

# Classification and Qualification



# STANDARDS

The California State University System

## Information Technology Series Operating Systems Analyst

### CLASSIFICATION OVERVIEW

Positions in this classification are primarily responsible at varying levels for the analysis, modification, maintenance, and installation of operating systems, utilities, and related software and systems, including physical databases, to meet campus needs. Responsibilities include ensuring the availability, integrity, and reliability of assigned systems.

Positions in this classification typically support systems that serve the entire campus. Operating System Analyst positions may also exist in large administrative departments or academic schools that have responsibility for their own configuration(s) of mainframes, mini-computers, file servers, and/or workstations. Common working titles include Software Systems Analyst/Programmer, Operating Systems Analyst/Programmer, Systems Programmer, Software Systems Specialist, Database Administrator, Systems Administrator, etc.

### ENTRY QUALIFICATIONS

To enter this classification, a basic foundation of knowledge and skills in operating systems programs, maintenance, and systems administration features is a prerequisite. This foundation would normally be obtained through a bachelor's degree, preferably in computer science, mathematics, or a related technical field, or equivalent technical training and/or experience. Foundation knowledge and skills for the Operating Systems Analyst include a working knowledge of the assigned computer operating systems, systems analysis, and systems-level programming.

Further progress within this classification is based on department need and work assignments requiring higher levels of skills and knowledge. *Reference the Information Technology Series Introduction for level definitions.*

### CORE FUNCTIONS

The core functions of the Operating Systems Analyst are:

- Operating Systems Analysis
- Operating Systems Administration

These core functions represent major categories of work within the Operating Systems Analyst classification. Typical activities and core skills for each core function cited below are illustrative; campus assignments may vary.

## **CORE FUNCTION**

### **Operating Systems Analysis**

#### **Examples of Typical Activities:**

##### **Operating System Development/Installation:**

Ensure operating system software is properly installed, tested, and tuned to maximize operating efficiency.

Examples of typical work activities include:

- Develop and implement plans for fully Integrated systems, including operating systems, network systems, database systems and applications;
- Develop plans, schedules, and requirements for the installation and maintenance of new and/or revised software;
- Install, configure, and tune operating systems software for optimal performance;
- Integrate operating systems with other systems;
- Evaluate and recommend hardware and system software procurements;
- Assess the impact of new software on existing systems and users and develop modification plans as needed.

##### **Operating System Programming/Modification:**

Customize and upgrade operating and related systems to meet ongoing user needs. Examples of typical work activities include:

- Plan and implement modifications and upgrades to system configuration to improve utilization based on analysis of application and production requirements;
- Plan system capacity and develop expansion plans;
- Allocate and organize data storage;
- Write and develop efficient software and code for operating systems;
- Develop system utility programs and procedures to enhance operations, applications, and general system usage;
- Document operations procedures and installation methodologies and modifications.

##### **Operating Systems Performance Analysis:**

Evaluate level of systems operation and recommend measures to improve overall performance. Examples of typical work activities include:

- Conduct analytical studies of system processing time and resource capacity, measuring system performance against predetermined or standard benchmarks (e.g., operating time, error rates, and types);
- Determine system compatibility and performance, and impact of integration with new systems or upgrades;
- Perform analysis, testing, and/or simulation of equipment and software configurations;
- Research and identify system expansions to meet anticipated future workload.

##### **Operating Systems Maintenance:**

Monitor and maintain operating and related systems to ensure minimal interruption of production systems and to maintain maximum system availability. Examples of typical work activities include:

- Diagnose and resolve operating systems and program failures;
- Develop and execute test schemes and diagnostic procedures;
- Monitor and analyze system performance and capacity and install corrections as necessary;
- Review all systems software and hardware to ensure system integrity;
- Work with maintenance vendor to develop and implement solutions specific to the campus needs.

**Operations Support:**

Provide technical support to computer operations and applications programming staff to ensure availability of production and on-line systems. Examples of typical work activities include:

- Analyze application failures and work with computer operations and applications programming staff to develop solutions;
- Provide guidelines for applications development structure and security;
- Provide procedures training and support;
- Assist in resolving production problems.

**CORE SKILLS****Operating Systems Analysis**

- Knowledge of internal operating system technology, computer operations and hardware, and network communications theory.
- Ability to use operating system languages as defined by the campus and ability to perform systems level programming in a distributed, networked environment.
- Ability to use performance monitoring software and interpret results.
- Ability to perform preventative and remedial maintenance to operating system(s).
- Ability to interface/integrate campus defined operating system(s) with software and other systems.
- Ability to evaluate existing and proposed systems and recommend upgrades and/or modifications.
- Knowledge of applications programming techniques and procedures.
- Understanding of job control and production procedures with an ability to troubleshoot and isolate production problems and applications code.
- Ability to research and survey new products and/or releases, such as productivity tools.
- Ability to establish and document operations procedures.
- Knowledge of network operating system and network architecture, configuration, and protocols.
- Knowledge of client server technologies.

**CORE FUNCTION****Operating Systems Administration****Examples of Typical Activities:****Database Maintenance/Management:**

Design, create, manage and maintain physical databases including database storage management, procedures and tools for access, database security, and monitoring and tuning the database to ensure ongoing operation and access. Examples of typical work activities include:

- Install, structure, tune, and maintain database operating systems and software on mainframe or mini-computers;
- Manage database organization and data storage;
- Monitor database system usage and performance;
- Troubleshoot and resolve database problems;
- Create databases and/or migrate databases between machines;
- Support client/server database access tools;
- Develop benchmarks for testing new software releases;
- Provide consultation to programmers on relational database design;
- Oversee vendor software fault resolution.

**Security Management:**

Ensure safety and security of information system assets and protect systems from inappropriate access or destruction. Examples of typical work activities include:

- Run checks on data integrity; plan and execute disaster recovery plans;
- Develop system backup and archival methodology;
- Maintain data security and integrity by developing system access standards and procedures;
- Evaluate the adequacy of controls and security measures;
- Conduct virus avoidance procedures;
- Work with users to understand security needs and evaluate level of security required.

**Storage Administration:**

Design system storage capacity to provide for efficient and timely response and operating time. Examples of typical work activities include:

- Calculate data storage media and cost alternatives;
- Specify sources and methods of data storage;
- Plan for efficient allocation of system storage capacity.

**CORE SKILLS****Operating Systems Administration**

- Knowledge of system management and security/control procedures.
- Knowledge of database design, structure development, features, operations, programming, and data access principles.
- Knowledge of data communication network architecture, configuration, protocols, and interfaces.
- Knowledge of operating systems and storage capacity, including ability to perform capacity planning.
- Ability to identify and implement critical maintenance fixes and to isolate and correct malfunctions, including interface problems.
- Ability to develop and execute disaster recovery plans.
- Ability to establish data security standards and procedures.
- Ability to tune database systems and maintain database software.