10. Exercise: Product Lifecycle Management

1) Foundations of Product Lifecycle Management

a) What are phases of a product lifecycle? Which of these phases are not part of the product development process?

b) Name the main functions provided by a PLM system? Why can these not be covered within a specific engineering tool, e.g. a CAD or EDA tool?

2) Product Structure Management

A simplified view of product structures could be as follows: a product consists of an arbitrary number of assemblies. Assemblies can be used in more than one product and consist themselves of other assemblies or produced or purchased parts.

a) Using ER modeling and relational database design, how could these aspects be represented in a schema?

b) Using object-oriented modeling (e.g. UML), how could the same facts be represented in a conceptual schema?

3) Document Management

Why are part/document relationships typically modeled as N:M relationships?

4) Configuration Management

A product consists of 2 assemblies, and each of these assemblies consists of 3 parts produced within the company. For each part there are 2 variants and of each variant there are 5 versions that were used throughout the products lifecycle.

a) Assuming every possible combination of variants and versions would be allowed, how many configurations would exist?

b) How can the number of possible configurations be constrained?