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Class Specifications for the Class:COMPUTER PROGRAMMER IDuties Summary:

Receives orientation and training in electronic computer concepts, operation, logic, and programming principles and techniques; and performs other duties as required.

Distinguishing Characteristics:

This is the entry level class in the computer programming series. This class involves participation in orientation, instruction and directed reading in basic data processing and machine principles and techniques. It also involves on-the-job training and practice in programming and debugging well-defined programs. Work progress is continually reviewed and immediate supervision is received.

Examples of Duties:

Beginning programmers receive formal classroom and on-the-job training both in computer programming methods and techniques. Training in computer programming methods and techniques is designed to develop: (1) knowledge of computer characteristics and techniques, machine languages and compiler systems; and (2) skills in block diagramming and writing program instructions. Training includes a thorough study and indoctrination in the basic missions, purposes and functions of the activity being programmed.

Knowledge and Abilities Required:

Knowledge of: Statistics and report writing.

Ability to: Think logically; learn the fundamentals of data processing and computer programming; learn pertinent techniques such as flow charting and debugging; read and comprehend machine manuals and other materials; speak and write effectively; work cooperatively with others.

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Due to the transfer of authority to the Department of Education to administer its own Civil Service System pursuant to Act 51 Session Laws of Hawaii 2004, this is an adoption of the class specifications for the Executive Branch Civil Service class COMPUTER PROGRAMMER I by the Department of Education Civil Service system.

DATE APPROVED: FEB 13 2006

EFFECTIVE DATE: JUL - 1 2005



Gerald Okamoto
Assistant Superintendent
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Class Specifications for the Class:COMPUTER PROGRAMMER IIDuties Summary:

Assists higher level programmers by preparing block diagrams and writing computer instructions for processing data on electronic data processing equipment; and performs other duties as required.

Distinguishing Characteristics:

This class involves progressively responsible work assignments, as well as on-the-job training and instructions to perfect and broaden technical computer skills and knowledge. Work assignments include programming involving simple problems and well-defined segments of large and complex problems. Immediate supervision lessens as employees in the class develop in knowledge and skill.

Examples of Duties:

Advanced trainee positions at this level perform simple programming assignments which entail: writing program instructions from block diagrams developed by others; devising program logic, block diagrams and instructions for program segments which are of limited scope and difficulty; adjusting established routines to accommodate limited subject matter or specification changes. Instructors or supervisors select assignments to develop programmer skills and provide close assistance and guidance in the performance of those tasks that are typical of grades above the II level.

Knowledge and Abilities Required:

Knowledge of: Statistics, report writing, fundamental data processing and programming concepts and techniques.

Ability to: Think logically; read and comprehend machine manuals and other materials; speak and write effectively; and work cooperatively with others.

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Due to the transfer of authority to the Department of Education to administer its own Civil Service System pursuant to Act 51 Session Laws of Hawaii 2004, this is an adoption of the class specifications for the Executive Branch Civil Service class COMPUTER PROGRAMMER II by the Department of Education Civil Service system.

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Class Specifications for the Class:COMPUTER PROGRAMMER IIIDuties Summary:

Develops and prepares detailed diagrammatic plans for processing a variety of data on an electronic computer; assists in studying procedures and in developing general plans for the processing of data by means of an electronic computer; and performs other duties as required.

Distinguishing Characteristics:

This class involves the development of general plans for data processing by means of electronic computer. Assignments at this level involve working from information which is comprehensive in that: (1) the specific subject matter processes to be accomplished have been identified; (2) the program structure specifies the processing runs required; and (3) the format and the content of all records to be used are provided. While the precise degree of detail provided by instructions, charts and system specifications may vary, information about the processes to be accomplished is readily available in the material provided. While the information provided is comprehensive, the programmer must still use considerable discretion in analyzing requirements and in determining the logical order in which processes should be accomplished within the program unit assigned or in determining the sequence in which conditioning factors should be considered. (For example, information is not developed in the degree of specificity contained in detailed logic diagrams.)

