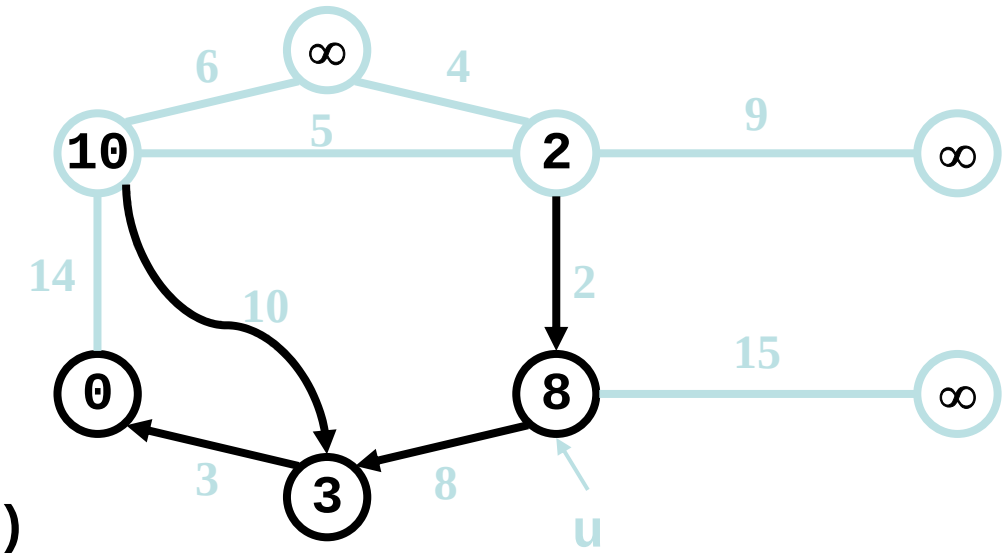

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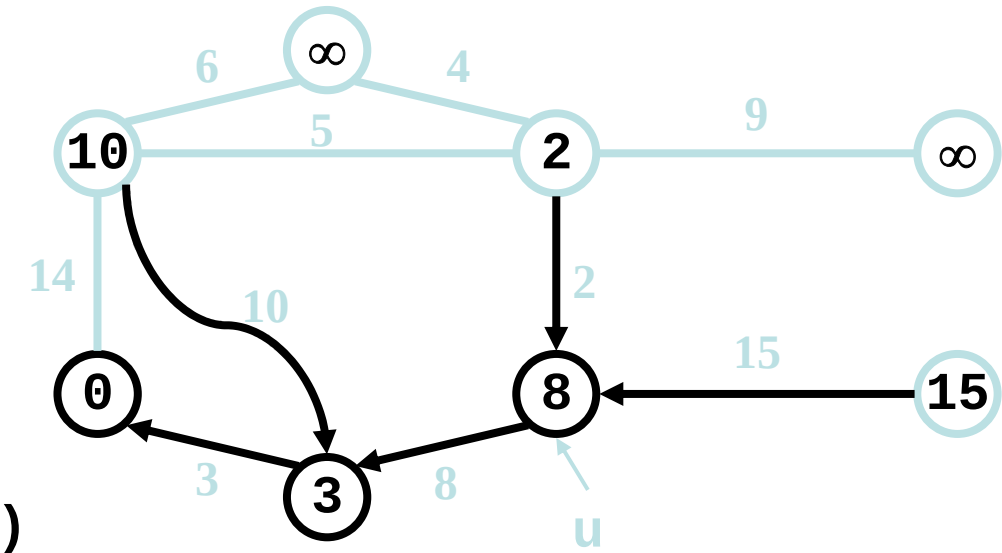

