

State of California

MEMORANDUM

MM Ref. #89-19

Date: August 25, 1989

To: PERSONNEL MANAGEMENT LIAISONS

NOTE: Please distribute a copy of this memo and attachments to your Departmental Personnel Office.

From: Department of Personnel Administration
Classification and Compensation Division

Subject: Allocation Guides for Data Processing Classes.

A draft Board memo and revised series specifications for the Computer Operator, Information Systems Technician, and Information Systems Analyst classes were sent to you on March 23, 1989. Comments received from departments were reviewed and many were incorporated into the proposal. This proposal was adopted at the June 13, 1989, State Personnel Board meeting.

Attached are three separate sets of documents relating to the Data Processing classes. Following is a summary of the contents of each set:

1. Information Systems/Programmer Analyst Allocation Guidelines

- a. The guidelines have been revised to incorporate the Office Systems Support guidelines that were attached to the March 23 memo referenced above. Minor changes in the list of tasks for other functions have also been made. The guidelines have also been re-formatted in order to make them easier to use. The re-formatting, discussed below, resulted in reducing the guides from 23 pages to 11 pages.
- b. The individual tasks for each functional area have been removed from the guides and placed on a separate page titled "Functional Areas of Responsibility". This page is set up as a "check" list, which is to be completed for each position being allocated to one of these classes. Also included is a new list of the various functional areas, showing which of the Analyst series would typically have "primary" responsibility for each function.
- c. The complexity factors have all been placed on one page, and have also been set up as a "check" list for easy completion for each position.
- d. The guidelines for each of the class series have been placed on one page.
- e. Departments will now be required to submit a copy of the two "check" lists to DPA when they submit Requests for Certification, Form 625. These forms provide an easy means of documenting complexity factors and functional responsibilities, as defined in the guides.



2. Data Processing Manager Series Allocation Guidelines

- a. A new form titled "Summary of Functional Areas of Responsibility/Complexity Factors" has been developed. It is set up as a "check" list, and must be submitted to DPA with position allocation requests.
- b. Departments are currently required to submit a copy of the "Quantitative Considerations for Determining Organizational Complexity/Size" for Manager positions which supervise Technical Support or Administrative functions. We are now asking that this form be submitted with all requests, because it provides beneficial information regarding a department's data processing environment.

3. System Software Specialist Series Allocation Guidelines

- a. The "Allocation Guidelines Matrix" for the series has been reformatted; no other changes were made to the Matrix.
- b. The definition of the Operating Systems function has been expanded to include a description of the complexity of various operating systems.
- c. The list of mainframe computers has been updated, and the reference to the IBM 43XX or equivalent size computers has been deleted. The key consideration is the complexity of the operating system, which is now included in the Functions Definition section.
- d. A new form titled "Summary of Factors Relating to Position to be Filled" has been developed. It is also set up as a "check" list, and must be submitted to DPA with position allocation requests.

In addition to the forms described above, departments should continue to submit a memo of justification and present/proposed organization charts with each request.

The allocation guides for the Computer Operator and Information Systems Technician class series will be revised and distributed at a future date. Any questions regarding information in this memo should be directed to Duella Farmer on 324-9406. Questions regarding the application of these guidelines to positions in your department should be directed to your Department DPA analyst.

Frank Tanaka

Frank Tanaka, Senior Section Manager
Classification and Compensation Division

ALLOCATION GUIDELINES

FOR

ASSOCIATE INFORMATION SYSTEMS ANALYST (SPECIALIST)
ASSOCIATE INFORMATION SYSTEMS ANALYST (SUPERVISOR)
STAFF INFORMATION SYSTEMS ANALYST (SPECIALIST)
STAFF INFORMATION SYSTEMS ANALYST (SUPERVISOR)
SENIOR INFORMATION SYSTEMS ANALYST (SPECIALIST)
SENIOR INFORMATION SYSTEMS ANALYST (SUPERVISOR)

ASSOCIATE PROGRAMMER ANALYST (SPECIALIST)
ASSOCIATE PROGRAMMER ANALYST (SUPERVISOR)
STAFF PROGRAMMER ANALYST (SPECIALIST)
STAFF PROGRAMMER ANALYST (SUPERVISOR)
SENIOR PROGRAMMER ANALYST (SPECIALIST)
SENIOR PROGRAMMER ANALYST (SUPERVISOR)

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I. PURPOSE AND USE OF GUIDELINES

These guidelines are provided to assist in determining the appropriate level of positions within the Information Systems Analyst and Programmer Analyst Series of classes.

These allocation guidelines supplement and clarify the descriptions contained in the series specifications for these classes. They are provided in an attempt to assure appropriate allocations and consistency in the use of these classes by all departments.

These guidelines do not cover every possible combination of duties and responsibilities. Instead, they attempt to describe typical situations and identify those types of factors which should be assessed in justification of the levels within the class series. Identification and assessment of these factors by departments should facilitate the review of position allocation requests by department and DPA personnel.

Many of the allocation guidelines relate to a mainframe environment. It is acknowledged that there can exist mini-computer environments with many of the same complexities. These situations will have to be justified by the department.

Included within the guidelines are various quantitative factors. These numbers are not to be interpreted as being absolutes or as primary allocation factors, but should be evaluated along with all other considerations.

The number of long term contract personnel should be factored in when determining classification levels.

II. JUSTIFICATION PROCESS/STEPS IN DETERMINING CLASS AND LEVEL

Requests for refills of positions which have been approved by DPA using these guidelines, or positions which clearly meet the guidelines, do not need as much in-depth justification. However, all basic pertinent information relating to the position, including a description of any changes which have occurred, should be included. As is standard procedure, all requests must include a "present" and "proposed" organization chart.

A. The steps to be used in determining the appropriate class and level, and the justification process are outlined below:

1. Complete the form on page 5 titled "Functional Areas of Responsibility". This form contains space for indicating subordinate staff for supervisory positions, in addition to a list of tasks arranged by the following functional areas of responsibilities:

System Development/Maintenance
Technical Support
Computer Services
MIS Administration
Information Center Services
Office Systems Support
Data Administration

The duties of a position will typically include 2 or more of the tasks for each functional area. The list of tasks are those that are typically performed, but are not necessarily all inclusive.

2. Determine which classification series is appropriate:

Programmer Analyst Series - would be used for positions performing duties requiring technical programming knowledge.

Information Systems Analyst Series - would be used when the duties of the position are primarily analysis tasks and typically less than 10% of time is spent performing duties which require a knowledge of programming. This series would also be used in data processing administrative support areas when a data processing person is needed to broaden the overall knowledge of data processing budget and administrative functions.

Functions Typically Performed by each Class Series - A summary of the functions and tasks performed by positions in these classes appear on page 6. The summary indicates which tasks are typically performed, and which tasks are "secondary" and may be performed by positions in each class series.

Supervisory Designation - In order to be designated as a supervisor, the proposed position must spend at least half the time performing technical duties appropriate for the classification level. If less than half the time is spent on technical duties, the Data Processing Manager Series would be more appropriate.

3. Complete the chart on page 7 titled "Complexity Factors" to determine which complexity factors apply to the majority of the functional areas of responsibilities assigned to the position to be filled. The complexity designation reflects the knowledge and skill level that an employee must have to perform the duties of a position at a satisfactory performance level. The justification for a position at the Staff or Senior level must describe how the complexity factors relate to the required knowledge and skill level required to perform the duties of the position.



These are the definitions of key terminologies used in the Complexity Factors chart:

Large Batch or Large On-Line System--Multiple input and output files where at least one file is considered large (i.e., greater than one million records).

Multiple System Integration--The sharing of data between systems through an electronic media, such as tape or disk.

Medium File--File size between 50,000 and one million records.

Large Scale DBMS (Data Base Management System)--The use of a data base software package to manage shared user data exceeding one million records.

