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# ISDAT 1.0 Programmers Guide

## 1. Overview and General Guidelines

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## 1 Introduction

### 1.1 Purpose of the document

The purpose of this document is to provide an overview of documentation needed to write code to be implemented in the ISDAT system, and to provide general guidelines for the coding. The document is written for the programmer.

A general introduction to the ISDAT is given in [Ref. 1].

### 1.2 Scope of the software

The scope of the ISDAT software package is to provide a flexible tool for the analysis of scientific data.

### 1.3 Definitions and acronyms

Acronym	Meaning
DBH	Data Base Handler
GKS	Graphics Kernel System
ISDAT	Interactive Science Data Analysis Tool
N/A	Not Applicable
PEX	PHIGS Extension to X11
PHIGS	Programmer's Hierarchical Graphics System
TBD	To Be defined
TBW	To Be Written

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## 2 Overview of Programmers Guides

The ISDAT is a modular system with modules accommodating all instrument specific software, scientific data analysis software, libraries, etc. A set of guides is provided for the programmer that wants to add software modules to the ISDAT. The following documents are provided:

1. Overview and general guidelines (this document)
2. DBH Project modules [Ref. 4]
3. Clients [Ref. 2]
4. Filters[Ref. 5]
5. Libraries [Ref. 6]
6. External software packages [Ref. 7]

## 3 General Guidelines

### 3.1 System design principles

At the start of the ISDAT development, a few basic assumptions were adopted:

- Processing power will be no practical limitation.
- Peripheral memory will be affordable and thus no limitation.

This led to the following design strategies:

- Favour readable and logic code before the fastest possible code.
- Assume that large portions of the data bases reside on fast on-line random access media.
- Unpack data in real time. I.e. do not create any intermediate file format (Level 1).

### 3.2 Software environment

**Systems:** UNIX, POSIX, X/OPEN, SV

**Languages:** C and FORTRAN

**Windows:** X11, Motif

**Graphics:** PHIGS and PEX

### 3.3 Coding standards

The preferred language is C. FORTRAN should only be used for inclusion of already existing software that not easily can be translated to C. To facilitate the readability and maintainability of the code, it is recommended to follow the following simple rules:

- Names**
- Use descriptive names at the dispencc of short names.
    - Begin variable names by lower case, e.g. **variable**.
    - Indicate multi-word variables by Upper case e.g. **secondVariable**
    - Begin functions by upper case e.g. **ComputeAverage()**.
    - Use all upper case for define e.g. **#define PI 3.14159** and underscore for multi-word names e.g. **#define PI\_HALF 1.57**

**Arguments** Try to group families of variables into structures to avoid long argument lists.

**Modules** Avoid long functions. Use max one A4 page as a rule. Otherwise split it up into several processes.

**Errors** Propagate error messages to the top level. Never print out errors in the low level routines. Note that there are mechanisms within ISDAT to handle errors.

### 3.4 Documentation standards

All executable files and all library calls should have an associated man-page. For more complex clients there should also be a more elaborate user printed user manual.

### **3.5 Installation rules**

All ISDAT software shall utilize Make. The programmer shall supply an Imakefile which is used by the system to make an Makefile. By this method the system can be made system independent. The practical installation of the ISDAT system is described in [Ref. 3].

## References

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