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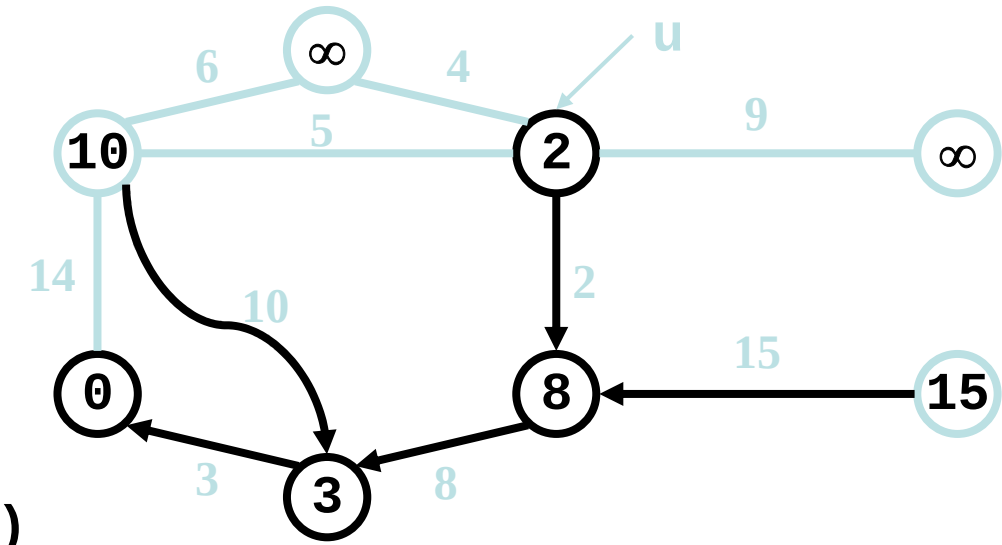

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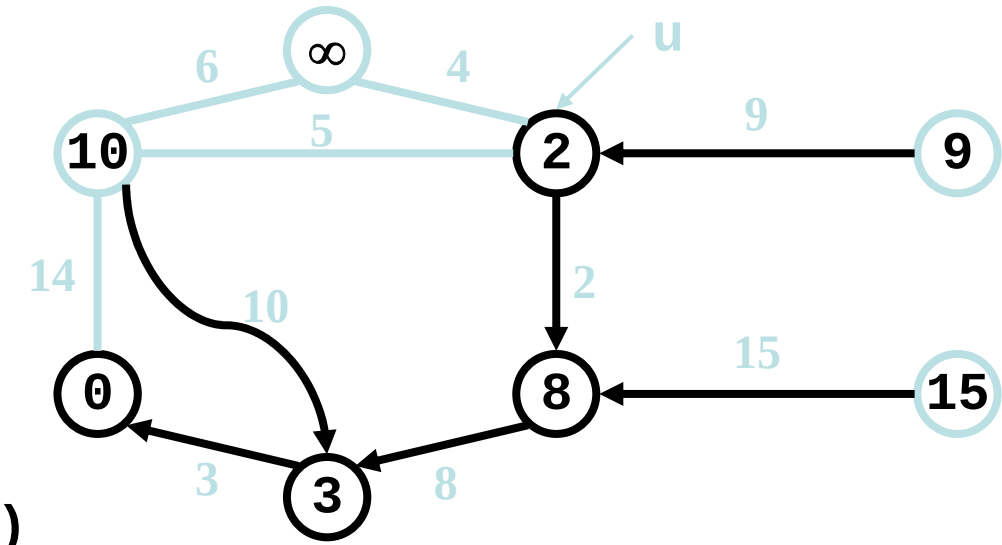

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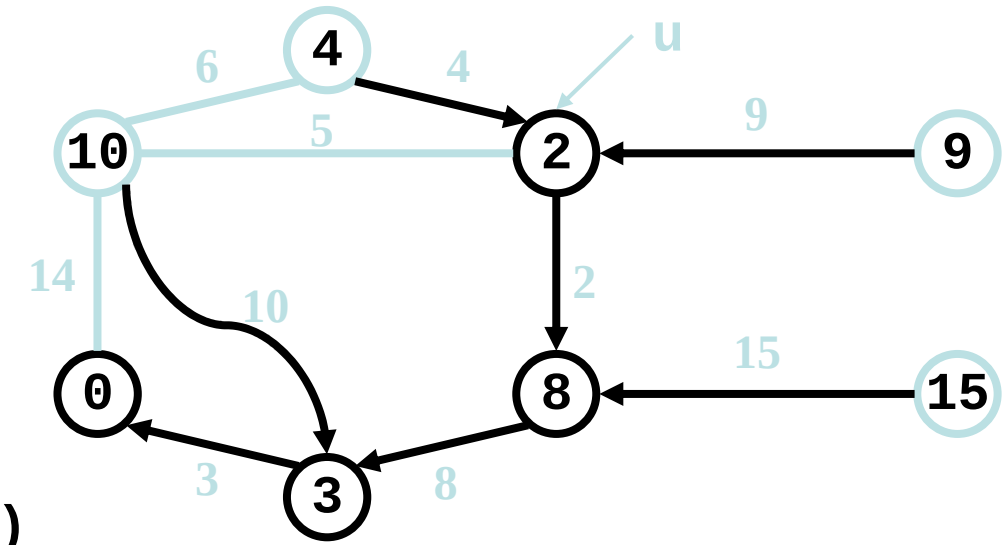