Programmers at this level are primarily concerned with developing programming logic that does not require substantive knowledge of the subject matter being programmed. Programmers at this level are required to have some understanding of the work flow, work procedures and general information requirements of the subject matter functions served. No interpretation of policy matters concerning programming is done by this position. Emphasis is placed on the organization of information to facilitate its storage and retrieval and to minimize the number of processing steps in the programs.

Examples of Duties:

Converts generalized process or flow charts into detailed plans, diagrams or charts depicting the operational sequences required to accomplish the variety of specific work processes. Analyzes work processes to be accomplished and arranges

them in their logical order and determines series and sequences of computations in program instructions.

Develops logic flow charts, depicting the detailed actions required to produce end products. Writes instructions in appropriate format and tests the programs to insure that the prescribed conditions and formats will be processed correctly.

Knowledge and Abilities Required:

Knowledge of: Electronic computer programming techniques and the operation of electronic computer equipment; data processing principles and techniques; office practices and procedures.

Ability to: Understand and analyze oral or written statements concerning a variety of data processing problems and discuss them with others; visualize flow of data through a computer system; recognize errors in programs; code programs; keep records and prepares reports; give and receive oral and written instructions; and work well with others.

Due to the transfer of authority to the Department of Education to administer its own Civil Service System pursuant to Act 51 Session Laws of Hawaii 2004, this is an adoption of the class specifications for the Executive Branch Civil Service class COMPUTER PROGRAMMER III by the Department of Education Civil Service system.

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Class Specifications for the Class:COMPUTER PROGRAMMER IVDuties Summary:

Translates systems requirements into instructions and logic by which computers can produce the desired actions and/or work products; develops all levels of block diagrams and logical flow charts, coding material into one of a variety of computer languages to yield a program of coded computer instructions; responsible for organizing and sequencing programming actions required to achieve the purposes of an application; and performs related work as required.

Distinguishing Characteristics:

The programmer at Level IV is distinguished from Level III in that applicant works from systems flow charts. Specifications provided in chart and narrative form gives a broad picture and general nature of production runs required and the general relationship of processes to be accomplished with the input and output of each segment of a major program. Diagrams and narrative specifications indicate the principal work processes to be accomplished in each of several runs, the nature and purpose of end products desired, and such characteristics as volume and frequency. Instructions given this class indicate the kind of documentation required (e.g. development in chart or decision table form) and provide general requirements regarding content and formats of input and output records and files (tape, card, listing, etc.).

When an assignment comes to a programmer at the IV level, the instructions and information accompanying it may not include:

- (1) specific formats for records, inputs, outputs and documentation involved;
- (2) a comprehensive scheme of intermediate runs (edits, merges, sorts, etc.) required to refine data prior to processing runs assigned in order to facilitate programming.

Programmers at this level formulates and uses subject matter rules for making decisions in which numerous conditions affect the outcome of individual actions.

Level IV programmers analyze problem statements to insure that all data required for accurate work products are available and can be introduced into the program or can be generated during processing. They evaluate the impact of alternate programming methods possible for the accuracy and adequacy of products to be generated. In formulating decision making rules, they test all conditions and actions

against criteria provided to insure that rules will produce accurate answers under all circumstances. Frequently, programmers at this level must recognize incomplete statements of problems and outline additional information required to produce desired results.

Examples of Duties:

Analyzes general information concerning requirements contained in master application plans. Expands and amplifies functional descriptions of processes to be accomplished. Specifies the processes required in each run to generate the work products desired and the data items necessary to produce them; develops additional data essential to the accomplishment of subject matter processes (e.g. additional facts, conditions or criteria checking accuracy of subject matter). Recommends the development of additional substantive processing runs or segments as a result of programming problems encountered (e.g. additional runs may be required because of amount of data, volume of records, frequency of changes in criteria controlling action); the development of formats and layouts for the data file (e.g. tape, disk and other such storage media). May recommend the combination of items in data fields or develop brief forms and symbols to represent data in order to reduce record size. Determines need for and provides necessary control fields to insure the accuracy of computations, or to provide check points for controlling program instructions or actions; and designs intermediate or final formats of outputs when required. May make suggestions regarding revisions in formats of basic documentation established for inputs and outputs to permit the use of more efficient programming techniques (e.g. design of new records, revised formats for transactions, consolidation of actions or records, elimination of duplications, etc.); and to develop test data to determine the accuracy and completeness of runs under a variety of conditions.

