

# TAD<Graph>

$G = (V, E)$ , where  $V$  is a set of vertices, and  $E$  is a set of edges

{inv: There cannot be two vertexes with the same value on the Graph.}

Primitive operations:

- Graph	constructor	Graph	-> Graph
- newVertex	modifier	Graph x Value	-> Graph
- deleteVertex	modifier	Graph x Value	-> Graph
- edge	modifier	Graph x Value1 x Value2	-> Graph
- edgeWeight	modifier	Graph x Value1 x Value2 x Weight	-> Graph
- deleteEdge	modifier	Graph x Value1 x Value2	-> Graph

Graph()

Creates a new Graph

{ pre: TRUE }

{ post: Graph is created }

newVertex (G, u)

Adds vertex u to the graph G.

{ pre: TRUE }

{ pos: The vertex is added to the graph G }

deleteVertex (G, u)

Removes vertex u from the graph G.

{ pre: u must belong to the set of vertices of the graph G }

{ pos: The vertex is removed from the graph G }

edge (G, u, v)

Adds the arc or edge (u,v) to the graph G.

{ pre: u and v must belong to the set of vertices of the graph }

{ post: An edge connecting u with v is created in the graph G }

edgeWeight (G, u, v, w)

For a valued graph, adds the arc (u,v) to the network and the cost of the edge, w.

{ pre: u and v must belong to the set of vertices of the graph }

{ post: An weighted edge connecting u with v is created }

deleteEdge (G, u, v)

Removes arc(u,v) from the graph G.

{ pre : There must be an edge between u and v }

{ pos : The edge is removed from the graph G }