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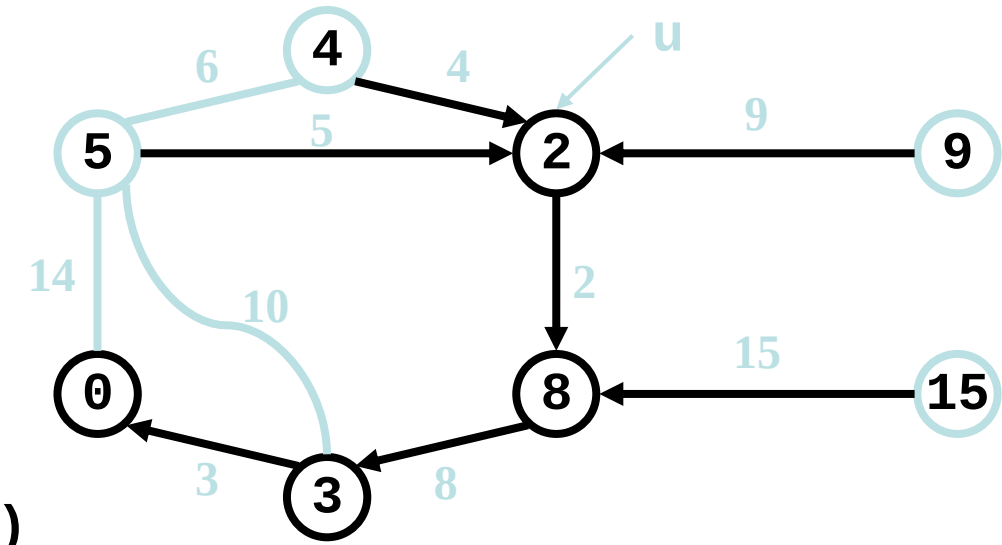

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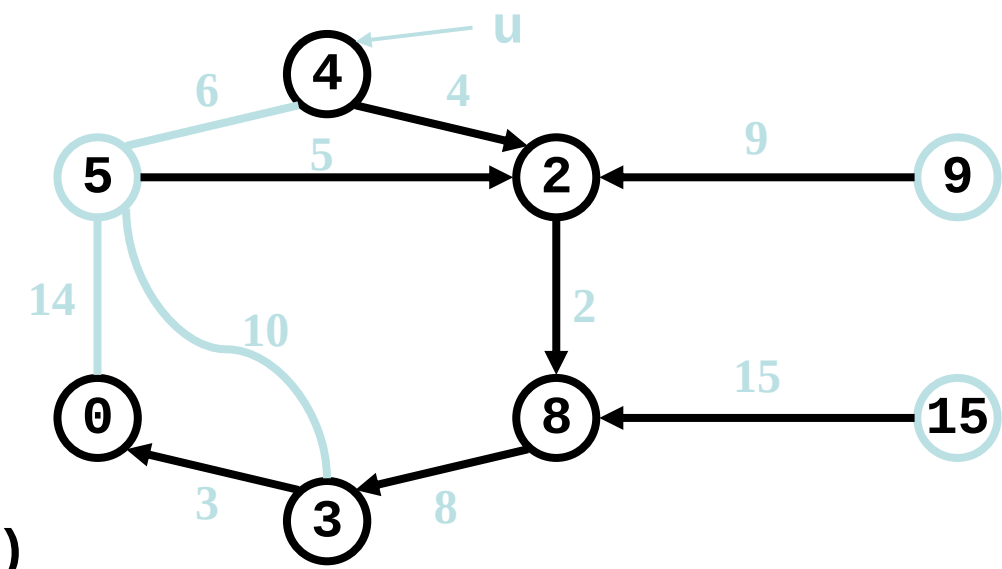

