

the analysis step, a determination is made as to the feasibility of the project. Documents answer the questions “Can we accomplish the project with the team and resources available?”, “What additional resources need to be gathered?”, and “Can the project be accomplished in the timeframe and budget allocated?” If the project makes it past the analysis step (many projects don’t), then the actual design begins. In the design phase, a top-down approach begins by first looking at the overall required modules, and the data flow between the modules. More details are gradually added as the methods required are determined, a platform is decided on, communication tools come together, and information storage is designed.

After a detailed design has been created, and approved, the project goes into development and testing. Both unit testing (individual modules) and complete application testing will occur. After successful testing, the project is ready for the Implementation Step. During implementation decisions have to be made on how to install the project and when to install it. After implementation, the application is “live”. But still continuous evaluation should occur to determine efficiently needs, security problems, logical problems, and possible overall enhancements to the project. Eventually, most projects will then revert back to the first step of the process for the development of a new version.

This section assumes that the planning and information gathering and analysis steps have been completed successfully, which would move you into the design step. We will look, in general, at the process of determining what type of activities should occur in which tiers of an application. We will also look at the type of data or information that may flow between the tiers. In later chapters we will refine this analysis by determining the types of methods that would be required and the information and data that must flow into and out of these methods. We will also look at the actual activities and code that would be created for these methods.

The best way to learn is by doing, so let’s look at a case problem and go from there.

## Case Study

*Company:* Atomic Fish Hatchery, Inc.

*Project:* Field Sales Ordering and Commission Application

*Scope:* This application will be accessible from multiple devices (mobile and PC) to allow field sales agents, managers, and payroll personnel easy access to necessary information. The system will accept information from the sales agent that will be used to determine purchase costs to the customer, sales volume for the sales manager, and commissions for the payroll department. Phase one of the project is the development of the application to accept information from the sales agents, display purchase cost, determination of commissions, and storage of the information into a MySQL database. After successful testing the platform, it will be moved and secured in the company’s cloud platform.

*Inputs (from Sales Agent):* Sales Agent Number, Customer Number, Order Number, Item Number, Quantity, and Special Needs

*Outputs:* (Additional information may be determined for future phases)

*To database:* In addition to the input from the sales agent: commission, sales total

The goal is to determine the types of information and processes that will occur in each tier and the data flow between the tiers. Once determined, this information could be used to develop a general empty structure of tiers that would eventually hold the completed project.

## Interface Tier

The company has requested access from multiple devices. Thus, we must keep in mind that mobile devices (tablets and smart phones) will be used to input and output information in addition to laptops and PCs. We may decide to create multiple interfaces for each type of device. With three-tier design, you could design a system that shares the business rules tier and data tier contents while allowing this flexibility.

As a designer and/or programmer, you must determine the type of information that will be entered; several fields (Sales Agent Number, Customer Number, Order Number, Item Number, and Quantity) all indicate that numbers will be entered. You need to determine the size of these fields and verify that only