Sample Lab Quiz 6

Study the following code to answer the question below

```
class Graph[A] {
 var nodes: Map[Int, A] = Map()
 var adjacencyList: Map[Int, List[Int]] = Map()

 def addNode(index: Int, a: A): Unit = {
   nodes += index -> a
   adjacencyList += index -> List()
 }

 def addEdge(index1: Int, index2: Int): Unit = {
   adjacencyList += index1 -> (index2 :: adjacencyList(index1))
   adjacencyList += index2 -> (index1 :: adjacencyList(index2))
 }
}
```

```
object Quiz6 {
 def main(args: Array[String]): Unit = {
   val graph: Graph[String] = new Graph()
   graph.addNode(0, "A")
   graph.addNode(1, "B")
   graph.addNode(2, "C")
   graph.addNode(3, "D")
   graph.addNode(4, "E")

   graph.addEdge(0,1)
   graph.addEdge(0,2)
   graph.addEdge(1,2)
   graph.addEdge(2,3)
   graph.addEdge(3,4)
 }
}
```

Q1 (40 points): Draw the graph created by running this code.

Q2 (10 points): What is the distance between nodes “A” and “C”?

Q3 (10 points): What is the distance between nodes “A” and “D”?

Q4 (40 points): Draw a BFS tree starting with “C” as the starting node