4. Next, determine the appropriate classification level by comparing the position against the levels description in the charts titled "Allocation Guides", which start on page 8. Determine the major functional area(s) into which the duties of the position fall. If the allocation guidelines indicate that a level is not appropriate (N/A) for a functional area, then special justification must be provided to indicate why that level is appropriate for the position. The guidelines describe each level by the major functional areas.
 5. Identify and describe in the justification memo any nonquantifiable or unique considerations, and discuss how they impact the level of the position to be filled. If the position is assigned to a special project, briefly describe the scope of the project, the scope of responsibility assigned to the position, stage of development, impact on department (or multi-department), and any other key considerations.
 6. Attach the memo of justification and copies of the completed forms (Functional Areas of Responsibility, and Complexity Factors) to the Request for Certification, Form 625, at the time it is submitted to DPA for review.
- B. In addition to the above information, DPA staff also evaluates the overall organization and other positions with an organizational or functional relationship to the position in question. If there are two or more Staff or Senior positions assigned to a function or special project, the justification must clarify the split of responsibilities.
- C. It is recognized that these guides may not always exactly describe a position which is to be filled, and that all factors may not apply to every position. It is the responsibility of Departments to describe their positions in terms which relate to the appropriate factors, as well as describing the complexity of their systems in relation to the factors shown in the attached guidelines.



FUNCTIONAL AREAS OF RESPONSIBILITY
INFORMATION SYSTEMS ANALYST/PROGRAMMER ANALYST SERIES
TO BE COMPLETED BY DEPARTMENT AND SUBMITTED WITH FORM 625, REQUEST FOR CERTIFICATION

CLASS TITLE: _____

DEPARTMENT NAME: _____

FOR SUPERVISORY POSITIONS ONLY, indicate the number of staff supervised:

___ Prog/Prog Appr/Info Sys. Ana/SSA	___ Computer Operators
___ Assoc PA (Spec) (Sup)	___ Info System Technicians
___ Assoc ISA (Spec) (Sup)	___ Key Data Supervisors
___ Staff PA (Spec) (Sup)	___ SUB-TOTAL
___ Staff ISA (Spec) (Sup)	___ Key Data Operators
___	___
___ TOTAL PROFESSIONAL	___ TOTAL STAFF

COMPLETE THE FOLLOWING INFORMATION FOR ALL REQUESTS

FUNCTIONAL AREA(S) OF RESPONSIBILITY: Check the specific functional responsibilities which apply to the position to be filled. In addition, in the first column, indicate the approximate % of time spent in each functional area.

SYSTEMS DEVELOP./ MAINT. % of time:	Please check: ___ MAINFRAME ___ MINI ___ MICRO ___ Project Proposals (FSRs) ___ Application Programming	Project Management/Coordination Application Analysis	___ System Testing
TECHNICAL SUPPORT % of time:	___ Hardware Procurements ___ Software Procurements ___ Operating Systems Support ___ Vendor Software Packages ___ Capacity Planning/Measurements	___ Telecommunications/Network Support ___ Technical Guidelines/Procedures _____ _____	
COMPUTER SERVICES % of time:	___ Production Standards & Procedures ___ Operations Analysis ___ COM Services ___ Equipment Maintenance Coord. ___ Establishing/Monitoring Service Level Objectives	Data Resource Management: ___ DASD Management ___ Tape Management ___ Security Table Maintenance ___ Data Security Policies/Procedures _____	___ Job Entry ___ Data Entry ___ Production Scheduling ___ Telecomm. Help Desk
MIS ADMIN. % of time:	___ Budgets/Office Services ___ Cost Accounting/Rates ___ Training	___ Planning/Reporting ___ Contract Administration _____	
INFO. CENTER SERVICES % of time:	___ End User Training ___ End User Application Development ___ End User Software/Hardware Evaluation		
OFFICE SYSTEMS SUPPORT % of time:	___ Configuration Planning ___ Physical Planning ___ Implementation of OA Systems ___ Maintenance of OA Systems ___ OA Hardware/Software Proc. & Install.	___ OA System Administration ___ OA End-User Training ___ OA Standards & Procedures ___ OA System Security, Recovery, & Backup	
DATA ADMIN. % of time:	Data Administration Planning: ___ Global Data Modelling ___ Logical DB Design ___ Entity Relationship Modelling	Data Base Services: ___ Physical DB Design ___ DB Access Module Development ___ Data Dictionary Support ___ Performance Monitoring & Tuning ___ DB backup/Recovery ___ DB Technical Architecture ___ DB Migration/Procedures ___ DB Reorganization/Maintenance	



Data Processing Classifications Class Use by Function

<u>FUNCTION</u>	<u>Information Systems Analyst</u>	<u>Programmer Analyst</u>
I. SYSTEMS DEVELOPMENT/MAINTENANCE		
A. Application Analysis	T	T
B. Project Proposals	T	S
C. Application Programming	S	T
D. System Testing	T	T
E. Project Mgmt/Coordination	T	T
II. MIS ADMINISTRATION		
A. Budgets/Office Services	T	S
B. Cost Accounting/Rates	T	S
C. Training	T	S
D. Planning/Reporting	T	S
E. Contract Administration	T	S
III. TECHNICAL SUPPORT		
A. Hardware/Software Procurements	T	T
B. Proprietary Production Software	S	T
C. Capacity Planning/Measurements	S	T
D. Telecommunications/Network Support	S	T
E. Technical Guidelines/Procedures	T	T
IV. DATA ADMINISTRATION		
A. Planning		
1. Global Data Modelling	T	T
2. Logical DB Design	T	T
3. Entity Relationship Modelling	T	T
B. Data Base Support Services		
1. Physical DB Design	S	T
2. Performance Monitoring	S	T
3. DB Technical Architecture	S	T
4. DB Migration/Procedures	S	T
5. DB Backup/Recovery	S	T
6. DB Reorganization/Maintenance	S	T
7. DB Access Services	S	T
8. Data Dictionary Support	S	T
V. INFORMATION CENTER SERVICES		
A. End-User Training	T	S
B. End-User Application Development	T	T
C. End-User Software/Hardware Evaluation	T	T
VI. OFFICE SYSTEMS SUPPORT		
A. Configuration Planning, Physical Planning, Implementation, & Maintenance of OA Systems	T	S
B. OA Hardware/Software Procurement & Installation	T	S
D. OA System Administration	T	S
E. OA End-User Training	T	S
F. OA Standards & Procedures	T	S
G. OA System Security, Recovery, & Backup	T	S
VII. COMPUTER SERVICES		
A. Standards & Procedures	T	S
B. Operations Analysis	T	S
C. Est./Monitor Service Level Objectives	T	S
D. Production Scheduling	T	S
E. COM Support Services	T	T
F. Telecommunications Help Desk	T	S
G. Data Management	T	S
H. Data Security	T	S
I. Equip. Maint. Coordination	T	S

Key: T=typical function performed by class
S=secondary function which may be performed by class

COMPLEXITY FACTORS
INFORMATION SYSTEMS ANALYST/PROGRAMMER ANALYST SERIES
TO BE COMPLETED BY DEPARTMENT AND SUBMITTED WITH FORM 625, REQUEST FOR CERTIFICATION

PLEASE CHECK ALL THOSE WHICH APPLY TO THE POSITION TO BE FILLED.

