DATA ITEM DESCRIPTION

Title: SOFTWARE INPUT/OUTPUT MANUAL (SIOM)

Number: DI-IPSC-81445A
AMSC Number: N7367
DTIC Applicable:
Office of Primary Responsibility: N/SPAWAR
Applicable Forms:
Use, Relationships:

Approval Date: 19991215
Limitation:
GIDEP Applicable:

The Software Input/Output Manual (SIOM) tells a user how to access, submit inputs to, and interpret output from, a batch or interactive software system that is run by personnel in a computer center or other centralized or networked software installation.

The SIOM is developed for software systems that will be installed in a computer center or other centralized or networked software installation, with users accessing the system via terminals or personal computers or submitting and receiving inputs and outputs in batch mode.

This Data Item Description (DID) contains the format and content preparation instructions for the data product generated by specific and discrete task requirements as delineated in the contract.

This DID is used when the developer is tasked to identify and record information needed by persons who will submit inputs to, and receive outputs from, software, relying on others to operate the software in a computer center or other centralized or networked software installation.

This DID is often used with the Software Center Operator Manual (SCOM) (DI-IPSC-81444A). This pair of manuals is an alternative to the Software User Manual (SUM) (DI-IPSC-81443A).

This DID supersedes DI-IPSC-81445.

Requirements:

1. Reference documents. None.

2. General instructions.

a. Automated techniques. Use of automated techniques is encouraged. The term "document" in this DID means a collection of data regardless of its medium.

b. Alternate presentation styles. Diagrams, tables, matrices, and other presentation styles are acceptable substitutes for text when data required by this DID can be made more readable using these styles.

3. Format. Following are the format requirements.

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The manual shall be in contractor format unless otherwise specified on the Contract Data Requirements List (CDRL)(DD 1423). The CDRL should specify whether deliverable data are to be delivered on paper or electronic media; are to be in a given electronic form (such as ASCII, CALS, or compatible with a specified word processor or other support software); may be delivered in developer format rather than in the format specified herein; and may reside in a computer-aided software engineering (CASE) or other automated tool rather than in the form of a traditional document.

4. Content. The manual shall contain the following:

a. Title page or identifier. The document shall include a title page containing, as applicable: document number; volume number; version/revision indicator; security markings or other restrictions on the handling of the document; date; document title; name, abbreviation, and any other identifier for the system, subsystem, or item to which the document applies; contract number; CDRL item number; organization for which the document has been prepared; name and address of the preparing organization; and distribution statement. For data in a database or other alternative form, this information shall be included on external and internal labels or by equivalent identification methods.

b. Table of contents and index. The document shall contain a table of contents providing the number, title, and page number of each titled paragraph, figure, table, and appendix, and an index providing an alphabetic listing of key forms and concepts covered in the document and the pages or paragraphs in which the terms and concepts are covered. For data in a database or other alternative form, this information shall consist of an internal or external table of contents containing pointers to, or instructions for accessing, each paragraph, figure, table, and appendix or their equivalents.

c. Page numbering/labeling. Each page shall contain a unique page number and display the document number, including version, volume, and date, as applicable. For data in a database or other alternative form, files, screens, or other entities shall be assigned names or numbers in such a way that desired data can be indexed and accessed.

d. Response to tailoring instructions. If a paragraph is tailored out of this DID, the resulting document shall contain the corresponding paragraph number and title, followed by "This paragraph has been tailored out." For data in a database or other alternative form, this representation need occur only in the table of contents or equivalent.

e. Multiple paragraphs and subparagraphs. Any section, paragraph, or subparagraph in this DID may be written as multiple paragraphs or subparagraphs to enhance readability.

f. Standard data descriptions. If a data description required by this DID has been published in a standard data element dictionary specified in the contract, reference to an entry in that dictionary is preferred over including the description itself.

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g. Substitution of existing documents. Commercial or other existing documents may be substituted for all or part of the document if they contain the required data.

The numbers shown designate the paragraph numbers to be used in the document.

1. Scope. This section shall be divided into the following paragraphs.

1.1 Identification. This paragraph shall contain a full identification of the system and the software to which this document applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s), and release number(s).

