The Japanese Way in Solution Design and Problem Solving in Computer Science (Final Project)

by Raymond Greenlaw

The Japanese play a leading role in the field of computing, and anybody who uses technology/electronics is aware of this fact. It is important to introduce students in the United States and throughout the world to some of the Japanese methodologies pertaining to computing. At Armstrong Atlantic State University, I will introduce students in my "Fundamentals of the Internet and World Wide Web" class to several key ideas stemming from the "Japanese approach." The concepts discussed will be incorporated into the third edition of my book which goes under the same title and is published by McGraw-Hill. This book has been translated into several languages and is used internationally, and so the result of this work will reach throughout the United States and beyond, perhaps even back to Japan.

The main point is that the process utilized to perform a task such as developing software, designing Web pages, and/or solving problems is extremely important. For example, in software development, without a proper starting point and a proper process, the end result is buggy, inefficient, and unreliable software—the type that we have become accustomed to and even expect. The essence of the Japanese influence on process is beauty, elegance, purity, efficiency, and simplicity. These values in turn nurture reflection resulting in a more-artistic and robust solution. In the computer science field these traits translate into a more craftsman-like approach to problem solving rather than a purely engineering approach.

When employing the Japanese approach to complete a task, the process matters and the process significantly influences the resulting solution. For example, computer code which is poorly written is best discarded rather than patched. Furthermore, the aesthetics of a solution are also extremely important. The art of discovering Japanese-like aspects of computing adds a beauty, simplicity, and elegance to this technical field, which in turn often results in more-efficient solutions and designs to complex problems; solutions developed in this manner tend to be more reliable and robust. Many students are only concerned with getting their code working, and as such develop incomplete, inefficient, and inelegant solutions. By providing students with a context, successful Japanese companies, and examples from specific Japanese practices, such as Ikebana, calligraphy, and Zen, students will be able to begin to see the importance of process and patience leading naturally to success.