Knowledge and Abilities Required:

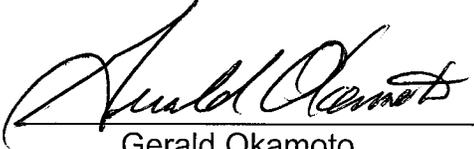
Knowledge of: Data processing principles and techniques; electronic computer programming concepts, methods and techniques; the various types of symbolic programming languages; operation of electronic computers and peripheral equipment; office systems practices and procedures.

Ability to: Plan, analyze and evaluate computer programming problems and discuss requirements with others; recognize error in program instructions and determine causes of machine stoppages; translate data into program codes used in computer systems; keep records and prepare reports; work effectively with others; give and follow oral and written instructions.

Due to the transfer of authority to the Department of Education to administer its own Civil Service System pursuant to Act 51 Session Laws of Hawaii 2004, this is an adoption of the class specifications for the Executive Branch Civil Service class COMPUTER PROGRAMMER IV by the Department of Education Civil Service system.

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Class Specifications for the Class:COMPUTER PROGRAMMER VDuties Summary:

Develops and prepares detailed diagrammatic plans for processing a variety of engineering, business, economic and statistical data on an electronic computer; studies procedures and develops general plans and sub-systems for the processing of data by means of an electronic computer; considerable initiative and independent judgment are exercised in directing the work of subordinates and in making technical decisions; and performs other duties as required.

Distinguishing Characteristics:

This class assists in the development of general plans and sub-systems for data processing by means of electronic computer. Assignments in programming include large and complex problems with emphasis on sub-systems work. The supervisor sets the framework of project assignments and an incumbent is expected to develop complete programs.

This level is primarily distinguished from level IV by the complex nature of the subject matter to be computerized and by the need to formulate and use the judgmental and decision-making rules inherent in automating these complicated work processes.

Programmers are required to understand substantive decision-making rules involved in technical work processes and to provide for their accomplishment by computer methods. As used in this standard, technical work processes are those identified with the central or principal actions and transactions involved in a professional or high level administrative line of work. Normally, these require that the programmer understand the practices and objectives involved in the central processes of such fields as: financial management, professional accounting, professional statistics, logistics planning, and systems control. Requirements in individual applications may also require the understanding and use of technical process involved in working with mathematical models and simulated problem solutions.

Examples of Duties:

Evaluates and prepares difficult computer programs for data processing equipment; reviews completed computer programs for accuracy and determines if optimum programming requirements have been met; studies and improves existing

computer programming routines; formulates mathematical problem statements and devises electronic data processing solutions; writes detailed program, flow charts and diagrams indicating mathematical computations and sequence of machine operation; supervises the development of tests and the computer testing of programs; outlines the programming approach for others to follow; assists or directs the scheduling of work of a programming unit; and direct or assists in the supervision and training of technical employees.

Knowledge and Abilities Required:

Knowledge of: Comprehensive electronic computer programming techniques and operation of data processing equipment; considerable knowledge of office procedures and practices; working knowledge of accounting, mathematic and statistical theories, methods and practices; report writing; principles and practices of supervision.

Ability to: Think logically and to analyze, interpret and discuss mathematical, business, and statistical problems with engineers, fiscal personnel and others; write data processing instructions in the various computer coding languages; to present computer programs in flow chart and block diagram form; assign, coordinate and manage major computer programming projects; keep records and prepare reports; give and follow oral and written instructions; establish and maintain effective working relations with others; plan, organize and supervise the work of programmers.

Due to the transfer of authority to the Department of Education to administer its own Civil Service System pursuant to Act 51 Session Laws of Hawaii 2004, this is an adoption of the class specifications for the Executive Branch Civil Service class COMPUTER PROGRAMMER V by the Department of Education Civil Service system.

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