1.2 System overview. This paragraph shall briefly state the purpose of the system and the software to which this document applies. It shall describe the general nature of the system and software; summarize the history of system development, operation, and maintenance; identify the project sponsor, acquirer, user, developer, and support agencies; identify current and planned operating sites; and list other relevant documents.

1.3 Document overview. This paragraph shall summarize the purpose and contents of this document and shall describe any security or privacy considerations associated with its use.

2. Referenced documents. This section shall list the number, title, revision, and date of all documents referenced in this document. This section shall also identify the source for all documents not available through normal Government stocking activities.

3. Software summary. This section shall be divided into the following paragraphs:

3.1 Software application. This paragraph shall provide a brief description of the intended uses of the software. Capabilities, operating improvements, and benefits expected from its use shall be described.

3.2 Software inventory. This paragraph shall identify the software files, if any, including databases and data files, that the user is responsible for requesting in order to access the software described in this manual. The identification shall include security and privacy considerations for each file and identification of the software necessary to continue or resume operation in case of an emergency.

3.3 Software environment. This paragraph shall identify the hardware, software, manual operations, and other resources needed to access and use the software. This paragraph shall be based on the assumption that the software is installed in a computer center or other centralized or networked environment and shall focus on the resources that a user must have to access and use the software in that environment. Included, as applicable, shall be identification of:

a. Computer equipment that must be present, such as terminals, printers, or other input/output devices
b. Communications equipment that must be present
c. Other software that must be present, such as networking software

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d. Forms, procedures, or other manual operations that must be present
e. Other facilities, equipment, or resources that must be present

3.4 Software organization and overview of operation. This paragraph shall provide a brief description of the organization and operation of the software from the user's point of view. The description shall include, as applicable:

a. Logical components of the software, from the user's point of view, including databases and data files the user can access, Database Management Systems (DBMSs), and communications paths, and an overview of the purpose/operation of each component

b. Performance characteristics that can be expected by the user, such as:

1) Types, volumes, rate of inputs accepted
2) Types, volume, accuracy, rate of outputs that the software can produce
3) Typical response time and factors that affect it
4) Typical processing time and factors that affect it
5) Limitations, e.g., restrictions on what data may be queried and from what location
6) Error rate that can be expected
7) Reliability that can be expected

c. Relationships of the functions performed by the software with interfacing systems and with the organizations or stations that are sources of input or recipients of output

d. Supervisory controls that can be implemented (such as passwords) to manage the software

3.5 Contingencies and alternate states and modes of operation. This paragraph shall explain the differences in what the user will be able to do with the software at times of emergency and in various states and modes of operation, if applicable.

3.6 Security and privacy. This paragraph shall contain an overview of the security and privacy considerations associated with the software. A warning shall be included regarding making unauthorized copies of software or documents, if applicable.

3.7 Assistance and problem reporting. This paragraph shall identify points of contact and procedures to be followed to obtain assistance and report problems encountered in using the software.

4. Using the software. This section shall be divided into the following paragraphs to describe how to prepare inputs to, and interpret output from, the software. If the software has a query capability, this paragraph shall reference section 5 for a description of this capability. If the software can be accessed via terminal, this paragraph shall reference Sections 6 through n to describe terminal processing procedures. Safety precautions, marked by WARNING or CAUTION, shall be included where applicable.

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4.1 Initiation procedures. This paragraph shall contain the procedures that must be followed to initiate use of the software. Included may be information such as sample job request forms or sample control statements.

4.2 Description of inputs. This paragraph shall be divided into the following subparagraphs.

4.2.1 Input conditions. This paragraph shall describe the conditions to be observed in preparing each type or class of input to the software. The conditions shall include the following, as applicable:

a. Reason for input, such as normal status report, need to update data
b. Frequency of input, such as monthly, on demand
c. Origin of input, such as the organization or station authorized to generate the input
d. Medium of input, such as magnetic tape
e. Related inputs that are required to be entered at the same time as this input
f. Other applicable information, such as priority, security and privacy considerations

4.2.2 Input formats. This paragraph shall illustrate the layout formats to be used in the preparation of inputs to the software and shall explain the information that may be entered in the various sections and lines of each format.