	STANDARD	COMPLEX	MOST COMPLEX
PC SUPPORT SERVICES	<input type="checkbox"/> Single PC network or stand alone computers using one operating system/network protocol. <input type="checkbox"/> Micro computer network gateway to a mini or mainframe computer. <input type="checkbox"/> Application level support for micro computer systems. <input type="checkbox"/> Limited network support. <input type="checkbox"/> Installation of micro computer equipment, operating system, and application software. <input type="checkbox"/> Appl. prog. in 4th/5th generation languages.	<input type="checkbox"/> Multiple PC networks using one operating system or network protocol. <input type="checkbox"/> Micro computer network gateway to a mini or mainframe computer. <input type="checkbox"/> Application level support for micro computers running multi-user, multi-tasking systems. <input type="checkbox"/> Installation of micro computer equipment, components, operating system, & application software. <input type="checkbox"/> Appl. programming in higher level languages.	<input type="checkbox"/> Multiple PC networks using more than one operating system. or network protocol. <input type="checkbox"/> Microcomputer network gateway to a mini or mainframe computer. <input type="checkbox"/> Operating system level support for micro computers running multi-user, multi-tasking systems. <input type="checkbox"/> Installation of micro computer, equipment, components, operating system, and application software. <input type="checkbox"/> Appl./Operating system programming in low level languages.
OVERALL COMPLEXITY:	_____	_____	_____

MAIN-FRAME ENVIRONMENT	<input type="checkbox"/> DOS, VM, UNIX operating systems. <input type="checkbox"/> Small computers operating independently. <input type="checkbox"/> Small user on data center (<5%)	<input type="checkbox"/> MVS operating system. <input type="checkbox"/> Medium computer. <input type="checkbox"/> Small network (<6) of distributed processors (mini-computers or larger). <input type="checkbox"/> Single on-line monitor. <input type="checkbox"/> DBMS that are not large in scale and are mainframe based.	<input type="checkbox"/> Multitasking MVS operating system or equivalent. <input type="checkbox"/> Large scale computer. <input type="checkbox"/> Large network (>6) of distributed processors (mini computer or larger). <input type="checkbox"/> Multiple on-line monitors. <input type="checkbox"/> Large scale DBMS <input type="checkbox"/> Extensive communs/networks (> 2000 terminals). <input type="checkbox"/> On line prog/library systems. <input type="checkbox"/> Integrated security software.
OVERALL COMPLEXITY:	_____	_____	_____

NAME AND # OF MAINFRAME COMPUTERS: _____

NO. OF TERMINALS: _____

NAME AND # OF MINI COMPUTERS: _____

NO. OF TERMINALS: _____

NAME(S) OF DBMS _____

APPLICATION SOFTWARE	<input type="checkbox"/> Small batch system <input type="checkbox"/> Small on-line system	<input type="checkbox"/> One or more batch systems and medium data files. <input type="checkbox"/> Single on-line system and medium data files.	<input type="checkbox"/> Multiple large batch systems with large data files. <input type="checkbox"/> One or more on-line systems with large data files. <input type="checkbox"/> Multiple system integration.
OVERALL COMPLEXITY:	_____	_____	_____

FUNCS. SUPPORTED Less than three Three or more Five or more

CRITICALITY Could be down up to 10 days without serious impact. Interruption of service >5 days would cause serious impact. Interruption of service >3 days would cause serious impact.

OVERALL COMPLEXITY: _____

ALLOCATION GUIDES FOR PROGRAMMER ANALYST (SPECIALIST) - Positions in this series are non-supervisory

FUNCTIONS	ASSOCIATE	STAFF	SENIOR
SYSTEMS DEVELOPMENT AND MAINTENANCE	<p>1. Journeyperson Programmer Analyst performing complex analysis and programming tasks on systems development and/or systems maintenance projects. OR</p> <p>2. Participates with other Programmers/Analysts on complex and most complex projects/systems. OR</p> <p>3. Acts as technical lead over a small team of 1-3 programmers.</p>	<p>1. Lead Programmer Analyst or independent technical specialist performing complex analysis and programming tasks on complex or most complex systems development and/or systems maintenance projects. Provides technical assistance to Associate level specialists. OR</p> <p>2. Participates with other Programmer Analysts on the most complex projects/systems.</p>	<p>Lead Programmer Analyst or high level technical specialist performing most complex analysis and programming tasks on the most complex on-line and/or data base systems development and/or maintenance projects. May provide teleprocessing and/or data base expertise to Associate and/or Staff level specialists.</p>
TECHNICAL SUPPORT	<p>Journeyperson performing data processing technical support tasks that are complex, such as telecommunications support, operating system support, micro computer support, supporting vendor software packages.</p>	<p>Journeyperson performing data processing technical support tasks that are most complex, such as data base specialist, telecommunication specialist, or providing operating system support for complex mainframe environments.</p>	<p>High level specialist performing the most complex technical support tasks such as supporting the most complex operating systems, telecommunication monitors or data base software that supports large scale data bases.</p>
COMPUTER SERVICES	<p>Journeyperson performing complex analysis and programming tasks in support of the computer operations and/or production processing in standard and complex environments.</p>	<p>High level specialist performing the most complex analysis and programming tasks in support of computer operations and/or production processing in the most complex environment.</p>	N/A
MIS ADMIN	N/A	N/A	N/A
INFORMATION CENTER SERVICES	<p>Journeyperson performing standard and complex analysis and programming in support of info center activities and training end users in use of computer tools.</p>	<p>High level specialist performing the most complex analysis and programming tasks and conducting complex end user training in the use of software packages such as SAS, Megacalc, and PC spreadsheets.</p>	<p>High level specialist acting as the lead person in a large information center (>8 staff) performing the most complex analysis and programming, and conducting end user training on complex software packages.</p>
OFFICE SYSTEMS SUPPORT	N/A	N/A	N/A
DATA ADMIN	<p>1. Journeyperson performing data base technical tasks of a complex nature. OR</p> <p>2. Participates with other programmer analysts on the most complex data base support tasks.</p>	<p>1. Journeyperson performing data base technical tasks in the most complex environment that involves large scale data bases. OR</p> <p>2. May act as the lead technical support specialist in a complex environment.</p>	<p>High level specialist acting as the lead technical support person in the most complex environment performing the most complex data base technical support activities.</p>
MULTIPLE FUNCTIONS	<p>Performing tasks for 2 or more of the above functions that meet the allocation guidelines for the Associate level. More than half the time must be performing tasks at the Associate level.</p>	<p>Performing tasks for 2 or more of the above functions that meet the allocation guidelines for the Staff level. More than half the time must be performing tasks at the Staff level.</p>	<p>Performing tasks for 2 or more of the above functions that meet the allocation guidelines for the Senior level. More than half the time must be performing tasks at the Senior level.</p>

ALLOCATION GUIDES FOR PROGRAMMER ANALYST (SUPERVISOR) - These classes do not supervise equivalent level Specialists

FUNCTIONS	ASSOCIATE	STAFF	SENIOR
SYSTEMS DEVELOPMENT AND MAINTENANCE	Supervises a team of Programmers at the Programmer II level and below. Team assignments are programming tasks of standard complexity. Team Size: 3 to 5	Supervises a team of Programmer Analysts which includes Associate Programmer Analyst Specialist(s). Team assignments are programming and analysis tasks on complex projects and systems. Team Size: 3 to 6	Supervises a team of Programmer Analysts which includes Staff Programmer Analyst Specialist(s). Team assignments are programming and analysis tasks on the most complex projects or systems. Team Size: 5 to 8
TECHNICAL SUPPORT	Supervises a team of Programmer(s) and Technician(s) performing technical support functions of standard complexity. Team Size: 3 to 5	Supervises a team of Associate Programmer Analyst(s) and Programmer(s) performing complex technical support functions. Team Size: 3 to 6	Supervises a team of Staff Programmer Analyst(s) and Associate Programmer Analyst performing the most complex technical support functions. Team Size: 4 to 8
COMPUTER SERVICES	N/A	N/A	N/A
NIS ADMIN	N/A	N/A	N/A
INFORMATION CENTER SERVICES	N/A	Supervises a team of Associate Programmer Analyst(s) and Programmer(s) performing information center tasks that are complex. Team Size: 3 to 6	Supervises a team of Staff Programmer Analyst(s) and Associate Programmer Analysts performing information center tasks that are most complex. Team Size: 4 to 8
OFFICE SYSTEMS SUPPORT	N/A	N/A	N/A
DATA ADMIN	Supervises a team of Programmer(s) and Technician(s) performing Data Administration technical support functions of standard complexity. Team Size: 3 to 5	Supervises a team of Associate Programmer Analyst(s) and Programmer(s) performing complex Data Administration technical support functions. Team Size: 3 to 6	Supervises a team of Staff Programmer Analyst(s) and Associate Programmer Analyst performing the most complex Data Administration technical support functions. Team Size: 4 to 8
MULTIPLE FUNCTIONS	Supervises a team of Programmer II's or below performing tasks of standard complexity for 2 or more of the above functions. Team Size: 3 to 5	Supervises a team of Associate Programmer Analyst(s) and Programmer(s) performing complex tasks for 2 or more of the above functions. Team Size: 3 to 6	Supervises a team of Staff and Associate Programmer Analysts performing the most complex tasks for 2 or more of the above functions. Team Size: 5 to 8

