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Problem 6

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Problem 6-1

0 points possible (ungraded)

Graphs are a convenient way to represent the relations between people, objects, concepts, and more.


There are many ways to create a graph, some of which are random. A random graph is one that is generated by randomly adding edges to a list of nodes. The list of nodes for this problem is initialized as follows:

```
nodes = []
for i in range(n):
    nodes.append(newNode(i)) # newNode takes one parameter, the number of the node
```

A helper method, `addEdge`, is referenced in this problem. The `addEdge` method takes two integers - representing nodes in the graph - and adds a directed edge from the first node to the second node. So, `addEdge(8, 2)` adds a directed edge from Node 8 to Node 2.

In each code piece below, a graph is generated using the above node set by adding edges in some fashion. Your job is to examine the code and select the type of graph that will be generated. Your choices for each question will be: tree; graph (undirected graph); line graph; digraph (directed graph); complete graph or clique; bar graph; bipartite graph; loop or connected chain of nodes. Note that this last option refers to a graph that consists of one single, large loop or connected chain of nodes.

```
for i in range(len(nodes)):
    x = random.choice(nodes)
    y = random.choice(nodes)
    addEdge(x,y)
```

digraph (directed graph) 



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 Correct

Problem 6-2

0 points possible (ungraded)

```
for i in range(len(nodes)):
    x = random.choice(nodes)
    y = random.choice(nodes)
    addEdge(x,y)
    addEdge(y,x)
```

graph (undirected graph) 



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You have used 1 of 1 attempt

 Correct

Problem 6-3

0 points possible (ungraded)

```
for i in range(len(nodes)):
    w = random.choice(nodes)
    x = random.choice(nodes)
    y = random.choice(nodes)
    z = random.choice(nodes)
    addEdge(w,x)
    addEdge(x,y)
    addEdge(y,z)
    addEdge(z,w)
```

complete graph or clique

✖

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You have used 1 of 1 attempt

✖ Incorrect

Problem 6-4

0 points possible (ungraded)

```
for x in nodes:
    for y in nodes:
        addEdge(x,y)
        addEdge(y,x)
```

complete graph or clique

✔

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You have used 1 of 1 attempt

✔ Correct

Problem 6-5

0 points possible (ungraded)

The out degree of a node is the number of its neighbors, i.e. for a node `x`, its degree is the number edges, of the form `(x, y_i)`, where `y_i` is some other node.

Which graph has the largest out degree per node?

complete graph or clique

✔

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✔ Correct



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