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## Lab 8 – C++ Sort & Graph

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### Problem 1 \*

Write a program implementing the quick sort algorithm (the pivot is the leftmost element).

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### Problem 2\*

Write a program implementing the depth-first traversal in one graph **using stack**.

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### Problem 3

In a weakly connected graph, it may not be possible to start at one vertex and reach another. Write a program that given the graph, a source vertex, and a destination vertex determines whether there is at least one path from the source to the destination.

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### Problem 4 \*

Write a program finding cycles in one directed graph.

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### Problem 5

An Eulerian cycle is a path in a graph which visits every edge exactly once so that it starts and ends on the same vertex (one any vertex can be visited many times). Write a program checking whether one graph contains the Eulerian cycle. Reference [https://en.wikipedia.org/wiki/Eulerian\\_path](https://en.wikipedia.org/wiki/Eulerian_path) in more detail.

Write a program finding cycles in one directed graph.