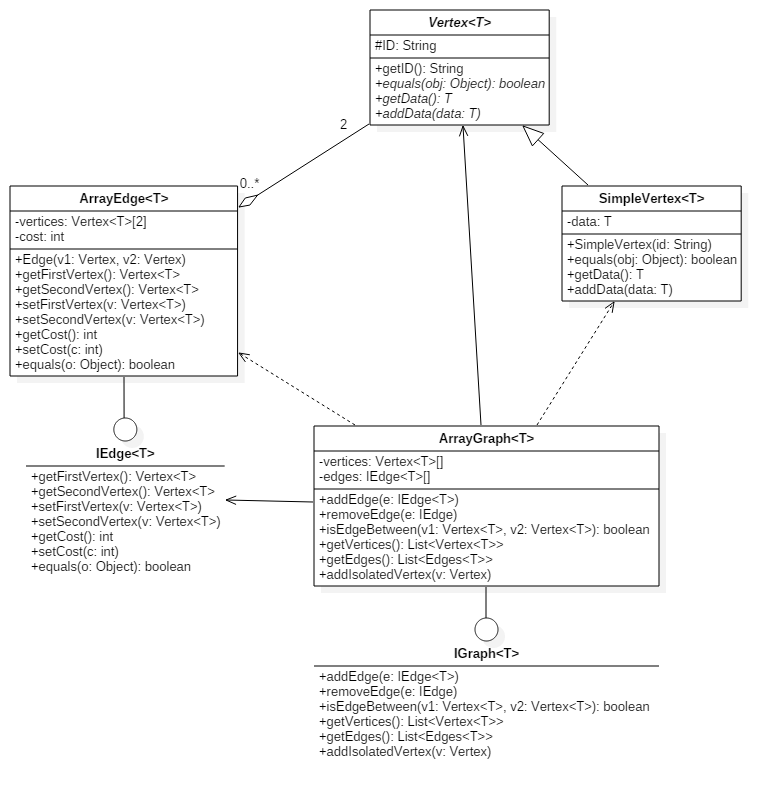
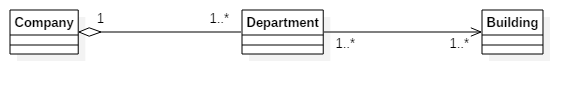
**P1.** Prepare a class model to describe undirected graphs. An undirected graph consists of a set of vertices and a set of edges. Edges connect pairs of vertices. Your model should capture only the structure of graphs (i.e. connectivity).



Clasa abstracta Vertex<T> reprezinta un nod un grafului, care este identificata printr-un ID. Un nod al grafului poate stoca o data de tipul generic T. Clasa SimpleVertex<T> mosteneste si implementeaza metodele abstracte ale clasei Vertex<T>. Interfata IEdge<T> descrie comportamentul unei muchii. Clasa ArrayEdge<T> implementeaza interfata IEdge<T> continand un vector de 2 elemente de tipul Vertex<T>. Muchiilor I se poate asocial si un cost daca este cazul (implicit este 0). Interfata IGraph<T> contine metodele principale ale unui graf, si anume adaugarea/stergerea unei muchii, adaugarea unui varf izolat, verificarea existentei unei muchii si intoarcerea muchiilor si a varfurilor care alcatuiesc graful. Clasa ArrayGraph<T> implementeaza interfata IGraph<T> cu ajutorul unor tablouri.

**P2.** Consider the following specification: *“A company consists of several departments. Each department is located in one or more buildings. ”*. Draw a class diagram to model the concepts above (no attributes and operations, just classes and the relationships between them including multiplicities).



**P3.** Prepare a class diagram for a graphical document editor that supports grouping. Assume that a document consists of several sheets. Each sheet contains drawing objects, including text, geometrical objects, and groups. A group is simply a set of drawing objects, possibly including other groups. A group must contain at least two drawing objects. A drawing object can be a direct member of at most one group. Geometrical objects include circles, ellipses, rectangles, lines and squares.

