FUNCTIONAL AREA 3

Web Application Development (WAD)

Incumbents in this functional area use software tools and/or programming languages to produce and implement properly engineered and tested web software solutions to meet the defined business needs of State departments. The application software components may reside on any web platform and may consist of many interrelated programs spread across multiple platforms.

WEB APPLICATION DEVELOPMENT	T	1	2	3
Knowledge of:				
Systems development life cycle management concepts.	X	X	X	X
Basic IT principles and practices, general computer architecture (CPU, memory allocations, peripheral devices. I/O, etc., in order to perform basic programming functions, and basic arithmetic (e.g., binary, hexadecimal).	X	X	X	X
Client-side programming methods and best practices		X	X	X
Server-side programming methods and best practices		X	X	X
Application development principles and methods.		X	X	X
Web protocols (e.g., HTTP, FTP)		X	X	X
Web platform hardware and software operational dependencies		X	X	X
Web privacy, security issues and best practices		X	X	X
Structured query languages (SQL)		X	X	X
Program debugging concepts and techniques		X	X	X
Software testing and evaluation principles, methods, and tools.		X	X	X
Web programming languages.		X	X	X
Database principles and methods		X	X	X
Web interface design			X	X
Web usability best practices			X	X
Web Accessibility Initiative and state ADA requirements			X	X
Web application implementation and integration			X	X
Web Services concepts and principles			X	X
Web design patterns			X	X
Web standards and standard bodies			X	X
Principles, methods, and procedures for designing, developing, optimizing, and integrating new and/or reusable system components.			X	X
IT change management practices and their application in the software development environment.			X	X
Interrelationships between web applications and networking components.			X	X
Customized Commercial Off-the-Shelf (COTS) products and components.			X	X
New and emerging application software technologies and industry trends including Services Oriented Architecture (SOA) concept and principles.			X	X
Comprehensive knowledge of departmental policies and procedures as it relates to IT.			X	X
Advanced web systems development concepts including structured design, supportability, reliability, scalability, maintainability, and survivability.				X
Database management principles and methods.				X
Advanced web application software theories, concepts, principles, standards, methods, or practices.				X
Ability to:				
Write simple web application code based upon detailed program specifications.	X	X	X	X
Learn and use standard programming principles	X	X	X	X
Learn and use at least one programming language to develop application code.	X	X	X	X

Present solutions to problems with clarity and precision in written and/or graphic form	X	X	X	X
Write clear and concise narrative statements and draw logical diagrams	X	X	X	X
Learn to detect, analyze, and correct errors in programs	X	X	X	X
Learn additional programming languages	X	X	X	X
Organize applications into logical components		X	X	X
Suggest alternative application development strategies to meet user requirements and constraints		X	X	X
Write detailed program specifications		X	X	X
Write, test, debug, and maintain more complex software applications that meet technical and functional requirements.		X	X	X
Analyze information and situations, reason logically and creatively, identify problems, draw valid conclusions, and develop effective solutions		X	X	X
Apply creative thinking in the design and development of methods of processing information with information technology systems		X	X	X
Ensure that applications meet design specifications.		X	X	X
Develop secure applications that restrict access to confidential, sensitive, and personal data to those individuals with a business need to access this data.		X	X	X
Develop, execute, and evaluate application test plans, scenarios, and scripts.		X	X	X
Participate in the design of new or modified applications.		X	X	X
Perform detailed analysis of applications used to ensure that information provided meets the business requirements and expectations.		X	X	X
Develop, execute, and evaluate application test plans, scenarios, and scripts.		X	X	X
Participate in the design of new or modified web applications.		X	X	X
Write the most complex web applications.			X	X
Ensure applications are consistent with the current and planned infrastructure and data environments.			X	X
Design and develop efficient and effective applications through the use of reusable components.			X	X
Ensure applications are consistent with the current and planned infrastructure and data environments.			X	X
Interpret programming policies, standards, and guidelines.			X	X
Plan and carry out difficult and complex application development assignments and develop new methods, approaches, and procedures.			X	X
Provide advice and guidance on a wide range and variety of complex programming issues to management, peers and customers.			X	X
Develop and implement security requirements.			X	X
Provide technical direction/leadership to applications development program or project work.			X	X
Gather data to analyze system utilization, capacity and performance, and incorporate findings in the development and deployment of an application.			X	X
Advise other IT experts throughout the organization on a variety of situations and issues that involve applying or adapting new software theories, concepts, principles, standards, methods, or practices.				X
Develop comprehensive software development plans for cross functional applications.				X
Lead application development teams with authority to initiate and influence key decisions and obtain necessary project resources.				X
Develop new theories, concepts, standards and methodologies in web application development.				X
Ensure optimal use of commercially available products through integration at the Operating System or Application layer.				X
Evaluate and recommend adoption of new or enhanced approaches to the delivery of IT services related to web application development.				X
Investigate, analyze, and evaluate project feasibility; develop project cost and benefit estimates; evaluate risks; and estimate resource needs for staff and consultants.				X