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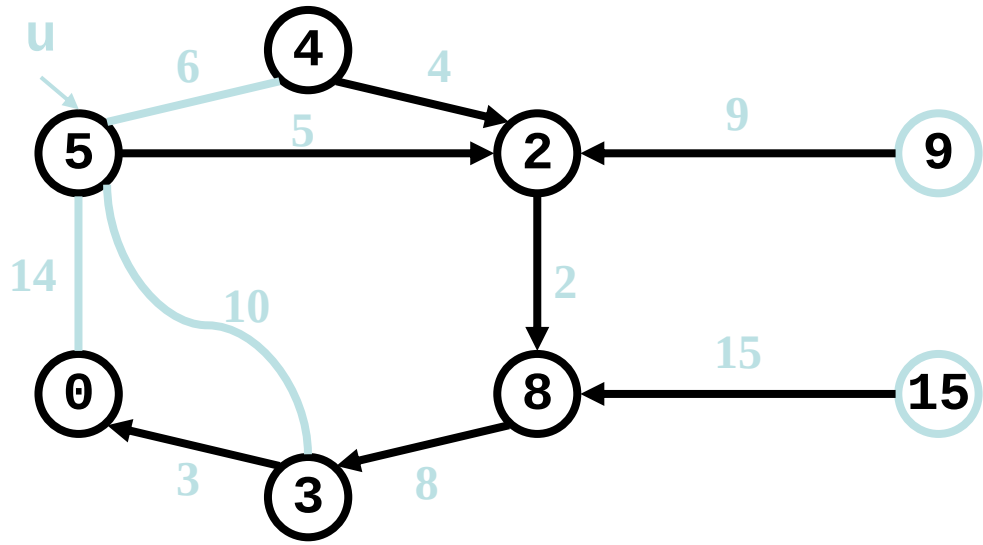

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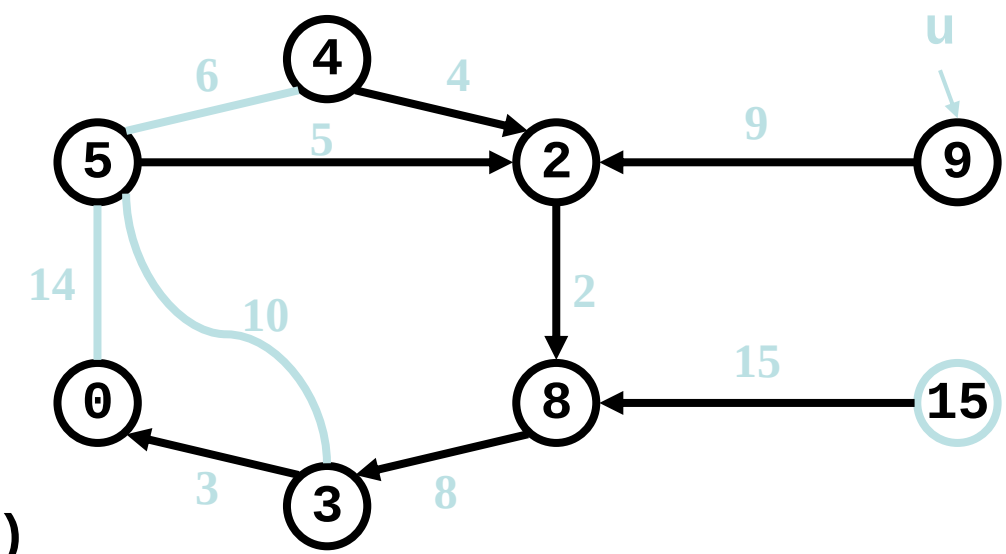

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