

Requirements Management Series

Internal Program Design

A Structured Approach to Software Design

Internal Program Design: *A Structured Approach to Software Design* provides a proven strategy for creating an internal, architectural view of a future software product. This *Tryon and Associates* seminar presents the tools and techniques of *Structured Systems Design*. The concepts and practices taught in this course enable a software designer to...

- Consider the implications of a specific software design prior to writing the actual code.
- Plan a design that is easy to maintain and enhance.
- Evaluate and restrict the flow of data through a software design, making error protection and detection more feasible.
- Organize a design into independent subcomponents (modules).
- Create a design that maps closely to the characteristics of the actual problem.
- Build design documents that may be used to guide actual software construction.
- Build design documents that are useful for future maintenance.

The discipline of **Structured Design** was created by evaluating the natural characteristics of understandable and maintainable software products. These design observations are organized into a set of stable tools and techniques that help...

- Partition a software design into independent and understandable *modules*.
- Arrange those modules into a control structure called a *Structure Chart*.
- Evaluate the general shape of the control structure to create a *well-balanced hierarchy*.
- Model and evaluate the flow of information between modules using the concepts of *coupling*.
- Evaluate the internal relevance of each module's contents using the concepts of *cohesion*.
- Document module internals using *Module Specifications*.
- Document data composition and meaning using a *Design Data Dictionary*.
- Create a general program flow that studies the natural movement of data through processes using a *Data Flow Graph*.

Internal Program Design: *A Structured Approach to Software Design* is intended for environments that use high-level, procedural programming languages such as COBOL, C and PL/1. It may be used as a stand-alone seminar that targets the software design and construction process. The seminar may also be used as the final component of an integrated systems/software engineering curriculum that includes the Structured Analysis process and the creation of a New Physical Model. Practitioners of Structured Analysis will also benefit from this seminar as many of the concepts applied in Structured Analysis (partitioning, the independence of processes and internal process cohesion) were first introduced in Structured Design.

While there are numerous software products that support this design discipline, the course emphasizes the fundamental tools and techniques of Structured Design along with the mental process for using the discipline. Any software product that supports this method, directly or indirectly, may then be used intelligently by a software designer.

Learning Objectives

The specific goals and objectives for this seminar are to provide each attendee with an understanding of...

- What is Internal Design?
- What is Structured Design?
- The characteristics of a module.
- How to create a Structure Chart.
- How to evaluate a Structure Chart.
- Types of coupling in a design.
- Levels of internal module cohesion.
- The contents of a Module Specification.
- The contents of a Design Data Dictionary.
- How to create a Data Flow Graph.
- How to perform Transform Analysis.

Audience

This seminar is intended for anyone who is responsible for designing and building a software product. This seminar is particularly useful to anyone who is involved in...

- Converting customer requirements into a workable software solution.
- Creating the software design.
- Building meaningful documentation for a software product.
- Creating a software product.
- Testing a software product.

This audience often includes software designers, programmers, testers, software engineers, systems analysts, project managers, interface designers and technology specialists. Various staff managers may find this seminar series informative if they wish to understand the design process.

Prerequisites

There are no prerequisites for this session. However, attendees should have an understanding of basic programming skills.

Duration

Internal Program Design: *A Structured Approach to Software Design* is designed as a very compact, fast-paced three-day seminar. Each day lasts a full eight hours and includes time for breaks and lunch.

Format

This seminar is divided between instructor-led lecture and team workshops. Consistent topic coverage is insured by the use of easy-to-follow seminar notes. The instructor introduces each topic adding illustrations, examples and analogies to explain the material. Seminar attendees are encouraged to add their observations or ask questions at any time. Group discussions are often used to explore a specific topic. Topics are then examined using enjoyable workshop exercises where attendees may experience the dynamics and process for using a technique. Results are then evaluated by the instructor and other attendees.

Materials

Each attendee receives a full set of presentation materials and workshop answers used by the instructor during the seminar. They will also receive articles, examples, templates and common processes that are identified during the course. A comprehensive bibliography is provided of all books and reference materials noted during the seminar. Each attendee will receive an attractive Certificate of Completion following the seminar.

Author

Internal Program Design: *A Structured Approach to Software Design* was written by Charles A. Tryon, founder of ***Tryon and Associates***. This seminar was created based on Mr. Tryon's experience as a Software Developer in the Information Technology industry and as a project consultant and seminar leader. This course is based in part on the book *Structured Systems Design* by Larry Constantine and *The Practical Guide to Structured Design* by Meiler Page-Jones. Numerous others books are referenced during this seminar.

Scheduling and Pricing

This seminar is typically scheduled on-site for a specific client. Please review the general scheduling and pricing policies. A complete price quote will be provided on request. On occasion, this seminar is offered on a public basis. Contact ***Tryon and Associates*** for more information about scheduling or attending this seminar.

Contact Information

Additional information on this and other ***Tryon and Associates*** seminars may be obtained by calling (918) 455-3300. You may also fax a request for information to (918) 455-3331. Seminar descriptions and other helpful information are available at www.TryonAssoc.com.

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Attendee Comments

“This is the way of the future for those who will survive as software engineers.”

“This was a helpful and worthwhile course. It allows me to view a problem and work on insuring the detail is not missed during design.”

“I really can use this technique.”

“A very knowledgeable instructor, not just from a presentation perspective, but from a true working knowledge of our job.”

“This is the first time my company sent me to a class that I thought was truly worth my time.”