**Week Eleven**

**Discussion point 1:**

The text considers database integrity issues surrounding a database residing on one physical system (i.e. processes share a CPU, disk and memory). Consider then the problems associated with:

1. A database on a single system with multiple CPUs (shared memory and disk)
2. A database running over multiple physical computers connected by a network (but using a shared disk array)
3. A database running over multiple physical computers connected by a network (nothing shared)

How could transaction processing and locking be implemented in each of these instances? What other problems would the developers of RDBMSs face in each of these instances? What advantages are there to these architectures?

**Task 1:**

A tablespace provides an important level of abstraction in the storage of objects in a relational database. Using the web, find out what a tablespace is and what it is used for. What is the relationship between a tablespace and files? What advantages would a tablespace have over using a file to store every table/index in?

**Task 2:**

A data warehouse is sometimes referred to as an OLAP database. “Live” databases are referred to as OLTP databases. Using the web, expand these acronyms and describe the differences between them.

**Discussion point 2:**

When designing and building a data warehouse, there are very different considerations than when building an OLTP database. One key issue is the number of indexes and the response time to queries and updates. How do you think these would differ in between OLTP and OLAP databases?

**Discussion point 3:**

At the time of writing this lab, the US Senate had just passed laws that protected individuals from “genetic” discrimination. This is a controversial and ethically problematic area with intertwining issues of genetic discrimination, privacy and the rights of individuals to “own” their own genetic data. If you are unaware of the issues, use the web to perform some research into this area. Who do you believe owns a person’s genetic data? What problems are associated with ownership? What are the potential issues that can arise once a person’s genetic code is encoded and stored in an electronic format?