Draft Classification Standards – Rev. 03/29/2024
Software Developer Series

Class Title	Class Code	Issue Date	FLSA
Software Developer I	*XXXX*	*XXXX*	*Non-Exempt*
Software Developer II	*XXXX*	*XXXX*	*Exempt**
Software Developer III	*XXXX*	*XXXX*	*Exempt**
Software Developer IV	*XXXX*	*XXXX*	*Exempt**

OVERVIEW:

Responsible for planning, design, and implementation of software development projects, upgrades, and highly technical software development support for third party products and in-house initiatives. Performs work across all stages of the software development lifecycle including planning, feasibility analysis, design, programming, testing and integration, implementation, and maintenance/enhancement. Using programming language(s), builds custom software applications and online systems as well as develops complex customizations. Creates the executable code, system functionality, and user interfaces that will be utilized by system users in business-unit or enterprise-level software applications or systems. Develops programmed solutions based on defined requirements that meet business needs and objectives. Develops technical documentation throughout the software development life cycle. Automates custom software platform tasks and services through appropriate tools and scripting.

Positions are assigned to classifications within the series based on the scope and complexity of software development activities; degree of independence and judgement; experience, knowledge, skill, and ability required; degree of planning, analysis, and execution required by the position; impact and risk to the university; and nature of supervision received. Higher levels within the series build upon and include the knowledge and skill requirements and work assignments of lower levels within the series.

Software Developer I – Entry-level professional who applies basic professional concepts to resolve problems of limited technical scope and complexity. Normally operates under established guidelines. Assignments may be routine in nature and involve performing various duties related to creating code, testing systems, and providing technical documentation. Follows standard practices and procedures.

Software Developer II – Professional who applies acquired software development skills, and knowledge of university and information technology policies, and procedures to complete significant assignments, projects, and requests related to the development and implementation of software applications, online systems, database structures to support software applications and software customizations of moderate technical scope and complexity. Exercises judgment to determine appropriate system functionality and user interfaces based on business needs and defined requirements.

Software Developer III – Professional who applies advanced job skills, in-depth organizational and stakeholder acumen, and technical project planning skills to develop programmed solutions and related work of significant technical scope and complexity to meet operational needs and objectives. Exercises advanced discernment when creating development and implementation plans and determining appropriate software design and

customization decisions. Demonstrates in-depth knowledge of software design, development, and customization principles and information technology policies, guidelines, and standard operating procedures to determine appropriate action. May require the development of new approaches, techniques, and innovation to address issues. Conducts software development feasibility studies and ensures proper implementation of software applications and programs by providing expert guidance.

Software Developer IV – Technical leader with a high degree of knowledge in software development and architecture. Problem-solving frequently requires analysis of unique issues or problems without precedent and/or structure and new approaches, methods, techniques, or innovation. Responsible for conceptualization, development, and implementation of complex interlinked applications and systems. Under the direction of management, creates strategies, guidelines, and procedures to ensure technology objectives are achieved.

TYPICAL PROGRAMS, ACTIVITIES, AND CORE FUNCTIONS/DISCIPLINES *(May include but are not limited to)*:

- *Planning and Analysis* – Participates in functional/business unit requirements gathering and analysis. Provides technical knowledge of appropriate custom software/system strategies, capabilities, and functionality in requirements gathering sessions. Conducts feasibility analysis and technical review for the viability of custom development of the application, software, or service.

- *Programming and Software Development* – Writes, documents, maintains, and secures effective, efficient, and scalable code. Utilizes a wide array of methods and programming tools to develop or modify software programs. Creates software integrations that optimize system and data resources to meet business unit requirements and enhancement requests. Ensures that applications comply with secure coding standards and user interfaces incorporate principles of universal design for inclusivity and accessibility. Works collaboratively with campus business or academic users to ensure requirements align with work practice.

- *Data Integration* – Develops custom scripts, application protocols and interfaces, and connectors to facilitate data exchange and communication between disparate systems and platforms. Designs and develops integration solutions to connect various systems, applications, and data sources, ensuring seamless data flow and interoperability. Performs testing, debugging, and troubleshooting of integration and automation solutions to ensure reliability, scalability, and performance.

