

## Software Development Key Performance Indicators

For the entry-level employee, all tasks are typically done under supervision for much of the first year and then with some independence with verification after the employee has more experience. All tasks are done according to company guidelines.

	Tasks	Key Performance Indicators
<b>Analysis &amp; Design</b>		
T-1	Identify and analyze user needs and use needs to establish a plan in the selection, creation, evaluation, implementation and administration of information technology systems.	<p>Complete set of requirements, including security concerns and/or threat vulnerabilities is communicated to and approved by client/user and properly documented.</p> <p>Requirements are properly understood, interpreted and evaluated, and conflicting requirements are identified and resolved.</p> <p>Time, technology and resource constraints are defined, alternatives are presented, and risk analysis and contingency plans are developed.</p> <p>Security requirements are consistent with company standards and all applicable laws and regulations.</p> <p>Security requirements are correctly translated into application design elements.</p> <p>Analysis of new and existing software security concerns and/or threat vulnerabilities are provided to IT/software team to guide development/modification of a security application.</p>
T-2	Identify, document and effectively communicate security concerns and/or threat vulnerabilities.	
T-3	Analyze information to determine, recommend, and plan development and installation of a new system or modification of an existing system.	
T-4	Translate security requirements into application design elements including documenting the elements of the software attack surfaces, conducting threat modeling, and defining any specific security criteria.	
T-5	Prepare detailed interface diagrams that describe input, output, and logical operation, and convert them into a series of instructions coded in a computer language (This statement is agnostic with respect to specific technology or tool).	
<b>Programming</b>		
T-6	Develop code to read and write files.	<p>Code is developed and documented using efficient software design processes.</p> <p>Links between web application and associated databases are properly established.</p> <p>Applications performance meets requirements and expectations on all applicable platforms and browsers.</p> <p>Appropriate debugging tools are used in an efficient manner.</p> <p>High-quality software of multiple types is produced that meets or exceeds customer expectations, follows industry best practices, and is completed within engineering time and cost estimates.</p> <p>Application, programming or communication errors and security vulnerabilities are correctly anticipated, detected and resolved.</p> <p>Authoring, modifying, compiling, deploying and debugging of software are completed in a thorough and efficient manner.</p> <p>Programs are written in the most efficient way, and data is organized in such a way that it can be updated, deleted, retrieved efficiently, and securely protected.</p> <p>Software is deployed in accordance with secure software deployment methodologies, tools, documentation, and other practices.</p> <p>Counter measures and mitigations produce a reduction in threats and vulnerabilities.</p> <p>Documentation is clear and complete, including consistent use of enterprise-wide version control.</p> <p>The appropriate Integrated Development Environment is used in code creation.</p> <p>SDLC industry practices as specified by the company are consistently followed.</p> <p>Cooperative software development practices are utilized.</p> <p>Applications are enabled with PKI as appropriate.</p>
T-7	Create webpages using data from a database.	
T-8	Create applications such as Servlets that send HTML pages to Internet clients.	
T-9	Write and debug effective code using various scripting languages.	
T-10	Assist with development on multiple platforms (e.g. Linux, Windows, AppleOS, etc.).	
T-11	Design, develop and validate stable, robust, secure, and efficient code following industry best practices.	
T-12	Develop secure code and error handling.	
T-13	Develop cross-platform applications targeted for an OS or hardware different from the development machine.	
T-14	Develop applications that run on multiple browsers.	
T-15	Design, create, manage, and evaluate Apps.	
T-16	Manipulate the objects contained in the Document Object Model (DOM).	
T-17	Demonstrate familiarity with at least one current IDE and other developer productivity tools.	
T-18	Identify, evaluate, and apply efficient algorithms and data structures (e.g. sorting, multithreading).	
T-19	Apply SDLC (software development lifecycle) industry practices (e.g. Agile, waterfall, scrum, etc.).	
T-20	Enable applications with public keying by leveraging existing public key infrastructure (PKI) libraries and incorporating certificate management and encryption functionalities when appropriate.	
T-21	Identify and leverage the enterprise-wide security services while designing and developing secure applications (e.g., Enterprise PKI, Federated Identity server) when appropriate.	
T-22	Assist in designing countermeasures and mitigations against potential exploitations of programming language weaknesses and vulnerabilities in system and elements.	
T-23	Apply secure code documentation in accordance with corporate policy to ensure safety of how code is implemented or processed for user access and security access to code that govern software driven apparatus.	
T-24	Compile and write documentation of existing software program development and subsequent revisions, inserting comments in the coded instructions so others can understand the program.	
T-25	Identify and leverage the enterprise-wide version control system while designing and developing secure applications.	
T-26	Collaborate with a wide range of technical professionals, in person and virtually, using tools and strategies that support cooperative software development practices.	

Testing		
T-27	Conduct trial runs of programs and software applications to ensure that the desired information is produced and instructions and security levels are correct.	<p>Unit testing is accomplished using standard testing procedures, and testing on each unit is repeated until the unit is free of errors.</p> <p>Integrated testing is accomplished using standard testing procedures and test cases.</p> <p>Appropriate software testing tools are used.</p> <p>Testing identifies errors, gaps or missing requirements, and results in reliability, security and high performance.</p> <p>Errors identified during testing are corrected and code is retested until no errors are identified.</p> <p>A systematic testing program is implemented that is relevant to application and test requirements and is in compliance with legal requirements, policies, procedures and customer requirements.</p> <p>Code reviews are performed in a regular and timely manner.</p>
T-28	Test and evaluate any software code/processes you developed - unit testing.	
T-29	Utilize software testing tools to implement various test strategies.	
T-30	Perform integrated quality assurance testing for security functionality and resiliency attack.	
T-31	Identify security implications in the software acceptance phase including completion criteria, risk acceptance and documentation, common criteria, and methods of independent testing and report concerns to IT/software team.	
T-32	Assist in developing software system testing and validation procedures, programming, and documentation.	
T-33	Correct errors by making appropriate changes and rechecking the program to ensure that desired results are produced.	
T-34	Apply coding and testing standards, security testing tools including "fuzzing" static-analysis code scanning tools, and conduct code reviews.	
Implementation		
T-35	Determine system performance against standards and follow appropriate action plan when issues arise.	<p>Software upgrades and patches are applied with minimal service disruptions to clients/users in a timely manner.</p> <p>Software performance is monitored to determine need for modifications to meet design specs and client/user requirements.</p> <p>Software is modified on an on-going basis to adapt to hardware and software changes.</p> <p>Recommendations based on customer input and analysis of system data are developed and presented to key personnel.</p> <p>Client/users are informed regarding requirements and technology.</p> <p>Effective presentations are used to communicate both internally and externally.</p> <p>Team members collaborate and follow design and implementation guidelines provided.</p>
T-36	Implement and properly document software patches and report any software security issues that would leave software vulnerable.	
T-37	Modify existing software to correct errors, adapt it to new hardware, or upgrade interfaces and improve performance.	
T-38	Develop presentation materials/presentations and effectively present to a technical/non-technical audience.	
T-39	Communicate with customers or other departments on project status, proposals, or technical issues, such as software system design or maintenance, including both oral and written communication.	
T-40	Contribute to team, follow directives from designers and engineers related to software design and implementation.	