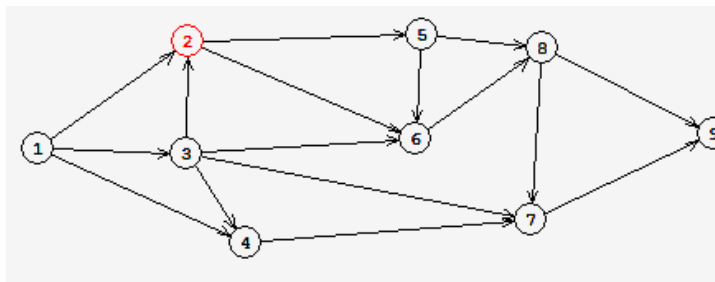


Exercise1

Let $G=(V,E)$ be the following graph:



- Does G an Eulerian graph?
- Does G a Hamiltonian Graph?
- Represent G using adjacency matrix
- Represent G using incidence matrix
- Calculate M^3
- What does mean?

Exercise2

Let the following adjacency matrix M :

Answer the following questions:

- Give the loop vertex if it exists?
- Give the source and the sink vertex if exists?
- Calculate the degree of each vertex.
- Give the set of adjacent vertices of each vertex.
- Draw the Graph represented by M .

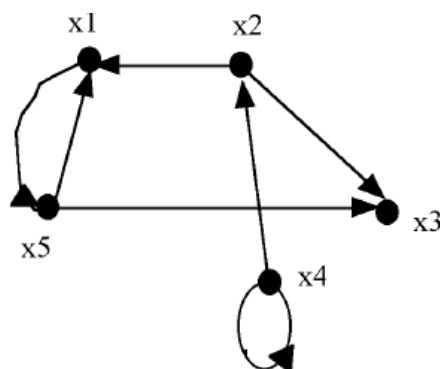
$$M(G) = \begin{pmatrix} 0 & 0 & 0 & 0 & 1 \\ 1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 & 0 \end{pmatrix}$$

Exercise3

Let $G=(V,E)$ be a graph shown by this figure

Represent G using:

- List of successors.
- List of sorted edges according to the starting endpoint.
- List of sorted edges according to the terminal endpoint.



Exercise4

Let $G=(V,E)$ be a graph shown by this figure:

- give a cycle and its correspondent vector
- Calculate the cyclomatic number $\mu(G)$.
- Give a base of cycle.
- Now we split E in two sets as shown in the figure.
- Give a cocycle and its correspondent vector.
- Calculate the cocyclic number $\lambda(G)$.
- Give a base of cocycle.
- Check the product $C \cdot \omega$.