- *Testing and Debugging* – Constructs and maintains test cases. Reviews, fixes, and debugs code; performs validation and verification testing of software programs, services, and applications to ensure functionality meets business unit expectations, including end-user, integration, system, and acceptance testing.

- *Application Deployment* – Implements custom programs, application services, and software. Tests applications for performance, responsiveness, and security. Deploys new releases of the application or platform. Complies with and participates in formal change management processes including the performance of validation and verification testing in order to maintain the operational environment.

- *Maintenance* – Ensures information systems are maintained in a state that is current by deploying programmatic and security updates and patches. Working with internal teams, performs troubleshooting of program errors and issues, vulnerability assessment and remediation, and deploys fixes and improvements to the product or service that it supports. Ensures optimal performance and minimal downtime and loss of productivity and service.

- *Software Documentation* – Independently or in collaboration with business systems analysts, document software design, architecture, changes, and development processes and create and maintain software specifications, user manuals, release notes, and related technical documentation.

DISTINGUISHING CHARACTERISTICS:

- Produces, tests, fixes, and improves programming code for a custom software application, system integration, or other platforms.
- Develops systems and solutions performing the full range of development functions that include systems design, software programming, deployment, and code maintenance.

SOFTWARE DEVELOPER I

Under direct supervision, performs entry-level professional software development duties to support software planning, maintenance, and development. Performs less complex technical tasks following detailed and established procedures. Work is reviewed for accuracy and soundness of technical concepts.

Work assignments typically include some or all of the following:
- Analyzes new/potential software components, systems, and workflows.
- Communicates with stakeholders to gather and document requirements and provide updates.
- Writes and documents clean, efficient, and scalable code for new and existing applications while adhering to established industry-standard security frameworks.
- Documents software design, architecture, and development processes.
- Provides technical support to application end users.
- Performs unit, integration, and regression testing to ensure software applications function correctly and meet specified requirements.
- Collaborates with senior developers, business systems analysts, project managers, and other team members to contribute to the overall software development process.
- Drafts technical documentation, such as user manuals or developer guides, to help users understand and utilize the software effectively.
- Ensures that all user interfaces incorporate principles of universal design for inclusivity and accessibility.

MINIMUM QUALIFICATIONS:

Knowledge and Skill:
- General knowledge of software development principles, concepts, frameworks, and tools
- Organizational and time management skills to plan, organize, and prioritize work.

- Demonstrated communication and interpersonal skills to gather information from users, convey technical issues effectively, and produce documentation.
- Demonstrated knowledge and ability to write code and troubleshoot software application system issues.
- Ability to maintain confidentiality and appropriately handle sensitive data and information.
- Ability to work independently and as part of a team and build relationships with diverse stakeholders.
- Analytical skills to gather requirements and analyze and troubleshoot issues.
- Stays current on programming languages and emerging technologies.
- Computer skills to appropriately troubleshoot and alter systems as required.

Experience and Education:

Equivalent to a bachelor's degree in a related field. Relevant education, certifications, and/or experience which demonstrates acquired and successfully applied knowledge and abilities shown above may be substituted for the required education on a year-for-year basis.

SOFTWARE DEVELOPER II

Under general supervision, designs, analyzes, develops/upgrades, tests, and maintains university software applications and systems. Applies software development knowledge to design feasibility studies, software upgrades and interfaces, write and review coding, and troubleshoot system software issues to ensure user technology is functioning properly and meets the needs of the institution. Works independently on most day-to-day assignments with general supervision on new assignments or projects to ensure alignment with objectives. Handles multiple work priorities and is accountable for own work results.