ALLOCATION GUIDES FOR INFORMATION SYSTEMS ANALYST (SPECIALIST) - Positions in this series are non-supervisory

FUNCTIONS	ASSOCIATE	STAFF	SENIOR
SYSTEMS DEVELOPMENT AND MAINTENANCE	<p>1. Journeyperson performing complex analysis tasks on projects and systems. OR</p> <p>2. Participates with other analysts/programmers on complex and most complex projects/systems. OR</p> <p>3. Acts as lead over a small team of 1-3 analysts.</p>	<p>1. Acts as a lead Analyst or independent specialist performing complex analysis tasks on complex or most complex projects or systems. OR</p> <p>2. Participates with other analysts/programmers on the most complex project/systems.</p>	<p>Acts as a lead Analyst performing the most complex analysis tasks on the most complex projects or systems.</p>
TECHNICAL SUPPORT	<p>Journeyperson performing data processing analysis tasks that are complex, such as writing FSR's, RFP's, IFB's for equipment and software procurements for complex projects or systems.</p>	<p>Journeyperson performing data processing analysis tasks that are most complex such as writing FSR's, RFP's, IFB's for equipment and software procurements for the most complex projects or systems.</p>	N/A
COMPUTER SERVICES	<p>Journeyperson performing analysis tasks in support of the computer operations and/or production proc'g in standard & complex environments.</p>	<p>High level specialist performing analysis tasks in support of computer operations and/or production processing in the most complex environment.</p>	N/A
MIS ADMIN	<p>Acts as a specialist performing standard and complex administrative support functions related to Data Processing Services.</p>	N/A	N/A
INFORMATION CENTER SERVICES	<p>Journeyperson performing standard and complex analysis tasks in support of information center activities and training end users in use of computer tools</p>	<p>High level specialist performing the most complex analysis tasks and conducting complex end user training in the use of software packages such as SAS, Megacalc, and PC spreadsheets.</p>	N/A
OFFICE SYSTEMS SUPPORT	<p>Journeyperson performing standard and complex tasks in support of multifunction automated office systems.</p>	<p>High level specialist performing most complex tasks in support of multifunction automated office systems in a complex environment.</p>	N/A
DATA ADMIN	<p>1. Journeyperson performing Data Administration Planning tasks of a complex nature. OR</p> <p>2. Participates with other programmers/analysts on the most complex Data Base analysis tasks.</p>	<p>1. Journeyperson performing Data Administration Planning Tasks in the most complex environment that involves large scale data bases. OR</p> <p>2. May act as the lead data base analyst in a complex data base environment.</p>	<p>May act as the lead data base analyst in the most complex data base environment.</p>
MULTIPLE FUNCTIONS	<p>Performing tasks for 2 or more of the above functions that meet the allocation guidelines for the Assoc. More than half the time must be performing tasks at the Assoc. level.</p>	<p>Performing tasks for 2 or more of the above functions that meet the allocation guidelines for the Staff level. More than half the time must be performing tasks at the Staff level.</p>	<p>Performing tasks for 2 or more of the above functions that meet the allocation guidelines for the Senior level. More than half the time must be performing tasks at the Senior level.</p>

ALLOCATION GUIDES FOR INFORMATION SYSTEMS ANALYST - SUPERVISORY - These classes do not supervise equivalent level Specialists

FUNCTIONS	ASSOCIATE	STAFF	SENIOR
SYSTEMS DEVELOPMENT AND MAINTENANCE	Supervise a team performing analysis tasks on projects and systems of standard complexity. Team Size: 3 to 5	Supervises a team of Assistant/ Associate Analysts performing analysis tasks on complex projects and systems. Team Size: 3 to 6	Supervises a team of Staff and Associate Analysts performing analysis tasks on the most complex projects and systems. Team Size: 5 to 8
TECHNICAL SUPPORT	N/A	N/A	N/A
COMPUTER SERVICES	N/A	N/A	N/A
MIS ADMIN	Supervises a team performing standard and complex administrative support functions that are related to DP services. Team Size: 3 to 5	Supervises a team of Assistant/ Associate Analysts performing the most complex administrative support functions related to DP services. Team Size: 3 to 6	N/A
INFORMATION CENTER SERVICES	N/A	Supervises a team of Associate Analyst(s) performing information center tasks that are complex. Team Size: 3 to 6	Supervises a team of Staff and Associate Analysts performing information center tasks that are most complex. Team Size: 4 to 8
OFFICE SYSTEMS SUPPORT	Supervises a team of Information Systems Analysts and/or Information Systems Technicians performing standard and complex tasks in support of multifunction automated office systems. Team Size: 3 to 5	Supervises a team of Information Systems Analysts and/or Associate Information Systems Analysts performing complex tasks in support of large multifunction automated office systems in a complex environment. Team Size: 3 to 6	Supervises a team of Staff and/or Associate and/or Information Systems Analysts in performing the most complex tasks in support of very large multifunction automated office systems in the most complex environment. Team Size: 4 to 8
DATA ADMIN	N/A	Supervises a team of Associate Analysts performing complex data administration analysis tasks. Team Size: 3 to 6	Supervises a team of Staff and Associate Analysts performing the most complex data administration analysis tasks. Team Size: 4 to 8
MULTIPLE FUNCTIONS	Supervises a team performing analysis tasks of standard complexity for 2 or more of the above functions. Team Size: 3 to 5	Supervises a team of Associate Analysts and below performing complex analysis tasks for 2 or more of the above functions. Team Size: 3 to 6	Supervises a team of Staff and Associate Analysts performing the most complex analysis tasks for 2 or more of the above functions. Team Size: 5 to 8

ALLOCATION GUIDELINES

FOR

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I. PURPOSE AND USE OF GUIDELINES

These guidelines are provided to assist in determining the appropriate level of positions within the Data Processing Manager Series of classes.

These allocation guidelines supplement and clarify the descriptions contained in the series specification for these classes. They are provided in an attempt to assure appropriate allocations and consistency in the use of these classes by all departments.

These guidelines do not cover every possible combination of duties and responsibilities. Instead, they attempt to describe typical situations and identify those types of factors which should be assessed in justification of the levels within the class series. Identification and assessment of these factors by departments should facilitate the review of position allocation requests by department and DPA personnel.

Many of the allocation guidelines relate to a mainframe environment. It is acknowledged that there can exist mini-computer environments with many of the same complexities. These situations will have to be justified by the department.

Included within the guidelines are various quantitative factors. These numbers are not to be interpreted as being absolutes or as primary allocation factors, but should be evaluated along with all other considerations.

The number of long term contract personnel should be factored in when determining classification levels.

II. JUSTIFICATION PROCESS/STEPS IN DETERMINING LEVEL

Requests for refills of positions which have been approved by DPA using these guidelines, or positions which clearly meet the guidelines, do not need as much in-depth justification. However, all basic pertinent information relating to the position, including a description of any changes which have occurred, should be included. As is standard procedure, all requests must include a "present" and "proposed" organization chart.

