SWEBOK KA #5: Software Maintenance

The Software Engineering Body of Knowledge (SWEBOK) features 11 knowledge areas (KAs). The fifth KA is Software Maintenance. The Software Maintenance KA is focused on the maintenance phase of the software lifecycle. It includes four topics, as shown in Figure 1. These topics are Software Maintenance Fundamentals, Key Issues in Software Maintenance, Maintenance Process, and Techniques for Maintenance.

The Software Maintenance Fundamentals topic provides the concepts and terminology that form a basis of software maintenance. Several IEEE standards provide definitions and terminology related to software maintenance. The nature of maintenance is a broader scope and more aspects to manage. Maintenance is needed to make sure the software meets the user’s requirements. The majority of maintenance costs is consumed for non-corrective actions, or enhancements. The evolution of software must be taken into account during maintenance, to ensure software does not become too complex. There are many categories of maintenance, including corrective, adaptive, and preventative.

The Key Issues in Software Maintenance topic discusses some of the unique challenges of software maintenance. Technical issues include limited understanding of the software, impact analysis, and maintainability. Management issues include staffing, process, and outsourcing. Maintenance cost estimation involves things like parametric models and experience. Software maintenance management has specific measures like changeability and stability.

The Maintenance Process topic covers standards used to implement the software maintenance process. Maintenance processes are broken down into tasks including implementation, migration, and software retirement. Maintenance activities include unique activities like transition, modification, and impact analysis.

The Techniques for Maintenance topic introduces techniques used in maintenance. Program comprehension involves studying program code and documentation to understand the software. Reengineering is examination and alteration of software into a new form. Reverse engineering involves analyzing the software and re-creating it in a different form.

Figure 1. Breakdown of Topics for the Software Maintenance Knowledge Area

