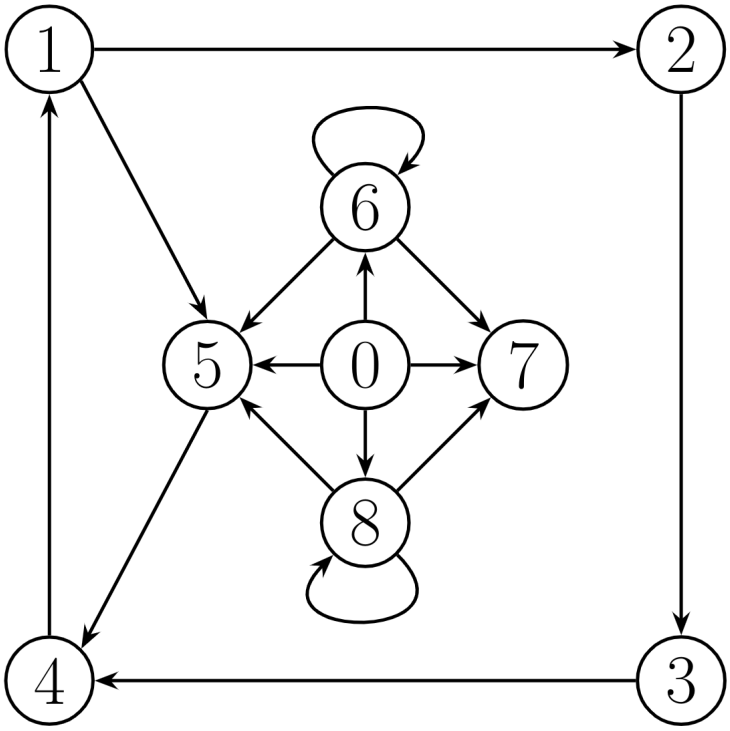
# Graph, List and Matrix

This assignment **closed** January 12, 2025 at 23:15.

In this assignment, we use different representation techniques for graphs.

## Tasks

Consider the following graph - **this following particular** graph will be referenced as this graph:




1. What is a graph?
2. What is a *directed* and *undirected* graph? What is this graph?
3. How many vertices does this graph have?
4. How many edges does this graph have?
5. List all *sources*! A source is a vertex that has only outgoing edges.
6. List all *sinks*! A sink is a vertex that has only ingoing edges.
7. A *cycle* in a directed graph is a path through this graph, where the start node and the end node are the same. The count of visited nodes is the *length* of this cycle. How many cycles of length $1, 2, 3$ and $4$ are in this graph? Provide them.
8. What is the corresponding edge list for this graph?
9. What is the corresponding node list for this graph?
10. What is the corresponding adjacency matrix for this graph?

## Template files

Introduction to Computer Science for Engineers

graph.md

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