- A. The steps to be used in determining the appropriate class and level, and the justification process are outlined below:
1. Complete the form on page 12 titled "Quantitative Considerations for Determining Organizational Complexity/Size" for all requests.
 2. Complete the form on pages 13 and 14 titled "Summary of Functional Areas of Responsibility/Complexity Factors" to document the complexity category which applies to each of the functional areas assigned to the position.

Use the "Size/Complexity Parameters" starting on page 7 for each functional area assigned to the position to determine the size and complexity categories. The complexity designation reflects the knowledge and skill level that an employee must have to perform the duties of a position at a satisfactory performance level. The form also contains space for indicating subordinate staff. Please note that positions in these classes cannot supervise equivalent level Programmer Analyst Supervisors or Information Systems Analyst Supervisors, but may supervise "Specialist" positions at the same level. The following definitions apply to the "Size/Complexity Parameters":

Large Batch or Large On-Line System--Multiple input and output files where at least one file is considered large (i.e., greater than one million records).

Multiple System Integration--The sharing of data between systems through an electronic media, such as tape or disk.

Medium File--File size between 50,000 and one million records.

Large Scale DBMS (Data Base Management System)--The use of a data base software package to manage shared user data exceeding one million records.

3. Next, determine the appropriate level by comparing the position against the levels matrix in the charts titled "Size/Complexity Parameters", which start on page 7. If the allocation guidelines indicate that a level is not appropriate (N/A) for a functional area, then special justification must be provided to indicate why that level is appropriate for the position.
4. Identify and describe in the justification memo any nonquantifiable or unique considerations, and discuss how they impact the level of the position to be filled. If the position is assigned to a special project, briefly describe the scope of the project, the scope of responsibility assigned to the position, stage of development, impact on department (or multi-department), and any other key considerations.

5. Attach the memo of justification and copies of the completed forms ("Quantitative Considerations..." and Summary of Functional Areas of Responsibility/Complexity Factors) to the Request for Certification, Form 625, at the time it is submitted to DPA for review.
- B. In addition to the above information, DPA staff also evaluates the overall organization and other positions with an organizational or functional relationship to the position in question.
- C. It is recognized that these guides may not always exactly describe a position which is to be filled, and that all factors may not apply to every position. It is the responsibility of Departments to describe their positions in terms which relate to the appropriate factors, as well as describing the complexity of their systems in relation to the factors shown in the attached guidelines.

III. DESCRIPTIONS OF FUNCTIONAL AREAS

The following descriptions are structured in a manner to illustrate traditional groupings of functions for which a data processing manager may have responsibility. They do not imply any recommended organizational structure or grouping of staff. It is recognized that there will be exceptions to these groupings given the diversity of size, structure, and functional alignments that exist in State government. Each functional area is described in terms of size and complexity in the attached "Size/Complexity Parameters".

Application Development/Maintenance: Feasibility analysis, design development and implementation of new computer systems and applications, and/or changes to existing computer systems typically performed by analysts and programmers. May also include development of procurement documents (IFB, RFP).

Production/Operations: Computer operations, network operations, key data operations, and data guidance/data control, typically performed by computer operators, information systems technicians, key data operators, and clerks. May also include some responsibilities listed below under Technical Support (e.g., system software, hardware/software planning, network control, operations support, system performance, capacity management).

Technical Support: The development and maintenance of support functions typically performed by analysts, programmers and/or system software specialists, including:

- . system software
- . standards
- . hardware, software and network planning
- . system performance and capacity management
- . technical liaison with data centers
- . procurement (e.g., hardware/software specification)
- . Personal Computer Coordinator
- . Database Administration
- . Operations Support
- . Information Center
- . Office Automation Coordinator
- . Misc: info, security, EDP auditing, technical training

Data Processing Administration: The coordination of administrative activities typically performed in a data processing organization by analysts and programmers, including:

- . budgeting
- . departmental information systems planning (e.g., IMAP)
- . training
- . interagency agreement and contract management
- . billing
- . personnel management and development
- . procurement activities (e.g., supplies, etc.)

Multifunction: Two or more of the above functional areas.

IV. MAINFRAME COMPUTERS (AS OF AUGUST 1989)

The following are examples of mainframe computers currently being used by the State:

<u>Organization</u>	<u>Computer</u>
TDC	IBM 3090-600E IBM 3090-400 NAS XL/100 AMDAHL 5990-700
HWDC	IBM 3090 - 600E AMDAHL 5990 - 1400 IBM 3081-G
BOE	Burroughs B-7900-H
DWR	CDC CYBER 720 UNIVAC 1100-71-H-1
PUC	UNIVAC 1100
DOJ	UNIVAC 1100 - 90 Series
FTB	IBM 3084
PERS	IBM 4381-R14 (USING MVS OPERATING SYSTEM)
LCB	IBM 3081-K

SIZE/COMPLEXITY PARAMETERS

APPLICATION DEVELOPMENT/MAINTENANCE

Size

- Largest: More than 50 programmers, analysts and subordinate managers
Large: 31 - 50 programmers, analysts and subordinate managers
Medium: 13 - 30 programmers, analysts and subordinate managers
Small: 6 - 12 programmers and analysts

Complexity

- Most Complex: Responsible for analysis, development and implementation of multiple large batch or online systems* with large database file*, large transaction volumes, multiple system integration*; or, critical systems necessary to the health and safety of the public or that generate significant revenues;
- Complex: Analysis, development and/or maintenance of large batch systems, single online system, medium-size files* and transaction volumes; or systems that are necessary for the accomplishment of State programs or are vital to a department's operation.
- Standard: Analysis, development and/or maintenance of small batch or online systems serving a single user's business function; fewer than five separate applications.

* See page 3 for definitions

DPM ALLOCATIONS MATRIX

	<u>MOST COMPLEX</u>	<u>COMPLEX</u>	<u>STANDARD</u>
LARGEST	DPM III	DPM II	DPM II
LARGE	DPM III	DPM II	DPM II
MEDIUM	DPM II	DPM II	DPM I
SMALL	DPM I	DPM I	DPM I

SIZE/COMPLEXITY PARAMETERS

PRODUCTION/OPERATIONS

Size

- Largest: Technical staff* of 50 or more
- Large: Technical staff* of 30 - 49 or six or more professional staff***
- Medium: Technical staff* of 20 - 29 or 3 - 5 professional staff***
- Small: Less than 20 technical staff*

Complexity

- Most Complex: Responsible for all operations activities listed in "Description of Functional Areas" (See page 5) in a multiple-computer**, telecommunications environment.
- Complex: Responsible for computer operations and data guidance/data control activities in a mainframe-based telecommunications environment.
- Standard: Responsible for one or two of the listed operations activities within a large production/operations unit. (If responsible for only a single activity, it must be other than key data entry.)

- * Technical staff includes computer operators, key data supervisors and information systems technicians and does not include KDOs or clericals.
- ** Does not include mini - or microcomputers - see page 6.
- *** Professional staff includes programmers, analysts, software specialists and managers.

DPM ALLOCATIONS MATRIX

	<u>MOST COMPLEX</u>	<u>COMPLEX</u>	<u>STANDARD</u>
LARGEST	DPM III	DPM II	DPM II
LARGE	DPM II	DPM II	DPM I
MEDIUM	DPM I	DPM I	DPM I
SMALL	N/A	N/A	N/A

Note: Responsibility for a three-shift operation increases the complexity by one level.

