**Developer Test**

The following test will attempt to gauge your knowledge of Data Modelling, Algorithms and SQL.

The Acme Company is looking to automate some of their systems to reduce costs and streamline productivity. Acme is a multileveled hierarchial organization. They would like to model their organizational structure to facilitate mapping Employees within the company. Design a model that can capture their organizations structure keeping in mind that new departments can be added and likewise shifted or removed (but not very often). Amount of levels in the organization hierarchy can change as company grows. An Employee can exist in only one department at any given time.

1. Based on the given scenario, design a data model that fulfils the requirements and illustrates the relationships within the system.
2. Based on your model. Create an algorithm (pseudo-code) that will :
   1. Return the organizational structure of the entire company formatted for display.
   2. Return the organizational structure under one department only formatted for display.
3. Explain why you chose the design pattern you did in #1 and how it did affect your response to #2.
4. Based on your model and the design pattern you chose in #1, Can you create a SQL Query that will return all members under IT ? If so, produce that Query. If not, explain.
5. You need to create a page that allows easy editing of the Acme Company's organizational structure. Describe how you would structure your code and what design pattern you would utilize in your approach.
6. Acme requires that certain processes take place when a new department is created and when a department is being removed or shifted to a new location. Describe what you would consider the best implementation to effectively handle this requirement.
7. How would you best handle a situation where multiple administrators are making changes to the organizational structure at the same time?
8. Based on the given DOM: Use Javascript / jQuery to make the button from tab one activate tab three adding a class 'notice' to the related tab list element.

<div id=”tabs”>

<ul class=”tabs-nav”>

<li class=”tabs-selected”>

<a href=”#one”>One</a>

</li>

<li>

<a href=”#two”>Two</a>

</li>

<li>

<a href=”#three”>Three</a>

</li>

</ul>

<div id=”one”>

<button type="button">Activate Tab Three!</button>

</div>

<div id=”two”>

</div>

<div id=”three”>

</div>

</div>