We keep working with the Graph class defined in the previous exercise sheet. We are going to assume the graph is undirected.

1. Add two constructors to your class

a) A default constructors that creates an empty graph

```
Graph ();
```

b) A constructor that takes as argument an unsigned value n and creates a graph with n nodes and random number of edges.

```
Graph(unsigned n);
```

3. Add a member function that test whether a node exist.

```
bool existNode(int node);
```

4. Implement a member function that validates whether a graph is connected. Add a third constructor that always generates connected graphs.

```
bool isConnected();
```

5. Add an operation to the class to perform searches between two nodes of the graph. An exception should be raise if the graph is not connected. The function should print the found path in the standard output. Test its behavior using your graph class.

```
void search(int source, int destination);
```

6. Add an operation that prints all the edges of a graph. If the method is called on a const Graph, then a message is also printed indicating it. Test its behavior using your graph class.