In addition to duties performed by the Software Developer I, the Software Developer II typically performs the following duties:

- Collaborates with stakeholders and cross-functional teams to understand desired functionality and performance.
- Evaluates existing and proposed software systems and applications. Develops application program specifications.
- Creates models and diagrams that outline the code needed to create, update or interface with software and applications.
- Designs, develops, documents, and modifies software components, modules, and interfaces to systems, applications, and databases for existing and third-party software.
- Gathers feedback, troubleshoots, and debugs software issues, and provides timely resolution.
- Performs application-level system administration, upgrades, and integration.
- Uses productivity tools to develop and modify application software to meet user needs.
- Designs, develops, and implements back-end, front-end, and custom connectors.
- Analyzes moderately complex problems with applications.
- Reviews, tests, and updates code.
- Tests, stages, and implements software upgrades.
- Conducts testing and debugging to ensure software functionality and resolves issues.
- Provides technical guidance to service management teams to address user issues and provide timely resolutions.

- Monitors system performance and identifies and implements optimizations to resolve issues.
- Designs and develops database structures and schemas to support software applications. Integrates software applications with database, ensuring data integrity and security.
- Assesses, mitigates, and responds to core software vulnerabilities to fix application problems.
- Provides technical programming support to users of assigned systems. Works closely with user community to understand data access and integration needs.
- Consults with users to identify and document software purpose, workflow issues, output needs and to determine overall functional and technical requirements and specifications.
- May provide lead work direction and training to other technical and less-experienced staff, and student employees.

MINIMUM QUALIFICATIONS:

In addition to Software Developer I knowledge and skill requirements, work assignments typically require:
- Working knowledge of relevant software applications and programming languages.
- Working knowledge of software development methodologies such as designing workflows, diagrams, and schematics.
- Working knowledge of system development life cycle and structured systems development concepts.
- Strong project planning and organizational skills to plan, organize, document, and manage multiple projects.
- Strong communication and interpersonal skills with the ability to present technical information to technically diverse audience in a clear and concise manner.
- Strong analytical skills to evaluate user and business needs/programs and design, develop, and implement solutions.
- Proficiency in using applicable software and programming languages.
- Knowledge of university and IT policies, processes, and procedures, and data privacy regulations.
- Ability to provide lead work direction and training to others.

Experience and Education:
Equivalent to a bachelor's degree in a related field and two years of relevant experience. Additional experience which demonstrates acquired and successfully applied knowledge and abilities shown above may be substituted for the required education on a year-for-year basis. An advanced degree in a related field may be substituted for the required experience on a year-for-year basis.

SOFTWARE DEVELOPER III

Working independently under general supervision, architects software solutions while considering scalability, performance, and security requirements to meet existing and future software needs. Applies advanced technical knowledge and expertise in systems analysis and programming to provide technical advice and consultation on difficult analysis and programming problems. Demonstrates advanced discernment in selecting methods and techniques for obtaining solutions. Conducts analysis of complex software applications and prepares feasibility studies to evaluate user needs for new or revised systems. Decision-making is based on software development best practices; programming standards; university and information technology

policies, guidelines, and protocols; and technology strategies and goals. Work is focused on ensuring alignment with overall objectives. Handles multiple work priorities and may provide lead work direction with accountability for results.

In addition to duties performed by the Software Developer II, the Software Developer III typically performs the following duties:

- Collaborates with various stakeholders and cross-functional IT teams to plan and lead software development projects. Ensures technical solutions meet business needs and IT standards and protocols.
- Prepares cost analysis and justification for large or complex software development initiatives and/or projects.
- Designs new and recommends improvements to processes and procedures.
- Designs highly technical software solutions using programming languages and frameworks.
- Architects systems and databases to support software programs and applications created for various university needs.
- Develops and maintains technical solutions for enterprise-wide systems and applications. Ensures the availability and functionality of systems, including security and integrations.
- Develops and manages test plans and processes. Selects appropriate techniques and tools. Provides guidance to team members to ensure applications meet CSU application development standards for security.
- Determines timing and need for updates to locally developed software and applications. Creates plan for migration and manages implementation.
- Provides lead work direction, training, and mentorship to professional, technical, and administrative staff.

