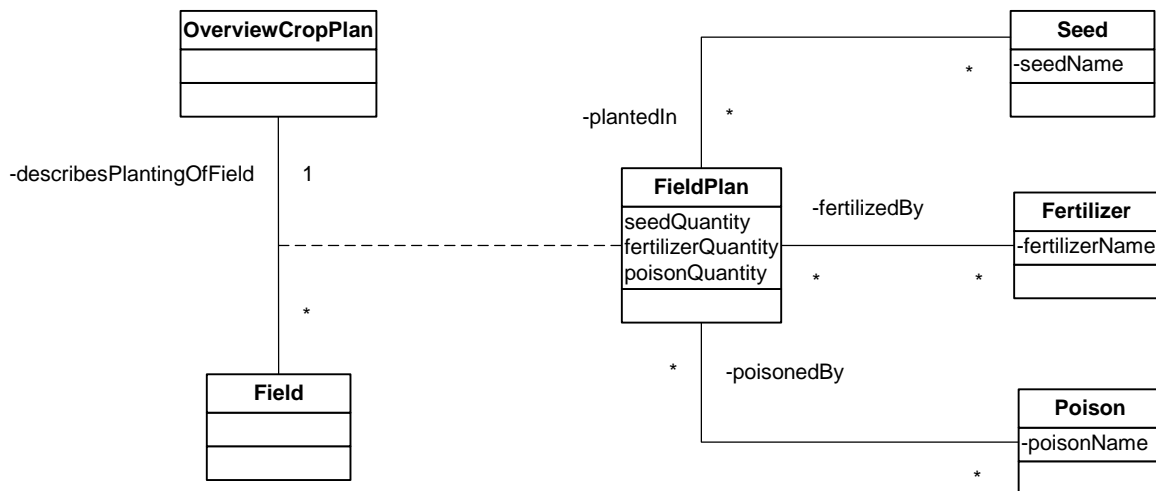


## Assignment 2(b) Due Tuesday, Nov 18 in tutorial

### *Use of Patterns in an Object Oriented Design*

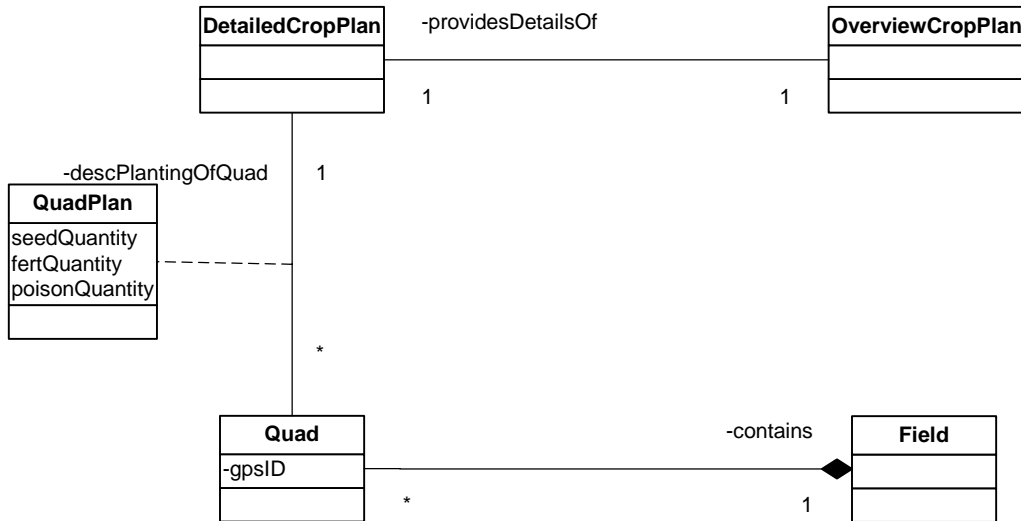
The Macdonalds have reviewed your analyses and are preparing to build their agricultural analytics code. Prior to a detailed design effort they feel that they need to experiment with the structure of their software. To this end they wish to build a prototype to ascertain if the Iterator and Visitor patterns will provide an elegant and pragmatic way of building various analytic modules..

After some consideration of our work they have arrived at the following OOA for the overview crop plan.



Overview crop plan modelled using an association class

They intend to follow a similar structure for the detailed plan:



They were reasonably pleased with our analysis, though they complained of too many emails, and they have engaged us to perform a small OOD before the prototype is started.

We are to design the classes of the Detailed Crop Plan and a Visitor class in such a way that various Visitor subclasses can perform different calculations on the network of objects representing a detailed crop plan. The prototype will support two Visitors that are trivial analytically but should serve to illustrate the point. The AverageVisitor will calculate the average seed, fertilizer and poison applied to a quad and the StdevVisitor will calculate the Standard Deviation.

Your task is to create an OOD for the prototype that includes the iterator and visitor pattern methods required to support the two Visitors. You need to consider only one use case, namely “calculate mean and average” and can ignore any special courses. You must write out this one use case, create a Robustness Diagram, a Sequence Diagram and a Class Diagram.

If all goes well, and the prototype indicates that the Visitor approach is a viable one, we are likely to get the contract for the entire OOD. Meanwhile, Young MacDonald and his team of applied mathematicians, meteorologists and agricultural scientists (ie Mr and Mrs MacDonald) can start designing the various production Visitors the real system will depend on.