SIZE/COMPLEXITY PARAMETERS

TECHNICAL SUPPORT

Size

Largest: More than 12 Analysts/Software Specialists

Large: 9 - 11 Analysts/Software Specialists

Medium: 5 - 8 Analysts/Software Specialists

Small: 3 - 4 Analysts/Software Specialists

Complexity

Most Complex: Performs many of the technical support activities listed in "Descriptions of Functional Areas" in an EDP organization where the technical complexity category* is either most complex or department-supported complex.

Complex: Performs many of the technical support activities listed in "Descriptions of Functional Areas" in an EDP organization where the technical complexity category* is either shared-support complex or department-supported standard.

Standard: Either performs most activities listed in "Descriptions of Functional Areas" in an EDP organization where the technical complexity category* is standard;

Or performs a limited number of functions in a DP organization where the technical complexity category* is complex or most complex.

* See form on page 12.

DPM ALLOCATIONS MATRIX

	<u>MOST COMPLEX</u>	<u>COMPLEX</u>	<u>STANDARD</u>
LARGEST	DPM II	DPM I	DPM I
LARGE	DPM II	DPM I	DPM I
MEDIUM	DPM I	DPM I	DPM I
SMALL	DPM I	N/A	N/A



SIZE/COMPLEXITY PARAMETERS

ADMINISTRATION

Size

- Largest: Professional staff of 20 or more*
- Large: 9 - 19 Professional staff*
- Medium: 4 - 8 Professional staff*
- Small: N/A

Complexity

- Most Complex: Performs most of the administrative activities listed in "Description of Functional Areas" in an organization where the technical complexity category is "most complex".**
- Complex: Performs many of the administrative activities listed in "Descriptions of Functional Areas" in an organization whose technical complexity category is "complex".**
- Standard: Either performs most administrative activities in an organization whose technical complexity category is "standard";**
Or a limited number of activities in a large organization.

* Professional staff includes programmers, analysts, software specialists and managers.

** See form on page 12.

DPM ALLOCATIONS MATRIX

	<u>MOST COMPLEX</u>	<u>COMPLEX</u>	<u>STANDARD</u>
LARGEST	Guidelines have not been developed to address these settings as they do not currently exist in the State.		
LARGE			
MEDIUM	DPM I	DPM I	DPM I
SMALL	N/A	N/A	N/A

SIZE/COMPLEXITY PARAMETERS

MULTIFUNCTION

Size

Largest: Total Staff* of 200 or more; or Professional Staff** of 75 or more
Large: Total Staff* of 75 - 199; or Professional Staff** of 41 - 74
Medium: Total Staff* of 20 - 74; or Professional Staff** of 13 - 40
Small: Total Staff* of less than 20; and Professional Staff** of 3 - 12

Complexity

Most Complex: All four functional areas (i.e., "Chief of Data Processing")
Complex: Three functional areas
Standard: Two functional areas

* Total Staff includes all classifications

** Professional Staff includes programmers, analysts, software specialists and managers.

DPM ALLOCATIONS MATRIX

	<u>MOST COMPLEX</u>	<u>COMPLEX</u>	<u>STANDARD</u>
LARGEST	DPM IV*	DPM IV*	DPM IV*
LARGE	DPM IV*	DPM III	DPM III
MEDIUM	DPM III	DPM II	DPM II
SMALL	DPM II	DPM I	DPM I

* Career Executive Assignments (C.E.A.) are sometimes used as "Chief of Data Processing" in large or largest organization.



VI. QUANTITATIVE CONSIDERATIONS FOR DETERMINING ORGANIZATIONAL COMPLEXITY/SIZE
 (Submit a copy of this form to DPA along with the Form 625.)

1. Please provide the following information regarding your computer system:

a). Name and # of "In House" mainframe computer(s) _____

b). Name and # of mini-computer(s) _____

c). Data Center User: HWDC ___ TEALE ___ OTHER _____

d). _____

2. Check the box in each row that reflects your environment. "Department Supported" means that your organization provides virtually all of the software/hardware support. "Shared Support" means that your data processing department operates in an environment where another organization, such as a data center, provides all or most of the technical support.

If an organization checks most of the boxes signifying "Department Supported", that organization should be considered a level higher in complexity depending on the pattern of check marks. (For example, if five out of the six rows were checked "Department Supported" all in the "Complex" column, the organization would be considered "Most Complex".)

FUNCTIONS	MOST COMPLEX	COMPLEX	STANDARD
A. HARDWARE AND OPERATING SYSTEM	Coupled Processor or Multiple CPUs	Multiple CPUs and single OS	Single CPU and single OS
B. COMMUNICATIONS	>2000 Terminals	>1000 Terminals	<1000 Terminals
C. TP MONITORS (PRODUCTION MONITORS ONLY)	>1 Type of Monitor	>1 Monitor	1 Monitor
D. DATA BASE MGMT.	>1 DBMS	1 DBMS	N/A
E. DATA MGMT. (NUMBER OF LOGICAL DISK VOLUMES)	>100 DASD	50-100 DASD	<50 DASD
F. SUPPORT SOFTWARE (EXCLUDES PC SOFTWARE)	>20 Packages	10-20 Packages	<10 Packages
OVERALL COMPLEXITY CATEGORY:			

KEY:

Department Supported---->

--	--	--	--	--	--	--	--	--	--

<----Shared Support



DATA PROCESSING MANAGER SERIES
SUMMARY OF FUNCTIONAL AREAS OF RESPONSIBILITY/COMPLEXITY FACTORS
 (Submit a copy of the completed Form to DPA along with the Form 625)

CLASS TITLE: _____

DEPARTMENT: _____

COMPLETE THE FOLLOWING INFORMATION FOR ALL REQUESTS

Indicate the number of staff supervised by the position:

_____ Prog/Prog Appr/Info Sys Ana/SSA _____ Assoc PA/ISA _____ Staff PA/ISA _____ Senior PA/ISA _____ Assoc. SSS _____ SSS I _____ SSS II _____ SSS III _____ DPM I _____ DPM II _____ DPM III _____ _____ _____ TOTAL PROFESSIONAL	_____ Computer Operators _____ Info Systems Technicians _____ Key Data Supervisors _____ Info Systems Specialists I/II _____ CO Specialists I/II _____ Info Systems Supvrs I/II _____ CO Supvrs I/II _____ SUBTOTAL _____ _____ Key Data Operators _____ Clerical _____ _____ TOTAL STAFF
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

TECHNICAL COMPLEXITY CATEGORY: _____ Most Complex _____ Complex _____ Standard

DEPARTMENT SUPPORTED: _____ **OR** **SHARED SUPPORT:** _____

COMPLETE ALL OF THE FOLLOWING SECTIONS WHICH APPLY TO THE FUNCTIONAL AREAS OF RESPONSIBILITY FOR THE POSITION TO BE FILLED.

1. MULTIFUNCTION:

SIZE: _____ Largest _____ Large _____ Medium _____ Small
COMPLEXITY: _____ Most Complex _____ Complex _____ Standard

FUNCTIONAL AREAS OF RESPONSIBILITY (check all that apply)

_____ Application Development/Maintenance _____ Production/Operations _____ Technical Support _____ Administration	_____ _____ _____ _____
-----------------------------------------------------------------------------------------------------------------------------	----------------------------------

NOTE: Also complete the applicable sections 2 through 5 on the following page.

