Graph Implementation

Class Diagram

```
                                                                    T
┌─────────────────────────────────────────────────────────┐
│                          Edge                              │
├─────────────────────────────────────────────────────────┤
│ Edge(source: T, destination: T, weight: Int)              │
│ getSource(): T                                             │
│ getDestination(): T                                        │
│ getWeight(): Int                                           │
│ setSource(vertex: T): Edge[T]                              │
│ setDestination(vertex: T): Edge[T]                         │
│ setWeight(weight: Int): Edge[T]                            │
│ equals(other: Edge<V, E>): boolean                         │
│ toString(): String                                         │
└─────────────────────────────────────────────────────────┘
```

```
                                                                    T
┌──────────────────────────────────────────────────────────────────────┐
│                                Graph                                    │
├──────────────────────────────────────────────────────────────────────┤
│ Graph(vertexSet:Set[T], edgeWeightMap:HashMap[(T, T), Int], isDirected:Boolean) │
│ isDirected:Boolean                                                      │
│ getVertices:Iterable[T]                                                 │
│ edgeExists(source:T, destination:T):Boolean                             │
│ getEdgeWeight(source:T, destination:T):Option[Int]                      │
│ addVertex(vertex:T):Graph[T]                                            │
│ removeVertex(vertex:T):Graph[T]                                         │
│ addEdge(source:T, destination:T, weight:Int):Graph[T]                   │
│ removeEdge(source:T, destination:T):Graph[T]                            │
│ getAdjacent(source:T):Iterable[T]                                       │
│ pathLength(path:Seq[T]):Option[Long]                                    │
│ shortestPathBetween(source:T, destination:T):Option[Seq[Edge[T]]]       │
│ toString:String                                                         │
└──────────────────────────────────────────────────────────────────────┘
```
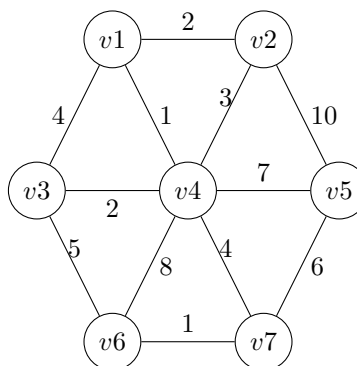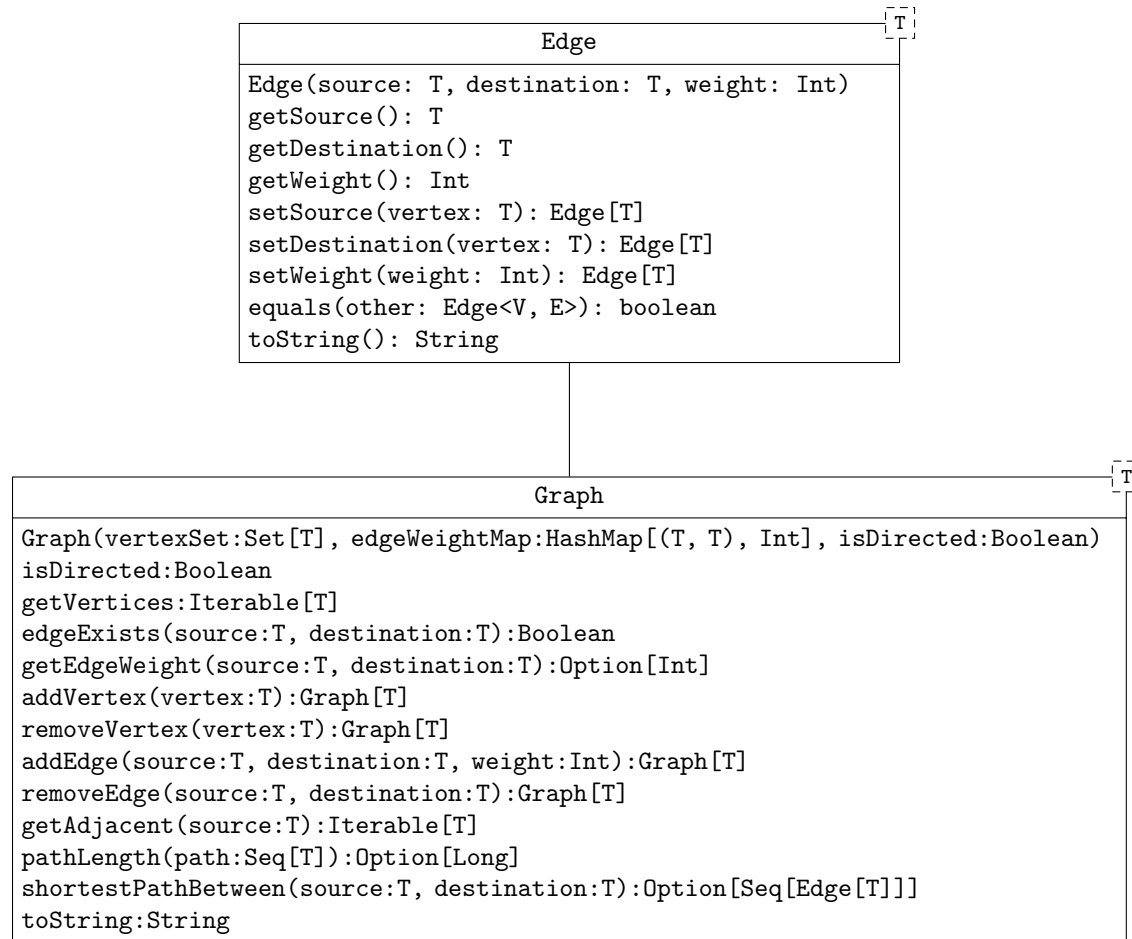

Figure 1: Default Graph Orr uses in class