4.2.3 Composition rules. This paragraph shall describe any rules and conventions that must be observed to prepare inputs. The rules of syntax, usage of punctuation, etc., shall be explained. The rules shall include the following, as applicable:

a. Input transaction length, such as 100 characters maximum
b. Format conventions; such as all input items must be left justified
c. Labeling, such as usage of identifiers to denote major data sets to the software
d. Sequencing, such as order and placement of items in the input
e. Punctuation, such as spacing and use of symbols (virgule, asterisk, character combinations, etc.) to denote start and end of input, of data groups, and of fields
f. Restrictions, such as rules forbidding use of particular characters or parameter sets

4.2.4 Input vocabulary. This paragraph shall explain the legal character combinations or codes that must be used to prepare inputs. An appendix may be provided containing an ordered listing of these codes.

4.2.5 Sample inputs. This paragraph shall provide examples that illustrate and explain each type or class of input acceptable by the software. Included shall be information on the following types of inputs, as applicable:

a. Headers denoting the start of input
b. Text or body of the input

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c. Trailers denoting the end of input
d. Portions of the input that may be omitted
e. Portions of the input that may be repeated

4.3 Description of outputs. This paragraph shall be divided into the following subparagraphs.

4.3.1 General description. This paragraph shall provide the following information, as applicable, for each type or class of output:

a. Reasons by the output is generated
b. Frequency of the output, such as monthly, on demand
c. Any modifications or variations of the basic output that are available
d. Media, such as printout, display screen, tape
e. Location where the output will appear, such as in the computer area or remotely
f. Any additional characteristics, such as priority, security and privacy considerations, associated outputs that complement the information in this output

4.3.2 Output formats. This paragraph shall illustrate and explain the layout of each type or class of output from the software. The following aspects shall be explained, as applicable:

a. Security and privacy markings
b. Data that may appear in headers
c. Information that may appear in the body or text of the output, including column headings and subsets or sections in the output format
d. Data that may appear in trailers
e. Additional characteristics, such as the meaning of special symbols

4.3.3 Sample outputs. This paragraph shall provide illustrations of each type or class of output from the software. A description of each sample shall be provided, including, as applicable:

a. Meaning and use of each column, entry, etc.
b. Source, such as extracted from database, calculated
c. Characteristics, such as when omitted, range of values, unit of issue

4.3.4 Output vocabulary. This paragraph shall describe any codes or abbreviations that appear in the output that differ from those used in the input described in paragraph 4.2.4.

4.4 Use of outputs. This paragraph shall explain the use of the output by the operational area or activity that receives it.

4.5 Recovery and error correction procedures. This paragraph shall list the error codes generated by the software, give their meanings, and describe the corrective actions to be taken by the user. Also included shall be the procedures to be followed by the user with respect to restart, recovery, and continuity of operations in the event of emergencies.

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4.6 Communications diagnostics. This paragraph shall describe the diagnostic procedures available to the user for validating communications and for identifying and classifying problems.

5. Query procedures. This section shall be prepared for software with a query capability. It shall be divided into the following paragraphs.

5.1 Database/data file format. This paragraph shall provide a user's view of the format and content of each database and data file that can be queried. Figure 1 provides an example. Information such as the following shall be provided for each data element, as applicable:

a. Data element name
b. Synonymous names
c. Definition
d. Format
e. Range and enumeration of values
f. Unit of measurement
g. Data item names, abbreviations, and codes

5.2 Query capabilities. This paragraph shall identify and describe the preprogrammed and ad hoc query capabilities provided by the software. An example of preprogrammed queries is shown in Figure 2.

5.3 Query preparation. This paragraph shall provide instructions for preparing queries. Figure 3 shows an example of the format for a preprogrammed query. Figure 4 shows an example of a query statement.

5.4 Control instructions. This paragraph shall provide instructions for the sequencing of runs and other actions necessary to extract responses to query requests. These instructions shall include control statements that may be required by the computer system or software.