2. APPLICATION DEVELOPMENT/MAINTENANCE: (% of time _____)

SIZE: _____ Largest _____ Large _____ Medium _____ Small
COMPLEXITY: _____ Most Complex _____ Complex _____ Standard

<u>Most Complex</u>	<u>Complex</u>	<u>Standard</u>
_____ Multiple large batch/ /on-line systems	_____ Systems vital to dept's operations	_____ Small batch or on-line systems
_____ Large database file	_____ Large batch systems	_____ Single user function
_____ Large transaction volumes	_____ Single on-line system	_____ Fewer than 5 separate applications
_____ Multiple system integration	_____ Medium sized files	
_____ Critical systems	_____ Medium transaction volumes	

Number of applications _____
Size of largest file (# records) _____
Other factors: _____

3. PRODUCTION/OPERATIONS: (% of time _____)

SIZE: _____ Largest _____ Large _____ Medium _____ Small
COMPLEXITY: _____ Most Complex _____ Complex _____ Standard

FUNCTIONAL AREAS OF RESPONSIBILITY (check all that apply)

_____ Computer Operations	_____ Technical Support:
_____ Network Operations	_____ Check specific functional responsibilities in Section 3 below.
_____ Data Guidance/Control	
_____ Key Data Entry	
_____ _____	_____ _____

4. TECHNICAL SUPPORT: (% of time _____)

SIZE: _____ Largest _____ Large _____ Medium _____ Small
COMPLEXITY: _____ Most Complex _____ Complex _____ Standard

TECHNICAL SUPPORT ACTIVITIES (check all that apply)

_____ system software	_____ data base administrator
_____ standards	_____ office automation coordinator
_____ hardware, software, network planning	_____ information security
_____ network control	_____ EDP auditing
_____ system performance/capacity planning	_____ technical training
_____ technical liaison with Data Centers	_____ Information Center
_____ procurement (specifications)	_____ _____
_____ personal computer coordinator	_____ _____

5. DATA PROCESSING ADMINISTRATION (% of time _____)

SIZE: _____ Largest _____ Large _____ Medium _____ Small
COMPLEXITY: _____ Most Complex _____ Complex _____ Standard

AREAS OF RESPONSIBILITY (check all that apply)

_____ Department information systems planning	_____ budgeting
_____ interagency agreements	_____ training
_____ contract management	_____ billing
_____ personnel management/development	_____ _____
_____ procurement activities (supplies, etc.)	_____ _____

ALLOCATION GUIDELINES

FOR

ASSOCIATE SYSTEMS SOFTWARE SPECIALIST (TECHNICAL)
ASSOCIATE SYSTEMS SOFTWARE SPECIALIST (SUPERVISOR)
SYSTEMS SOFTWARE SPECIALIST I (TECHNICAL)
SYSTEMS SOFTWARE SPECIALIST I (SUPERVISOR)
SYSTEMS SOFTWARE SPECIALIST II (TECHNICAL)
SYSTEMS SOFTWARE SPECIALIST II (SUPERVISOR)
SYSTEMS SOFTWARE SPECIALIST III (TECHNICAL)
SYSTEMS SOFTWARE SPECIALIST III (SUPERVISOR)

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I. PURPOSE AND USE OF GUIDELINES

These guidelines are provided to assist in determining the appropriate level of positions within the Systems Software Specialist Series of classes.

These allocation guidelines supplement and clarify the descriptions contained in the series specifications for these classes. They are provided in an attempt to assure appropriate allocations and consistency in the use of these classes by all departments.

These guidelines do not cover every possible combination of duties and responsibilities. Instead, they attempt to describe typical situations and identify those types of factors which should be assessed in justification of the levels within the class series. Identification and assessment of these factors by departments should facilitate the review of position allocation requests by department and DPA personnel.

Included within the guidelines are various quantitative factors. These numbers are not to be interpreted as being absolutes or as primary allocation factors, but should be evaluated along with all other considerations.

The number of long term contract personnel should be factored in when determining classification levels.



II. JUSTIFICATION PROCESS/STEPS IN DETERMINING LEVEL

Requests for refills of positions which are approved by DPA using these guidelines, or positions which clearly meet the guidelines, do not need as much in-depth justification. However, all basic pertinent information relating to the position, including a description of any changes which have occurred, should be included. As is standard procedure, all requests must include a "present" and "proposed" organization chart.

- A. The steps to be used in determining the appropriate class and level, and the justification process, are outlined below:
1. This class series is used to provide systems software support only for mainframe computers (see list on page 6). If the position to be filled will be providing system software support for mini or micro computers, the appropriate class series is the Programmer Analyst Series.
 2. Determine functional area(s) of responsibility for the position (see "Function Definitions" on pages 4 and 5.)
 3. In order to determine complexity of the data processing environment for the organization, complete the form on page 8 titled "Quantitative Considerations for Determining Organizational Complexity/Size".
 4. Supervisory Designation - In order to be designated as a supervisor, the proposed position must spend at least half the time performing technical systems software duties appropriate for the classification level. If less than half the time is spent on technical duties, the Data Processing Manager Series would be more appropriate.
 5. Based on the functions and complexity category, determine appropriate classification level (see Allocation Guidelines Matrix for SSS Series on page 7).
 6. Complete the form on page 9 titled "Summary of Factors Relating to Position to be Filled". The form also contains space for indicating subordinate staff. Please note that supervisory positions in these classes cannot supervise equivalent level Specialist positions.
 7. Identify and describe in the justification memo any nonquantifiable or unique considerations, and discuss how they impact the level of the proposed position.
 8. Attach the memo of justification and copies of the completed forms ("Quantitative Considerations ..." and "Summary of Factors...") to the Request for Certification, Form 625, at the time it is submitted to DPA for review.
- B. In addition to the above information, DPA staff also evaluates the overall organization and other positions within an organizational or functional relationship to the position in question.
- C. It is recognized that these guides may not always exactly describe a position which is to be filled, and that all factors may not apply to every position. It is the responsibility of Departments to describe their positions in terms which relate to the appropriate factors, as well as describing the complexity of their systems in relation to the factors shown in the attached guidelines.

VII. FUNCTION DEFINITIONS

OPERATING SYSTEMS

The software that schedules program tasks and allocates hardware resources (memory, I/O, peripherals, etc.) in a computer. Personnel working in this area install, modify, update and maintain versions of the operating system provided by a computer vendor. Typically in the State's processing environments, there is a significant difference in the complexity of operating systems. For instance, in IBM environments, the relative complexity of the VM/CMS operating system is simpler than the DOS/VSE operating system, which is likewise simpler than the MVS operating system. Similarly, the Unisys OS/100 and MCP operating systems are well integrated and, therefore, less complex than the IBM MVS operating system which must interact with subsystems such as CICS and IMS in order to perform typical processing tasks. Minicomputer operating system software (Prime, Data General, Wang, etc.) is least complex, typically only requiring the installation of vendor provided changes. Installation of and/or upgrades to microcomputer operating system software does not require systems software expertise. Therefore, the System Software Specialist series is not used to support mini- and micro- computers.

TELEPROCESSING MONITORS

Specialized software providing message switching abilities and utility functions to the end user. Personnel working in this area install, modify and maintain versions of these monitors which are normally provided by computer vendors. Examples of IBM monitors are CICS and TSO. Incumbents perform tasks such as performance tuning, troubleshooting, maintaining terminal/transaction/program/and file definitions and ensuring security standards are met. This support requires knowledge of the operating system, the network, file access methods, data base systems, security systems and several programming languages.

SUPPORT SOFTWARE

Generalized software providing utility for end users. Personnel responsible for these packages are involved with installation, performance monitoring and the implementation of updates. Direct support to users is normally a part of the job. Support software provides the application programmer and end-user the tools to create applications. Examples of support software include COBOL, Fortran and PLI compilers, SAS for generating statistical applications, Mark IV, and many others. Incumbents work with vendors and users in troubleshooting support software problems, testing and monitoring effects of new equipment or operating system installs. Some knowledge of the operating system is required as well as the ability to program in several languages, particularly Assembler.



III. FUNCTION DEFINITIONS - contd.

COMMUNICATIONS NETWORK

The software and hardware necessary to enable users to transmit data from one location to another. Personnel working in this area are involved with the analysis, acquisition, installation, maintenance and performance of the network. Normal tasks include installation, modification, testing and monitoring of data communications software residing on communications (front-end) processors as well as the host. Troubleshooting, problem isolation and resolution of teleprocessing network problems through the use of performance and diagnostics software program products. Incumbents provide assistance and consultation to network users and vendors in isolation of hardware malfunctions and problem determination.