Resolve complex problems related to interfaces and connectivity of multiple hardware platforms, operating systems, database management systems, and various other applications.				X
Provide technical guidance concerning system technical constraints, acceptance testing, performance criteria, complex design issues, and complex programming logic.				X
Analyze, define, develop, and implement the department's software design, development, and testing strategies, incorporating advanced security standards.				X
Research emerging technologies and provide guidance to ensure applications are optimized for state-of-the-art technology and functionality.				X

WEB APPLICATION DEVELOPMENT

Information Technology Specialist Trainee (Web Application Development)

Incumbents at this level work under direct supervision applying a basic understanding of information technology and web programming to maintain an assigned module of code for a deployed application and/or modify assigned code according to well-established procedures. Incumbents assist in the development, modification, testing, and/or installation and maintenance of web software to support business user applications.

Information Technology Specialist I (Web Application Development)

Incumbents apply a comprehensive understanding of web application development principles and methods. This level works under direct technical supervision to write web applications, according to technical specifications, using a variety of web programming languages and tools to meet business requirements. These software solutions may support new and/or existing customized-off-the–shelf, or in-house developed applications. Incumbents have authority to plan, design, code, test and implement software development tasks, independently, within a clear framework established by the supervisor.

Information Technology Specialist II (Web Application Development)

Incumbents take an independent, lead technical role within a web application development area. Incumbents demonstrate proficiency of business and technical IT competencies, with a specialization in web application development. Incumbents apply knowledge of the organization's technology and business infrastructure to perform the full-range of duties to effectively develop, modify, test, install and maintain complex custom-off-the shelf and/or in-house developed web software. Incumbents take responsibility for analyzing and translating technical specifications into integrated web applications that automate business processes and execute the life cycle change process to implement design changes in response to changes in customer functional requirements.

Technical decisions, recommendations and specifications are developed at this level based on analytical data and business requirements. The system development life cycle and change management processes are utilized to provide structure to the planning, implementation and deployment of new software to minimize impacts to the customer.

Information Technology Specialist III (Web Application Development) Range A

At the advanced Range A level, incumbents demonstrate extensive knowledge of the web application development process for multiple platforms, diverse and/or distributed IT environments. They serve in a lead capacity and direct the work of assigned staff and/or serve as expert specialists who work independently and deal with the most complex integrated enterprise web applications. Incumbents evaluate the feasibility of new systems design methodologies that best meet the business requirements and recommend the adoption of the most promising new methodologies. They interpret software development standards to develop complex web applications for multiple platforms. At this level, they are required to lead the development of alternative solutions to ensure web applications optimize technology and functionality to best meet a department's business needs. They also provide technical guidance concerning system technical constraints, acceptance testing, performance criteria, complex design issues, and complex programming logic. In addition, they resolve complex problems related to interfaces and connectivity of multiple hardware platforms, operating systems, database management systems, and various other applications.

Information Technology Specialist III (Web Application Development) Range B

Incumbents perform the state's most complex IT web application development and direct major state-wide projects. Incumbents function as architects for large, extremely complex enterprise-wide web applications typically found in either large departments or data center IT environments. Incumbents make decisions or recommendations to establish state or department-wide standards, policies, and practices for software development, requirement analysis, reusability of systems and or code, and performance metrics. Incumbents use in-depth experience and expertise of methods, paradigms and tools to advance software development practices for the state or department. They apply superior leadership skills to direct large project development teams and negotiate and interact with consultants. Incumbents use their broad understanding of the business and organization structure to predict and manage time, cost and capital expenditures related to these projects.