# SOFTWARE DESIGN SPECIFICATION TEMPLATE

You should begin to develop the software design specification after completion of the software requirements specification. The software requirements feed the design task.

At this point, your team should decide on a programming language for the project. If you are new to the language, take time to become familiar with it, before you proceed.

The software design specification focuses on how the system will be constructed. It includes four models: data design (section 2.0), architectural design (section 3.0), interface design (section 4.0) and component-level design (section 3.0).

Before you begin, please study chapters 9, 10, 11 and 12 in the text.

Your document should follow the template below. It is a modified version of the Pressman's Adaptable Process Model template for a software design document.

(Section 1.0 is repeated from the Software Requirements Specification. This section provides background information about the SW.)

**1.0 Introduction**

This section provides an overview of the entire requirement document. This document describes all data, functional and behavioral requirements for software.

**1.1 Goals and objectives**

Overall goals and software objectives are described.

**1.2 Statement of scope**

A description of the software is presented. Major inputs, processing functionality and outputs are described without regards to implementation detail. Rank the major processing functionality from the developer's point of view. Use a simple ranking system such as: essential, desirable and future requirements. This should represent what you think your team can accomplish in the time frame of a semester. The essential requirements, you are sure you can complete. The desirable requirements you hope to complete, but are not sure about. The future requirements, you have strong doubts about. Strive to balance the desires of your client with the reality of the time it takes to develop a SW product.

**1.3 Software context**

The software is placed in a business or product line context. Strategic issues relevant to context are discussed. The intent is for the reader to understand the 'big picture'.

**1.4 Major constraints**

Any business or product line constraints that will impact the manner in which the software is

to be specified, designed, implemented or tested are noted here.

## 2.0 Data design

A description of all data structures including internal, global, and temporary data structures.

### 2.1 Internal software data structure

Data structures that are passed among components of the software are described.

### 2.2 Global data structure

Data structured that are available to major portions of the architecture are described.

### 2.3 Temporary data structure

Files created for interim use are described.

### 2.4 Database description

Database(s) created as part of the application is(are) described. (Provide enough detail to create the database.)

## 3.0 Architectural and component-level design

A description of the program architecture is presented.

### 3.1 System Structure

A detailed description the system structure chosen for the application is presented.

#### 3.1.1 Architecture diagram

A pictorial representation, using a UML component diagram, of the architecture is presented.

### 3.2 Description for Component n

A detailed description of each software component contained within the architecture is presented. Section 3.2 is repeated for each of n components.

#### 3.2.1 Processing narrative (PSPEC) for component n

A processing narrative for component n is presented. It should describe the responsibilities of the component.

#### 3.2.2 Component n interface description.

A detailed description of the input and output interfaces for the component is presented.

#### 3.2.3 Component n processing detail

A detailed algorithmic description for each component is presented.

##### 3.2.3.1 Design Class hierarchy for component n

##### 3.2.3.2 Restrictions/limitations for component n

##### 3.2.3.3 Performance issues for component n

##### 3.2.3.4 Design constraints for component n

##### 3.2.3.5 Processing detail for each operation of component n

###### 3.2.3.5.1 Processing narrative (PSPEC) for each operation

###### 3.2.3.5.2 Algorithmic model (e.g., PDL) for each operation

### 3.3 Dynamic Behavior for Component n

A description of the interaction of the classes is presented.

#### 3.3.1 Interaction Diagrams

A sequence diagram, for each use case the component realizes, is presented.

## 4.0 User interface design

A description of the user interface design of the software is presented.

### 4.1 Description of the user interface

A detailed description of user interface including screen images or prototype is presented.

#### 4.1.1 Screen images

Representation of the interface form the user's point of view.

#### 4.1.2 Objects and actions

All screen objects and actions are identified.

### 4.2 Interface design rules

Conventions and standards used for designing/implementing the user interface are stated. (You could list the eight golden rules mentioned in lecture.)

### 4.3 Components available

GUI components available for implementation are noted.

### 4.4 UIDS description

The user interface development system is described. (You might not have one for your project.)

## 5.0 Restrictions, limitations, and constraints

Special design issues which impact the design or implementation of the software are noted here.

## 6.0 Testing Issues

Test strategy and preliminary test case specification are presented in this section.

### 6.1 Classes of tests

The types of tests to be conducted are specified, including as much detail as is possible at this stage. Emphasis here is on black-box and white-box testing.

### 6.2 Expected software response

The expected results from testing are specified.

### 6.3 Performance bounds

Special performance requirements are specified.

### 6.4 Identification of critical components

Those components that are critical and demand particular attention during testing are identified.

Sample Implementation of this template:

Security Camera Store Then Click on Security Shop - RSD

Dedicated Server Hosting then click on Web Hosting Project