1. Introduction

The implementation of data processing in clinical chemistry has led to the development of many different computerized laboratories.

The initial approach to this problem was very pragmatic failing often to make full use of computer's potentials.

Until now there have been more publications and work lists, sample identification, data acquisition and other practical problems of laboratory computing than on the inherent data structures.

On the other hand one of the main goals of clinical chemistry data processing is the development of portable systems. It is therefore imperative to focus on data structures and data base problems.

2. Essential Requirements of Data Structures

It is one of the principals of data processing that "the main objective of the definition of data structures should be the optimization of both: data retrieval and the further processing thereof."

This would seem to be self-evident. However, one of the main errors of EDP-systems is that the structure of data sets is mostly defined by acquisition facilities available. Therefore a lot of data are input to the computer without anybody knowing what their use is. This has led to the creation of large data cemeteries which can never be processed even if such were possible.

Only well defined aims for the processing and the filing of data will lead to the development of suitable structures.

With the regard to their use four different types of data have to be distinguished:

- data for system control and structure description
- fixed user data that must be permanent available
- variable user data for current use
- variable user data for long term filing and archivation.
2.1 System Control and Structure Description Data

The importance of this type of data has grown in the last years. The aim is to extract system and project specific data out of the programs and embed them into structured data sets. This procedure leads to a higher flexibility with the regard to the use of a program (or a program module) within different user systems. This type of data reduces individual adaptation of programs and facilitates service and maintenance of program packages, and last but not least, increases the degree of portability.

Two main functions are controlled by this kind of structured data set:
1. The integration of program segments, modules, subroutines and specific application routines to a "task", that deals with a certain project.
2. The definition of the behaviour of these tasks within real daily routine situations. The actuel behaviour within the context of all situations having to be considered is given in "decision tables".

Type one above will be used mainly during project development and implementation and further for supplementation to and alterations of structures.

Type 2 provides the requisite flexibility for adaptation to new situations, which however, must have been forseen principally upon layout of the program package.

2.2 Fixed User Data that must be permanent available

These are project internal information which have to be codified at the commencement of project installation. These data have never or relatively seldom to be changed, replaced or complemented (e.g. testnames, mnemonic abbreviations, measurement units, normal values, reference limits, textelements for validation of results, etc.).

2.3 Variable User Data for current Use

This kind of data has to be available to the system over a well defined period of time and has to be updated continuously (e.g. current requests, measurement values, result output of a work station, patient data and laboratory results accumulated over his stay, quality control data for actual and retrospective survey, etc.).