6. User terminal processing procedures. This section shall be divided into the following paragraphs to provide the user with information on the use of terminals to accomplish processing. If the procedures are complicated or extensive, Sections 7 through n may be added in the same paragraph structure as this section and with titles meaningful to the sections selected. The organization of the document will depend on the characteristics of the software being documented. For example, sections might be based on the organizations in which users work, their assigned positions, work sites, or the tasks they must perform. For other software, it may be more appropriate to have Section 6 be a guide to the menus, Section 7 be a guide to the command language, and Section 8 be a guide to functions. Detailed procedures are intended to be presented in paragraphs 6.2 through 6.5. Depending on the design of the software, the subparagraphs might be organized on a function-by-function, menu-by-menu, transaction-by-transaction, or other basis. Safety precautions, marked by WARNING or CAUTION, shall be included where applicable.

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6.1 Available capabilities. This paragraph shall describe in general terms the capabilities for retrieval, display, and update of data through terminal operations.

6.2 Access procedures. This paragraph shall present the sequence of steps and any applicable rules pertaining to accessing the software to initiate software operations.

6.3 Display, updates, and retrieval procedures. This paragraph shall be divided into subparagraphs to provide the step-by-step procedures necessary to produce the displays, updates, and retrievals that are available through the use of a terminal. Each procedure shall include the name of the operation, input formats, and sample responses, as applicable.

6.4 Recovery and error correction procedures. This paragraph shall identify error messages that may be displayed and shall indicate their meanings and any corrective actions that should be taken. Also included shall be any procedures to be followed by the user with respect to restart, recovery, and continuity of operations in the event of emergencies.

6.5 Termination procedures. This paragraph shall present the sequence of steps necessary to terminate the processing.

7. Notes. This section shall contain any general information that aids in understanding this document (e.g., background information, glossary, rationale). This section shall include an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document and a list of terms and definitions needed to understand this document. If section 6 has been expanded into section (s) 7,..., this section shall be numbered as the next section following section n.

A. Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (e.g., charts classified data). As applicable, each appendix shall be referenced in the main body of the document where the date would normally have been provided. Appendixes may be bound as separate documents for ease in handling. Appendixes shall be lettered alphabetically (A, B, etc.).

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Format of Data Record			
ITEM NAME	FORMAT	RANGE OF VALUES	UNIT OF MEASUREMENT
ORG NAME	30 AN	1-9, A-Z	
ORG-ID	6 AN	1-9, A-Z	
SOC-SEC-NO	9 N	0-9	
NAME	20 AN	---	
PAY GRADE	4 AN	---	
GROSS-PAY	6 SN	0-9	Dollars
GROSS-PAY-YTD	8 SN	0-9	Dollars
FED-TAX	6 SN	0-9	Dollars
FED-TAX-YTD	8 SN	0-9	Dollars
FICA	6 SN	0-9	Dollars
FICA-YTD	8 SN	0-9	Dollars
STATE-TAX	6 SN	0-9	Dollars
STATE-TAX-YTD	8 SN	0-9	Dollars
STATE-TAX-CODE	2 AN	B3-F6	
ALLOTMENTS	6 SN	0-9	Dollars
NET PAY	6 SN	0-9	Dollars
AN = Alphanumeric SN = Signed Numeric			

Figure 1. Example of data record format

Preprogrammed Query Capabilities	
DESCRIPTION	QUERY CODE
Number of employees within an organization	A
Number of employees in a specific pay grade	B
Total gross pay for employees within an organization	C
State tax year-to-date for specific state	D
FICA tax year-to-date for a specific employee	E
Total deductions for a specific employee	F
Net pay for a specific employee	G

Figure 2. Example of preprogrammed query capability

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Format of Query A		
NUMBER OF EMPLOYEES WITHIN AN ORGANIZATION		
QUERY ITEM TITLE	CHARACTER POSITION	COMMENT/CONTENT
Query designator	1	Q Constant
File Number	2-3	01 Constant
Query Number	4-5	Insert 01-99
Security Classification	10	U Unclassified
Query Card Format Code	12	A
Organization	14-19	Insert ORG-ID as requested by query. Refer to data format for applicable code.

Figure 3. Example of query format

Query Statement
Request - No. of employees within an organization (Office of Secretary of Defense) Query Statement - IF ORG_ID EQ OSD LIST NO OF EMPLOYEES

Figure 4. Example of query statement.

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