MINIMUM QUALIFICATIONS:

In addition to Software Developer III knowledge and skill requirements, work assignments typically require:

- Thorough and advanced knowledge of software application development life cycle and structured systems development concepts.
- Demonstrates competence in independently applying advanced judgment to resolve difficult and complex software development problems and issues.
- Advanced project management skills, with the ability to manage multiple, large, and/or complex projects.
- Advanced analytical skills to understand problems from a broad perspective and discern applicable underlying principles to conceive and develop strategic software development solutions.
- Advanced skill in mentoring and overseeing the work of others.
- Ability to research and incorporate new software languages, models, platforms, and techniques to gain efficiencies and continually improve approaches to development.
- Advanced communication and interpersonal skills to effectively convey technical knowledge and procedures and persuade stakeholders and management regarding software development.

Experience and Education:

Equivalent to a bachelor's degree in a related field and four years of relevant experience. Additional experience which demonstrates acquired and successfully applied knowledge and abilities shown above may be substituted for the required education on a year-for-year basis. An

advanced degree in a related field may be substituted for the required experience on a year-for-year basis.

SOFTWARE DEVELOPER IV

Working primarily independently with minimal supervision, oversees the software development life cycle, from defining user needs and anticipating user behavior to releasing a complete application. Uses technical expertise to provide expert advice and guidance to professional, technical, and administrative staff. Problems are highly complex and solutions may require the creation of new procedures and software development techniques. Serves as a technical expert in the conceptualization, development, and implementation of multiple, interlinked systems and programs. Decision-making often requires integration and interpretation of diverse information technology disciplines, expert software development expertise, functionality, and user experience impact on application design, and persuasion and negotiation with management. Functions with a high degree of autonomy. Work often requires a high degree of technical expertise, persuasion, and leadership.

In addition to duties performed by the Software Developer III, the Software Developer IV typically performs the following duties:

- Serves as a key technical advisor within the software development discipline. Under the direction of management, provides oversight and recommendations for highly complex projects, initiatives, problems, and issues.
- Manages the implementation of complex integrated and unique software solutions specific to university needs.
- Recommends new solutions and integrated problem resolutions, such as custom designed applications to management.
- Under the guidance of management, oversees process improvement efforts, often developing new strategic approaches, solutions, processes, and protocols.
- Under the guidance of management, works cross-functionally to provide consultation and advisement on business rules, services levels, and user requirements to software systems and applications.
- Engages with campus business or academic leaders and stakeholders to guide solutions that meet institutional needs.

MINIMUM QUALIFICATIONS:

In addition to Software Developer III knowledge and skill requirements, work assignments typically require:

- Expert knowledge and understanding of software development methodologies and best practices including software and programming languages.
- Expert knowledge and skill in applying and interpreting applicable standards, guidelines and, as appropriate, recommend new procedures, protocols, and standards.
- Expert analytical and organizational skills to organize, prioritize, and coordinate the successful completion of large, complex, and strategic software development, and/or system integration or migration projects.
- Expert communication and interpersonal skills to effectively communicate complex technical systems and procedures and persuade stakeholders and management regarding design and development options.

Experience and Education:

Equivalent to a bachelor's degree in a related field and five years of relevant experience. Additional experience which demonstrates acquired and successfully applied knowledge and abilities shown above may be substituted for the required education on a year-for-year basis. An advanced degree in a related field may be substituted for the required experience on a year-for-year basis.

NOTES:

All IT professionals protect the confidentiality and integrity of data and electronic information from incidental, intentional, unauthorized release and/or preventable misuse or loss to the university. IT professionals at the university are collectively responsible for ensuring the security and protection of sensitive information, systems, and digital assets. This includes upholding data confidentiality, integrity, and availability and actively contributing to a culture of cybersecurity awareness and compliance throughout the university's technological ecosystem.

The California State University has a long-standing commitment to make its programs, services, and activities accessible to the public and the entire campus community. All professionals classified within the Information Technology Series have the expectation to support practices and techniques that align with federal and state law, as well as the CSU initiatives, coded memorandums, and executive orders.

Acronyms and technical terms used in this classification document are current as of the publication date. Subsequent technical, functional, and usage terminology and acronyms should be substituted as appropriate.