CAPACITY PLANNING

The process begins with the monitoring, measurement and tuning of the computer system to obtain the highest level of performance from the hardware and software given the mix of user workload. Capacity planning uses as input the information gathered from system monitoring and measurement for determining future hardware and software needs.

DATA MANAGEMENT

The function of reviewing, analyzing and controlling the placement, retrieval and distribution of data on various computer storage media. Installation and maintenance of data management software subsystems. Development and implementation of data archiving and data backup and recovery capabilities. Problem identification and correction of data management subsystem errors. Monitoring data access and reorganizing data to improve system performance.

DATA BASE MANAGEMENT SYSTEMS

Specialized software to manage and maintain data in such a way that the requirements of several applications can be satisfied from a common data structure. Typical software components of a data base management system include: data dictionary, data definition language and processor, centralized multi-user data access routines for both batch and on-line access, data backup and recovery utilities, data base query tools, and application development languages and tools. In many ways these software systems are miniature operating systems. Personnel working in this area perform a wide variety of tasks such as: install and maintain the software, generate the centralized data access facility, monitor and tune the centralized facility, design and define data bases, load data bases, restructure data bases, monitor and tune the performance of data bases, develop and execute data base backup and recovery plans, implement security provisions to control access to facilities and data, provide assistance and consultation to application development staff, provide troubleshooting and problem resolution, develop and publish DBMS usage standards and procedures. It is not likely that any one position will have responsibility for all of these. The most common situation will be where a position has responsibility for some combination of the tasks.



IV. MAINFRAME COMPUTERS (AS OF AUGUST 1989)

The following are examples of mainframe computers currently being used by the State:

<u>Organization</u>	<u>Computer</u>
TDC	IBM 3090-600E IBM 3090-400 NAS XL/100 AMDAHL 5990-700
HWDC	IBM 3090 - 600E AMDAHL 5990 - 1400 IBM 3081-G
BOE	Burroughs B-7900-H
DWR	CDC CYBER 720 UNIVAC 1100-71-H-1
PUC	UNIVAC 1100
DOJ	UNIVAC 1100 - 90 Series
FTB	IBM 3084
PERS	IBM 4381-R14 (USING MVS OPERATING SYSTEM)
LCB	IBM 3081-K

V. ALLOCATION GUIDELINES MATRIX FOR SSS SERIES

CLASS	COMPLEXITY	FUNCTIONS		
		DOES MORE THAN ONE OF 1-7 MULTIPLE FUNCTIONS	DOES ONE OF THESE 1. OPERATING SYSTEMS 2. COMMUNICATIONS NETWORK 3. DATA BASE MGMT. SYSTEMS 4. DATA MANAGEMENT	DOES ONE OF THESE 5. SUPPORT SOFTWARE 6. TELEPROCESSING MONITORS 7. CAPACITY PLANNING
SSS III	MOST COMPLEX	Supervisor Staff >=5 or Lead	Supervisor Staff >=5 or Lead	
	COMPLEX			
	STANDARD			
SSS II	MOST COMPLEX	Supervisor or Lead	Supervisor or Lead	Supervisor or Lead
	COMPLEX	Supervisor or Lead	Supervisor	Supervisor
	STANDARD	Supervisor Staff >=5		
SSS I	MOST COMPLEX	Journeyman	Journeyman	Journeyman
	COMPLEX	Journeyman	Lead	Lead
	STANDARD	Lead		
ASSOC. SSS	MOST COMPLEX	Entry level	Entry level	Entry level
	COMPLEX	Journeyman	Journeyman	Journeyman
	STANDARD	Journeyman	Journeyman	Journeyman

NOTE: - "Supervisor" must have a staff of >=3 except where noted. Position cannot supervise equivalent level "Specialist" position.

- Support of only one of the seven functions is required in a column (excluding Multiple Functions column).

V. QUANTITATIVE CONSIDERATIONS FOR DETERMINING ORGANIZATIONAL COMPLEXITY/SIZE

Check the box in each row that reflects your environment. "Department Supported" means that your organization provides virtually all of the software/hardware support. "Shared Support" means that your DP department operates in an environment where another organization, such as a data center, provides all or most of the technical support.

The SSS Series was created for use where there are positions performing the most complex technical jobs in data processing. This is normally in data centers or organizations which have their own mainframe computer(s) and provide the majority of their own software/hardware support. With this in mind, the following applies:

If an organization does not have its own mainframe computer(s) (ie, Row A cannot be checked), and most of the remaining rows are checked "Standard", use of the SSS series is most likely inappropriate.

If an organization checks most of the boxes signifying "Department Supported", that organization should be considered a level higher in complexity depending on the pattern of check marks. (eg, if five out of the six rows were checked "Department Supported" all in the "Complex" column, the organization would be considered "Most Complex".) The definition of computer for this purpose means mainframe computer and excludes micros and minis. The chart on page 6 identifies mainframe computers currently in use in the State.

FUNCTIONS	MOST COMPLEX	COMPLEX	STANDARD
A. HARDWARE AND OPERATING SYSTEM	Coupled Processor or Multiple CPUs	Multiple CPUs and single OS	Single CPU and single OS
B. COMMUNICATIONS	>2000 Terminals	>1000 Terminals	<1000 Terminals
C. TP MONITORS (PRODUCTION MONITORS ONLY)	>1 Type of Monitor	>1 Monitor	1 Monitor
D. DATA BASE MGMT.	>1 DBMS	1 DBMS	N/A
E. DATA MGMT. (NUMBER OF LOGICAL DISK VOLUMES)	>100 DASD	50-100 DASD	<50 DASD
F. SUPPORT SOFTWARE (EXCLUDES PC SOFTWARE)	>20 Packages	10-20 Packages	<10 Packages
OVERALL COMPLEXITY CATEGORY:			

KEY:

Department Supported----->

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<-----Shared Support

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SYSTEM SOFTWARE SPECIALIST SERIES
SUMMARY OF FACTORS RELATING TO POSITION TO BE FILLED
(Completed form to be submitted to DPA along with the Form 625.)

CLASS: _____
DEPARTMENT: _____

COMPLETE THE FOLLOWING INFORMATION FOR SUPERVISORY POSITIONS ONLY

1. Indicate the number of staff supervised by the position:

____ Assoc SSS (Tech)	____ Prog/Programmer Appr
____ Assoc SSS (Sup)	____ Assoc Prog Analyst (Spec)
____ SSS I (Tech)	____ Assoc Prog Analyst (Sup)
____ SSS I (Sup)	____ Staff Prog Analyst (Spec)
____ SSS II (Tech)	____ Staff Prog Analyst (Sup)
____ SSS II (Sup)	____ Senior Prog Analyst (Spec)
_____	____ Senior Prog Analyst (Sup)
_____	_____

_____ TOTAL PROFESSIONAL STAFF _____ TOTAL "OTHER" STAFF

FUNCTIONAL AREA(S) OF RESPONSIBILITY (Indicate % of time spent in each functional area.)

- % of time
1. _____ operating systems
 2. _____ communications network
 3. _____ teleprocessing monitors
 4. _____ data base mgmt. systems
 5. _____ data management
 6. _____ capacity planning
 7. _____ support software
 8. _____

TECHNICAL COMPLEXITY CATEGORY: ___ Most Complex ___ Complex ___ Standard
(Attach completed form)

Please provide the following information regarding your computer system:

a). Name and # of "In House" mainframe computer(s):

If mainframe is IBM 43XX (or equivalent size), is at least 25% of usage for other than a single support function? ___yes ___no

b). Name of Operating System(s) _____

c). Name and # of minicomputer(s) _____

d). Data Center User: HWDC TEALE OTHER _____

e). _____

Please list any other unique/nonquantifiable factors:

