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UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ASSISTANCE TO BOTSWANA LICENSING UNIT

XP/BOT/90/083/11-02/J14102

Technical Report: Computerizing Industrial Licensing

Prepared for the Government of Botswana
by the United Nations Industrial Development Organization

Based on the work of Torsten S. Rasmussen, Computer Specialist

CONTENTS

ABSTRACT

This report is the second document for the project 'Assistance to Botswana Licensing Unit' (XP/BOT/90/083). The first document based on the works of J. Mambule describes a procedure for retrieval of information and data related to investment projects in the industrial sector.

This report describes the computerization of the proposed procedure and the tools implemented to retrieve data to monitor and evaluate the performance of the industrial sector (chapter 1). The training of the staff is taken up in chapter 2, and the recommendations for further computerization in chapter 3.

As the users have to use the technical documentation of the system (the user's manual) as a paper of its own, it has been appended as a separate document in the attached annex. This annex describes in detail the various functions of the system, the organization of the files and the structure of the data bank.

Table of contents

A. INTRODUCTION

The aim of the project was to improve the capacity and capability of the Industrial Licensing Unit (ILU), which is part of the Licensing and Protection Division in the Department of Industrial Affairs. As the work to be carried out by the ILU includes various statistical calculations based on data from licensed industries, the activities of the ILU might be executed more efficiently, if some of the functions were computerized.

The computerization of the ILU and the training of users was planned to take 4 months: one month was to be used for the analysis of the system and the database, two months were set aside for development and the last month was for the installation and the training. The first three months turned out as planned. However, the computer acquired from the USA, was not delivered at the end of the 3rd month as planned. and the 4th month was hence mainly used to expand the program to the present size of approx. 4700 lines of code. The computer was only delivered in Botswana in January 1992, i.e. 3 months after the project should have been completed, and for this reason an extra month was added to finalize the project.

The computer system developed for and installed at ILU is called INLIC (Industrial Licensing). It contains several statistical functions, most of which was done during the 'extra month'. However, during the installation month it was found that there also are several information retrival functions missing. This theme is treated more intensely in chapter D.

Concerning the improved capacity and capability of the ILU after the computer has been installed, it has to be pointed out, that the computer requires the current AIL formulas (Application for Industrial License) to be entered before it can be of any use. The time required to record the applications can be estimated to be approx. 750 hours per year, i.e. approx. 1500 working hours will need to be spent to enter the applications from the last two years, and no statistics is of any use before this has been done.

As invalid data causes invalid statistics, the completion of the AIL formulas also has to be mentioned. During the training a few applications were recorded to the system. In most of these applications there were one or more fields completed with wrong data or not completed at all. The fields No. of Shares were for instance very often completed with the percentage distribution of shares on the shareholders and not in absolute values as intended. For the existing applications erroneous fields have to be handled with special care to avoid invalid statistics. In the future applications with such dificiencies should be rejected.

Finally it has to be mentioned, that the data acquired in the INLIC system also are of interest to other ministerial organizations. The system has hence been prepared to be part of a network, and the establishment of such a system is highly recommended.

B. THE INLIC SYSTEM

The INLIC system is a database system using the structure of the DBase 4.1 data files. As this is an inofficial standard, the database is accessible and applicable for other computers too. With a few exceptions, the programmes have been written in the language of DBase. It has already been mentioned, that the INLIC system is expected to be part of a network in the near future. For this reason it has been established as a multi-user system causing the database to be applicable in a network system without changes. This subject is covered in detail in chapter D.

The few exceptions are a general purpose menu-system, a password protection and some extensions to the DBase language, which partly have been programmed in the language C and partly in assembler.

The system has been provided with two kinds of protection against unwanted access: a password protection and a key-lock protection. The key-lock protection disables the keyboard, i.e. it prevents commands to be entered from the keyboard, and is enabled / disabled by turning a key on or off in the lock. The password protection requires a user identification and a password to be entered before the user is allowed to access the system. The password protection is activated when the system is turned on, and may be reactivated at any time by the user. This means that the user can leave the computer and prevent it from unwanted access either by activating the password protection or by turning the key-lock on.

Printed output from a database system is very seldom used as a stand alone document. Normally various texts are appended to explain the data. For this reason direct printing from the INLIC system has not been implemented. Hard copies are placed in a file, from which it can be loaded and processed with a the word processing system Word Perfect. The statistical functions of the INLIC system always use a file for the output, and the hard copy is hence automatically produced. For the other functions a key has to be pressed to generate a hard copy.

All the functions of the INLIC system allow the user to restrict the database to a minor part, i.e. the user can retrieve product information for certain selected products, can reduce the license statistic to a certain area or to certain products. To do this, a table of manufacturing codes and a table of area codes have been established. Both of these tables are of course to be defined and may dynamically be changed by the ILU.

Most of the functions of the INLIC system are briefly described in the following overview. Not all functions has been included. The functions to define and maintain the area codes and the manufacturing codes have for instance been omitted, and so has the recording of the applications for industrial license (the AIL's).

1. Product Information

The function Product Information can retrieve information about production capacity, actual production, location of manufacturer etc. This information can be retrieved for independently selected groups of products.

PRODUCT INFORMATION for xxxxxxxxxxxx

Product	Unit	Location	Capacity	Quantity	Value
XXXXXXXXXXXXXXX	XXXXX	XXXXXXXXXXXXXXX	XXXXXXX	XXXXXXX	XXXX
XXXXXXXXXXXXXXX	XXXXX	XXXXXXXXXXXXXXX	XXXXXXXX	XXXXXXX	XXXXX

XXXXXXXXXXXXXXX	XXXXX	XXXXXXXXXXXXXXX	XXXXXXXX	XXXXXXX	XXXXXX
XXXXXXXXXXXXXXX	XXXXX	XXXXXXXXXXXXXXX	XXXXXXXX	XXXXXXX	XXXXXX

2. Shareholders and Directors

The function Shareholders and Directors displays a table stating the registration number of the company, the name of the shareholder/director, his citizen/country, the shares he possesses and/or his occupation in the company. This information may be retrieved for all groups of persons, having common letters in their names.

10 April 1992	Shareholders and Directors			10:58:50
REG_NO	PER_NAME	COUNTRY	SHARES	OCCUPATION
XX/XXXX	XXXXXXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXX	XXXXXXXXXXXXX
XX/XXXX	XXXXXXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXX	XXXXXXXXXXXXX

XX/XXXX	XXXXXXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXX	XXXXXXXXXXXXX
XX/XXXX	XXXXXXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXX	XXXXXXXXXXXXX

3. Industries Licensed

The function Industries Licensed states the companies licensed within dates specified.

INDUSTRIES LICENSED in the period 10.04.1991 - 10.04.1992

Company: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Address: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Phone: xxxxxxxx
Products: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
          xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Contact: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

---

Company: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Address: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Phone: xxxxxxxx
Products: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Contact: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

---

4. License Statistics

The License Statistic shows the number of licensed companies having a certain location for manufacturing or which are manufacturing certain products.

LICENSE STATISTIC

	1987	1988	1989	1990	1991	1992
No. of new Companies	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Batswana Owned	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Joint Venture	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Foreign Owned	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
% Batswana owned	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
% Joint Venture	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
% Foreign Owned	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Urban Projects	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Rural Projects	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Proj. Employment	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Urban Employment	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Rural Employment	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Proj. Investments	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Mean Investments	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx

Investments are stated in P'000

5. Number of New Licenses

The Number of New Licenses is stated for companies placed at a selected locality, in which case the table is separated by the manufacturing code, or for companies manufacturing a certain product, in which case the table is separated by the localities.

NO. of NEW LICENSED COMPANIES

Sector	1987	1988	1989	1990	1991	1992	Sum
Beverages	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxxx
Building Materials	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxxx

Total	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxxx

6. Ownership

The Ownership statistic can be stated for a range of years and for a certain location distributed by manufacturing code, or for a certain manufacturing code distributed by location.

OWNERSHIP of COMPANIES 1991 - 1992

Sector	Ownership			Total	Location	
	Botsw.	Joint	Forgn.		Urban	Rural
Beverages	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Building Materials	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx

Total	xxxxx	xxxxx	0	1	1	0

7. Investments

The Investments statistic can be stated for two independent years for a certain location distributed by manufacturing code, or for a certain manufacturing code distributed by location.

INVESTMENTS for 1991 and 1992

Sector	1991			1992		
	Number	Invest	Mean	Number	Invest	Mean
Beverages	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Building Materials	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx

Total	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Number = Number of Companies, Invest = Investments, Mean = Investment Average						

8. Comments

The system allows various comments to be made on each company. The type of comment should be classified by the use of comment codes. These comments may be retrieved for a specified comment code for companies located in a specified area and/or having a specified manufacturing code.

22 April 1992			Comments			13:09:00
DATE	REG_NO	MNFRCODE	AREACODE	COMMCODE	COMMENT	
xx.xx.xxxx	xx/xxxx	xxxxxxxx	xxxxxxx	xxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	
xx.xx.xxxx	xx/xxxx	xxxxxxxx	xxxxxxx	xxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	

----

f1: help, f8: accept and continue, ESC: regret

9. Employment Cadres

The Employment Cadre may be stated for a selected year and for either a selected location (distribution by manufacturing code) or for a selected manufacturing code (distribution by location).

EMPLOYMENT CADRE for the year 1992

Sector	Botswana				Foreigner			
	Man	Skl	Wrk	Oth	Man	Skl	Wrk	Oth
Beverages	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Building Materials	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx

Total	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx

Man = Managers,   Skl = Skilled Staff,   Wrk = Workers,   Oth = Others

10. Employment Jobs

The Employment Jobs may be stated for two selected years, and states the number of jobs and the percentage distribution on manufacturing sector or on location. Further, the table shows the percentage increase / decrease of number of jobs for each entry. The table may be retrieved for either a specified locality or a specified manufacture code.

EMPLOYMENT JOBS for the years 1991-1992

Sector	1991 jobs	%	1992 jobs	%	%
Beverages	XXXX	XX.XX	XXXX	XX.XX	XX.XX
Building Materials	XXXX	XX.XX	XXXX	XX.XX	XX.XX

Total	XXXX	100.00	XXXX	100.00	********

11. Parent Companies

The system may determine the subsidiary companies belonging to a certain parent / holding company, and to list all or a selected group of parent companies.

C. EDUCATION

The users have been trained in the operating system (MS-DOS 5), the Norton Commander, the password protection and the INLIC system in such a way, that they should be able to handle the system as long as no unusual tasks have to be carried out and no problems turn up.

The list of subjects to be covered in the available 4 weeks indicates in itself, that the knowledge acquired of a computer system during the training can only be rather superficial. As the users also had to handle their normal work during the training, only Mrs. Gaboutloeloe and Mrs. Ditshego participated in the training.

The users have not been trained in the database system DBASE although the INLIC system is written in the programming language of DBASE. The reason is, that INLIC established an interface to the user, which generally speaking makes knowledge to the database system or in fact the way the system functions unnecessary.

The ILU staff has at present enough knowledge to use the INLIC system as users. However, a computer system also needs maintenance. Normally the maintenance is handled by the users working with the system, but this requires a reasonably detailed knowledge of the way the system functions. For this reason it is recommended that the users of the INLIC system are trained further in the operating system MS-DOS and that they receive an education in the database system DBase.

The training in MS-DOS would make it possible for the users to maintain the computer system in an adequate way, e.g. to detect and remove redundant files for better disc utilization, to (re)configure the system for better memory utilization, to install for instance The Norton Anti Virus (which was installed during my stay), ... etc. ...

The training in DBase is recommended for two reasons. The first one is that with a reasonable knowledge of DBase, the users might be able to retrieve various kinds of information not to be retrieved with the present INLIC functions. The second reason is the maintenance of the database, which is much more important. Data errors turn up and exist in nearly all databases. They can for instance be created by a failure of the power supply. As each record in the database is only viewed from time to time and only utilized in a small percentage in the statistics, data errors may exist in the database for a long time, before they are discovered. In such cases the backup of the system can not recover the database, but knowledge of the data in the database and of the tools used to access the data, i.e. DBase, is required to correct the database.

D. RECOMMENDATIONS

Like all new applications the first version of the INLIC system has to be viewed as a prototype. During the installation / training month, as previously mentioned, it was realized that various functions to retrieve certain kinds of information are not present. However, this is not unusual, and when the users have been working with the system for some time, they will probably know exactly, which functions should have been in the system, which are redundant, which should have been ... an so on. It is therefore recommended, that the Department of Industrial Affairs now consider an upgrade of the present system.

As already mentioned, the INLIC database will, when completed, contain information of value to other units within the ministry. At the moment the data (to be) recorded in the INLIC database are collected in various ways by the different units. This causes redundant data in the ministry, which again means wasted work and increased risk for incorrect data. Although not verified it is rather sure, that for more companies the data, e.g. the addresses or telephone numbers, (to be) recorded in the INLIC system do not fit with the same information in the files of the Registrar of Companies.

To avoid redundant and invalid data it is recommended to establish a computer network (Local Area Network) connecting the INLIC system with other computers and their data. The data (to be) recorded in the INLIC system is the current state with respect to manufacturing, employment etc., and a network connection to the already existing network in the Department of Trade and Investment Promotion (TIPA) would be obviously beneficial.

A network connection also ought to exist between the INLIC system and the system used by the Registrar of Companies to maintain for instance the addresses of the companies. However, although a network link would be a benefit, it is hard to realize, as the Registrar of Companies does not record the companies on a computer. The unit has a computer, but no application to record and register the companies, and the computer is hence only used for word processing. The number of companies registered is growing rapidly - approximately 800 in 1990 and 2500 in 1991 - and computerization of the Registrar hence has become a must.

Recommendations concerning education has already been stated in chapter C. In this connection it should be pointed out, that one of the big difficulties designing the INLIC system was the missing computer knowledge of the users. Because of this and other similar experiences the Department of Industrial Affairs is highly recommended to consider the employment of either:

- a financial expert with an intensive computer knowledge, who might be able to establish the interface between the various units on the one hand and the computer expert developing the systems on the other
or
- a computer expert able to establish a network connection to TIPA, to develop an application for the Registar of Companies, and to make updates of the INLIC system. A computer expert has been employed by the Department of Wildlife and Natural Parks, and a computer expert with the same skills also should be employed by the Department of Industrial Affairs.

I N L I C

INDUSTRIAL LICENSING SYSTEM

USERS MANUAL

May 1992

A. INTRODUCTION

The INLIC system was developed to computerize some of the functions of the Industrial Licensing Unit (ILU) of the Department of Industrial Affairs of the Ministry of Commerce and Industry, Gaborone, Botswana.

The computerization of the ILU was necessary to strengthen the capacity and the capability of the unit regarding the ability to monitor and evaluate the performance of licensed industries, and regarding the ability to collect and disseminate data on these industries.

To satisfy these requirements the INLIC system was developed as a database system being able to store and retrieve data related to licensed industries in a fast and systematic way. The system has several procedures for retrieval of information and data to evaluate and monitor the performance of investment projects and the economic contribution that the investment makes in the industrial sector.

The computer installed at ILU was an AT386 having a disk capacity of 200Mb and 4Mb RAM memory. The computer was further equipped with a tape drive for backup, a HP LaserJet III Printer, the DBASE4.1, the Word Perfect 5.1, the Norton Commander and the Norton Utilities.

The INLIC system is recorded on a 1.4Mb floppy disc together with a config.sys and an autoexec.bat file for the computer installed at the ILU. On the drive is also a DOS file, install.bat, for installation of the software. However, this file installs the database too, and is hence only applicable for a system without any data. The documentation is written using Word Perfect 5.1, and is to be found in the file \inlic\text\inlic.doc.

B. General Purpose Functions

Two general purpose functions have been added to the INLIC software packages: a password protection and a menu system.

DBASE as well as WordPerfect contains password protection. However, both of these only apply for access to their own files through their own programs, and hence they do not protect against a deletion of a file carried out from the level of the operating system, e.g. from the command 'del database'.

It has hence been necessary to create a password program, which secures the whole system against unapproved access. However, the password protection installed only applies to a stand-alone system, and hence the password protection has to be reconsidered if the system is to be included in a network.

The menu system is included in the INLIC system to establish an easy way to generate and maintain menus. Both MS DOS and the Norton Utilities contain this possibility, and the manuals of both products also describe how to create a menu. However, creation of a menu in either one of the products requires programming knowledge, whereas the menus of the menu system are generated through the maintenance of tables.

The password program and the menu system are both loaded to the directory COMMAND, but might be placed in any other directory accessible through the MS DOS path-command. The packages contain the 4 files:

```
password.c      (source code)
password.exe    (password program)
menu.exe        (menu program)
menudata.txt    (declaration of the menus)
```

If the file menudata.txt is moved to another directory or is renamed, the menu program will ask the user for the pathname (directory and filename) of this file the first time it is activated.

B1. The Menu System

The Menu Program 'menu.exe' reads and handles the menu's as stated in the file 'menudata.txt'. In this file each menu is stated in the form:

```
@<menuname>;<lftcol>;<rghcol>;
 <entry>;<command>; ...... <command>;
 <entry>;<command>; ...... <command>;
```

The first letter on a line designates the kind of information stated on the line:
@ indicates a menuname, i.e. the beginning of a menu, and space indicates an entry in the last stated menu.

The <menuname> is displayed in the header of the menuscreen, and the <entry>'s are displayed on the body of the screen. Each <entry> is identified with a leading letter. A user can activate an <entry> by pressing the leading letter (upper- or lowercase). When this happens, the Menu Program executes the <command>'s stated for the selected <entry>, i.e. the <commands> until the end_of_line. The <command>'s must be separated with the character ';'.

A <command> is either an ordinary DOS-command, the word "pause", or the char @ followed by a <menuname> (e.g. "@Main Menu"). The command "pause" causes the program to ask for a key to be pressed before it continues with the next <command> or returns to the menu at the end_of_line. The command @<menuname> causes the program to change to the menu having the name <menuname>, i.e. display this menu. All other <command>'s are handled and executed by the operating system (MS_DOS).

The maximum no of <entry>'s for one menu is 18. <lftcol> and <rghcol> indicates where to place the left column and the right column. Both values must be integers in the range 1 - 80. If the left column is equal the right column, only one column is displayed and the maximum no of <entry>'s is then 9.

Empty lines are accepted as being dummy.

Example:

```
@Main Menu; 32;32;
 Industrial Licensing;   cd c:\inlic;        inlic;
 Norton Commander;       cd c:\nc;           nc;
 Word Perfect 5.1;       cd c:\wp51;         wp;
 WP Tutor;               cd c:\wp51\learn;   tutor;
 DBase 4.1;              cd c:\dbase;        dbase;
 Dbase Tutor;            cd c:\dbase;        dbtutor;
 Backup / Restore;       cd c:\tape;         tape;
 Norton Utilities;       cd c:\nu;           norton;
```

B2. Password

The program password.exe is to handle the normal password protection of access to the computer and is hence to be placed in the autoexec file as the first command.

The program has 3 functions:

(1) request the user for an identification (id.) and a password and repeats this request until a valid identification and password is entered. This function is activated when no parameters are stated, and the procedure of passing through this check is called to be logged in.

(2) change or enter a user identification. This function is activated with the question mark (?) as parameter, but can only be executed by the two super-users in the system. This function displays the id.'s of the 16 users allowed in the system, and requests the super-user to change the id. for a selected user. The password is by default set to the same as the user id., which hence has to be changed by the user by use of the (3) function.

(3) change the password of the user currently logged in, i.e. the user who has entered his user id. and password. This function appears, when a parameter different from ? is entered.

To change or enter a new user id. the following procedure applies: One of the 2 super-users has to log in and call the password program with the parameter ? ('password ?'). The user entry is selected with one of the letters a,b, ..., and the new user id. is stated as an answer to the request from the program. Then the user has to log in using the user id. as password, and afterwards call the password program entering the new password ('password <new password>').

When the program is installed, the 2 super-users has the default id.'s: AdminA with the password A, and AdminB with the password B.

The password program normally returns with the code 0. However, at the first log in after midnight the value 1 is returned. This allows for a backup request in the autoexec file, i.e. while the computer is being loaded.

C. THE FUNCTIONS

The functions of the INLIC system are all accessed through the INLIC menu. To activate a function the user only has to press the key associated with the function. However, before the function is carried out, the set of data on which the function should be applied is requested by the computer.

The request for a data set is made in a window called the selection-window. Each function is associated with one or two selection windows, which on the one hand allows the user to select a subset of the data available, and on the other hand allows the system to check whether the selected records are available. After a data-subset has been found, the function is applied on the subset.

Some of the requests ask for a name. These can be stated using the characters * and ? as substitution characters: ? replaces one unknown character and * replaces some (zero or more) unknown characters. Stating a name as *bo?one may find Gaborone, bosone, Amibolone, etc.

The functions can be split in three types: forms, tables and statistics. They separate in the way the displays are looking and in the functions of the keyboard keys. The difference on the display layout is, that the forms state the information like a paper form and the tables look like tables ordered in columns separated by lines. The statistics are also organized as tables, but at the top of these, a ruler is displayed.

The tables may be extended by moving the cursor below the bottom line of the table. The system will then ask, if the user wants to add new records.

The statistics are first written to the file inlic.out, and afterwards this file is displayed and may be edited with the DBASE modify file command (for further information see the DBASE reference manual). If the file is edited in a wrong way, it can be regenerated with the same INLIC function. For further information see the chapter hard copy.

All functions are aborted without any updates, when the ESC key is pressed.

The form 'Additional Products' (AIL 2) is recorded with the function Company Maintenance and the new data are entered under Product Information.

The market information stated in the AIL 1 and the statements concerning education cannot be used for data processing and have to be recorded as comments.

Operating companies must apply for a new license for the following year in the month of december in the current year. License numbers issued between 01.12 this year and the 30.11 the following year hence contains information for this year. This should be noted, when the issuing date of the license is completed.

However, as companies operating in 1990 do not apply for a license for 1991 before the end of the year, the data for 1990 are generally speaking not valid before 1992.

C1. The INLIC Menu

The menu constitutes the fundament of the INLIC system. It is displayed when the program is started, and establish the entry to all functions of the system. The user selects one of the functions by pressing the associated letter and the menu is redisplayed when the selected function is completed.

```
 9 April 1992              INDUSTRIAL LICENSING              15:04:17

    A. Company Maintenance          I. License Statistics

    B. Manufacturing Codes          J. Number of New Licenses

    C. Area Codes                   K. Ownership

    D. Comment Codes                L. Investments

    E. Product Information          M. Comments

    F. Shareholders and Directors   N. Employment Cadres

    G. Industries Licensed          O. Employment Jobs

    H. Parent Companies             P. Computer Statistics


                         Press ESC to exit
```

To exit INLIC press ESC. The system will ask you, if it was an error or if you really want to exit the system. (Pressing ctrl Q will return the system to DBASE in the inlic directory).

C2. Company Maintenance

Recording. renewing and retrieving company data are all carried out through the company maintenance. To detect whether the company is already recorded, the system requests the user to select the company using one of the two selection windows:

```
┌────────────────────────────────────────────────────────────────┐
│ 10 April 1992              Company Maintenance          12:56:45│
│ ┌──────────────────────────────────────────────────────────────┐│
│ │                                                              ││
│ │          ┌──────────────────────────────────────┐            ││
│ │          │       Append or Lookup Company        │            ││
│ │          │  ──────────────────────────────────   │            ││
│ │          │      Enter one of the numbers         │            ││
│ │          │                                       │            ││
│ │          │      Registration no.:  _____        │            ││
│ │          │   or File number.:      _____       │            ││
│ │          │   or Ind. License no.:  _____        │            ││
│ │          └──────────────────────────────────────┘            ││
│ │                                                              ││
│ │       ┌──────────────────────────────────────────┐           ││
│ │       │            Search Company                 │           ││
│ │       │  ──────────────────────────────────────   │           ││
│ │       │                                           │           ││
│ │       │  Company:   _____  │           ││
│ │       │  MnfrCode:  _____                       │           ││
│ │       │  AreaCode:  _____                       │           ││
│ │       └──────────────────────────────────────────┘           ││
│ └──────────────────────────────────────────────────────────────┘│
│        Use PgUp & PgDn to switch between the two windows         │
└────────────────────────────────────────────────────────────────┘
```

If the upper selection window is chosen to enter the requested data, the data for the searched company might be displayed immediately in the form basic company data. If the company is not recorded in the system, the data is of course empty. Note that only one of the fields in the upper selection window is to be completed.

If the lower selection window is chosen, the user may state a company name and possibly reduce the set of companies found by restricting the products manufactured by the mnfrcode and/or the location of the company by the areacode. The companies found are stated in a table from which the user can select the company actually wanted, by placing the curser on the company and press the key f8. After this selection has been executed the system behaves as if the upper selection window had been used.

When the company has been selected. the display Basic Company Data will appear.

```
┌─────────────────────────────────────────────────────────────────────┐
│ 10 April 1992              Company Maintenance            12:57:33    │
│  ┌────────────────────────────────────────────────────────────────┐  │
│  │                      Basic Company Data                         │  │
│  │                      ──────────────────                         │  │
│  │                                                                 │  │
│  │      Name of Company: _____         │  │
│  │      Address:         _____         │  │
│  │      Plot No.:        _____   Location: _____        │  │
│  │                                                                 │  │
│  │      Telephone:       _____   Telex: _____  Fax: _____    │  │
│  │                                                                 │  │
│  │                                                                 │  │
│  │      Registration No: _____    Date of issue:  __.__.___       │  │
│  │      License Number:  __ __     Date of issue:  __.__.___       │  │
│  │      File Number:     _____   Commencement :  __.__.___       │  │
│  │                                                                 │  │
│  │      Manufacture Code: _____     Area Code:    _____        │  │
│  │                                                                 │  │
│  │                                                                 │  │
│  │      Trade Name:      _____         │  │
│  │      Registration Number of Parent / Holding Company: _____    │  │
│  └────────────────────────────────────────────────────────────────┘  │
│          f1: help, f8: accept and continue, ESC: regret               │
└─────────────────────────────────────────────────────────────────────┘
```

The Manufacturing Code and the Area Code are described in the chapter concerning the database, and so is the Registration No. (reg_no). Parent/Holding companies without a registration number are supplied by the system with a negative reg_no (registration number) having the format -x/xxxx. This number is referred as the registration number (reg_no) of the company.

If the registration number of the parent/holding company is unknown, the field must be supplied with the number -9/9999. The system will then display a table with the known parent/holding companies. If the stated parent/holding company is among those listed, the user selects this by placing the cursor over its name and press f8. If not, the user presses the ESC key.

If the registration number of the parent/holding company is known or is found between the listed companies, the computer shows name and address plus the sister companies to have a confirmation from the user.

If the parent/holding company was not found among the companies recorded as parent/holding companies, the computer will ask the user to create the parent company.

The procedure for getting the registration number of the parent/holding company can be illustrated as follows :

```
          ┌─────────────────────┐
          ║  GET_BASIC_DATA     ║── esc ──
          └─────────────────────┘
                     │
                    cnt
                     ├──── parent = 0 ────
                     │
              parent◇ 0
                     │
    ┌──────────────────────────────────────┐
    ║            SELECT_PARENT              ║
    ║  ┌────────────────────────────────┐  ║
    ║  │ parent = -9.9999 and cnt       │  ║
    ║  │             or                 │  ║
    ║  │ parent > -9.9999 and seek = .T.│  ║
    ║  └────────────────────────────────┘  ║
    ║  ┌────────────────────────────────┐  ║
    ║  │ parent = -9.9999 and esc       │  ║
    ║  │             or                 │  ║
    ║  │ parent > -9.9999 and seek = .F.│  ║
    ║  └────────────────────────────────┘  ║
    └──────────────────────────────────────┘

 ┌──────────────┐                    ┌──────────────────┐
 │ MAKE_PARENT  │────────────────────│ CONFIRM  PARENT  │
 └──────────────┘        esc         └──────────────────┘
                         │
                        cnt
                         │
```
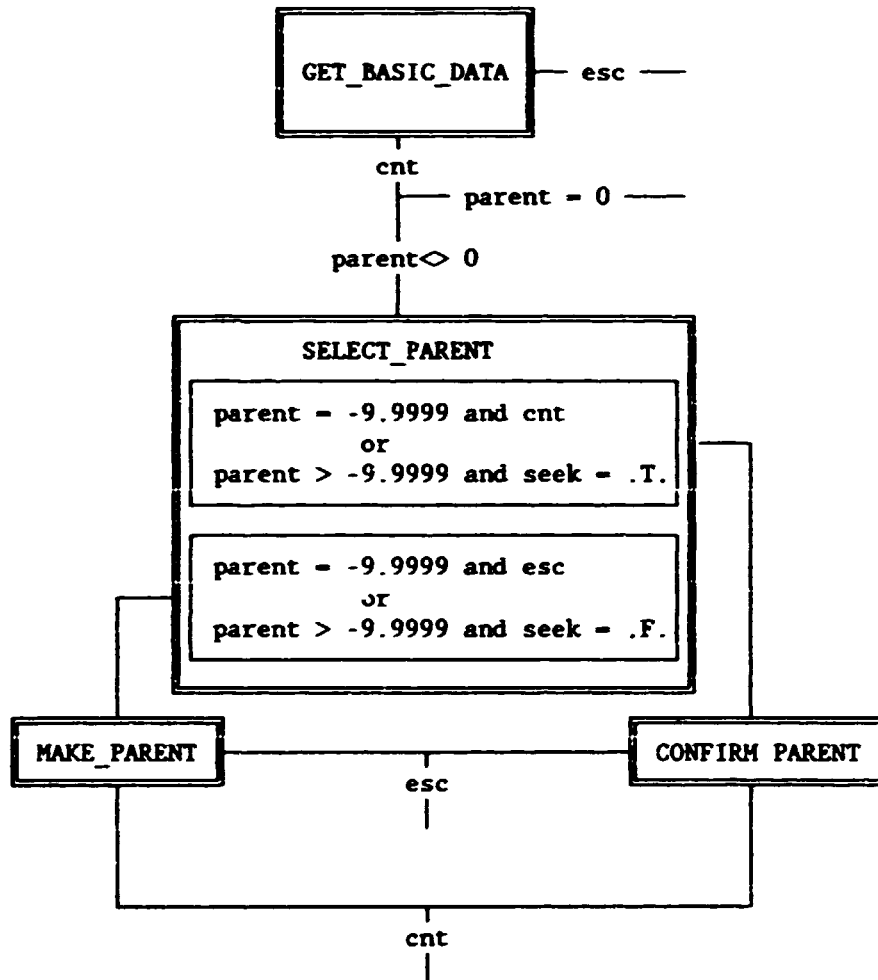
Explanation: esc means that the ESC key was pressed by the user, cnt (continue) that the key f8 (^END) was pressed. Parent is the registration number for the parent/holding company typed in by the user, seek is the search in the recorded parent/holding companies. This search may be equal .T. (true), if the company is found, or equal .F. (false), if it was not found.

The display for the confirmation of the selected/found parent/holding company is as the example shown below:

```
┌─────────────────────────────────────────────────────────────────────────┐
│10 April 1992              Company Maintenance                   12:58:23│
│  ┌───────────────────────────────────────────────────────────────────┐  │
│  │             Confirm the Parent / Holding Company to be             │  │
│  │             ──────────────────────────────────────────             │  │
│  │                                                                    │  │
│  │        Name of Company:  _____    │  │
│  │        Address:          _____    │  │
│  │        Plot No.:         _____                                    │  │
│  │        City:             _____                  │  │
│  │        Country:          _____                        │  │
│  │                                                                    │  │
│  │  ┌──────────┬────────────┬──────────┬───────────────────────────┐ │  │
│  │  │REG_NO    │FILE NO     │LIC_NO    │COMPANY                     │ │  │
│  │  ├──────────┼────────────┼──────────┼───────────────────────────┤ │  │
│  │  │xx/xxxx   │xxxxxxxxxx  │xxxxxxxx  │xxxxxxxxxxxxxxxxxxxxxxxxxxxx │ │  │
│  │  │xx/xxxx   │xxxxxxxxxx  │xxxxxxxx  │xxxxxxxxxxxxxxxxxxxxxxxxxxxx │ │  │
│  │  │          │            │          │                            │ │  │
│  │  │          │            │          │                            │ │  │
│  │  │          │            │          │                            │ │  │
│  │  └──────────┴────────────┴──────────┴───────────────────────────┘ │  │
│  │                                                                    │  │
│  │         Press F8 to confirm, ESC to change selection              │  │
│  └───────────────────────────────────────────────────────────────────┘  │
└─────────────────────────────────────────────────────────────────────────┘
```

When the parent/holding company has been recorded, the shareholders and managers are to be stated:

```
┌─────────────────────────────────────────────────────────────────┐
│10 April 1992            Company Maintenance            12:58:55  │
│  ┌──────────────────────────────────────────────────────────┐   │
│  │                 SHAREHOLDERS and MANAGERS                 │   │
│  │ ┌──────────────────────────┬──────────────┬─────────┬───┐ │   │
│  │ │PER_NAME                  │COUNTRY       │SHARES   │OCCUPATION│ │
│  │ ├──────────────────────────┼──────────────┼─────────┼───┤ │   │
│  │ │XXXXXXXXXXXXXXXXXXXXXXXXXXX│XXXXXXXXXXXXXX│XXXXXXX  │XXXXXXXXXXXXXXXXXX│ │
│  │ │XXXXXXXX/XXXXXXXXXXXXXXXXXXX│XXXXXXXXXXXXXX│XXXXXXX  │XXXXXXXXXXXXXXXXXX│ │
│  │ │XXXXXXXXXXXXXXXXXXXXXXXXXXXX│XXXXXXXXXXXXXX│XXXXXXX  │XXXXXXXXXXXXXXXXXX│ │
│  │ │                          │              │         │   │ │   │
│  │ │                          │              │         │   │ │   │
│  │ │                          │              │         │   │ │   │
│  │ └──────────────────────────┴──────────────┴─────────┴───┘ │   │
│  └──────────────────────────────────────────────────────────┘   │
│       f1: help, f8: accept and continue, ESC: regret            │
└─────────────────────────────────────────────────────────────────┘
```

If a shareholder has no occupation in the company, the field occupation is left blank, and if a manager has no shares in the company, the field shares is left blank (equal 0).

The first person stated in the table has to be the contact person for the company. This is used in the 'statistic' (overview) Industries Licensed.

The following screen requests information concerning the shares, and also displays information concerning the shares for the past years. When the Share Capital Status is completed, the Product Information has to be entered.

```
┌─────────────────────────────────────────────────────────────────┐
│ 10 April 1992              Company Maintenance           12:59:16│
│                                                                  │
│  ┌────────────────────────────────────────────────────────────┐ │
│  │                                                            │ │
│  │                  SHARE CAPITAL STATUS 19XX                  │ │
│  │                                                            │ │
│  │              ┌──────────┬──────────┬──────────┐            │ │
│  │              │          │  Local   │ Foreign  │            │ │
│  │              ├──────────┼──────────┼──────────┤            │ │
│  │              │  Paid    │ _____ │ _____ │            │ │
│  │              │          │          │          │            │ │
│  │              │  Unpaid  │ _____ │ __ _____ │            │ │
│  │              └──────────┴──────────┴──────────┘            │ │
│  │                                                            │ │
│  │     ┌────┬─────────┬─────────┬─────────┬─────────┐         │ │
│  │     │YEAR│L_SH_PAID│F_SH_PAID│L_SH_UPAID│F_SH_UPAID│        │ │
│  │     ├────┼─────────┼─────────┼─────────┼─────────┤         │ │
│  │     │19XX│xxxxxxxxx│xxxxxxxxx│xxxxxxxxx│xxxxxxxxx│         │ │
│  │     │19XX│xxxxxxxxx│xxxxxxxxx│xxxxxxxxx│xxxxxxxxx│         │ │
│  │     │19XX│xxxxxxxxx│xxxxxxxxx│xxxxxxxxx│xxxxxxxxx│         │ │
│  │     │19XX│xxxxxxxxx│xxxxxxxxx│xxxxxxxxx│xxxxxxxxx│         │ │
│  │     │    │         │         │         │         │         │ │
│  │     │    │         │         │         │         │         │ │
│  │     └────┴─────────┴─────────┴─────────┴─────────┘         │ │
│  └────────────────────────────────────────────────────────────┘ │
│          f1: help, f8: accept and continue, ESC: regret          │
└─────────────────────────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────────────────────────┐
│ 10 April 1992              Company Maintenance           12:59:27│
│                                                                  │
│  ┌────────────────────────────────────────────────────────────┐ │
│  │                    PRODUCT INFORMATION                     │ │
│  │   ┌───────────────┬──────┬────────┬────────┬──────┐        │ │
│  │   │PRODUCT        │UNIT  │CAPACITY│QUANTITY│VALUE │        │ │
│  │   ├───────────────┼──────┼────────┼────────┼──────┤        │ │
│  │   │               │      │        │        │      │        │ │
│  │   │               │      │        │        │      │        │ │
│  │   ├───────────────┴──────┴────────┴────────┴──────┤        │ │
│  │   │                    ----                       │        │ │
│  │   │                    ----                       │        │ │
│  │   └───────────────┴──────┴────────┴────────┴──────┘        │ │
│  └────────────────────────────────────────────────────────────┘ │
│          f1: help, f8: accept and continue, ESC: regret          │
└─────────────────────────────────────────────────────────────────┘
```

After the Product Information, Raw Material and Employment Information has to be stated.

```
┌─────────────────────────────────────────────────────────────────┐
│ 10 April 1992            Company Maintenance            12:59:42  │
│  ┌────────────────────────────────────────────────────────────┐  │
│  │                        RAW MATERIAL                         │  │
│  │                                                             │  │
│  │  ┌──────────────┬──────┬─────────┬──────────┬────────┐      │  │
│  │  │ DETAILS      │ UNIT │ COUNTRY │ QUANTITY │ VALUE  │      │  │
│  │  ├──────────────┼──────┼─────────┼──────────┼────────┤      │  │
│  │  │              │      │         │          │        │      │  │
│  │  │              │      │         │          │        │      │  │
│  │  │              │      │  ----   │          │        │      │  │
│  │  │              │      │  ----   │          │        │      │  │
│  │  └──────────────┴──────┴─────────┴──────────┴────────┘      │  │
│  └────────────────────────────────────────────────────────────┘  │
│          f1: help, f8: accept and continue, ESC: regret           │
└─────────────────────────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────────────────────────┐
│ 10 April 1992            Company Maintenance            12:59:59  │
│                                                                   │
│                   EMPLOYMENT INFORMATION 19XX                     │
│                                                                   │
│          ┌───────────────────────┬──────────┬──────────┐         │
│          │ Cadre                 │ Citizens │ Foreigner│         │
│          ├───────────────────────┼──────────┼──────────┤         │
│          │ Managers / Supervisors│          │          │         │
│          │ Skilled Staff         │          │          │         │
│          │ Unskilled Workers     │          │          │         │
│          │ Others                │          │          │         │
│          ├───────────────────────┼──────────┼──────────┤         │
│          │ Salary / Wages        │          │          │         │
│          └───────────────────────┴──────────┴──────────┘         │
│                                                                   │
│  f1 = help; PgUp,PgDn = overview; ESC = exit; F8 = store data and continue │
└─────────────────────────────────────────────────────────────────┘
```

The keys PgUp or PgDw causes the system to display a table showing the number of employees during the last 6 years.

```
┌────────────────────────────────────────────────────────────────────────┐
│10 April 1992              Company Maintenance              12:59:59│
│ ┌──────────────────────────────────────────────────────────────────┐ │
│ │                                                                    │ │
│ │      ┌────┬─────────┬─────────┬─────────┬────────┬────────┐       │ │
│ │      │YEAR│C_MANAGER│C_SKILLED│C_WORKERS│C_OTHERS│C_SALARY│       │ │
│ │      ├────┼─────────┼─────────┼─────────┼────────┼────────┤       │ │
│ │      │19XX│xxxxxxxxx│xxxxxxxxx│xxxxxxxxx│xxxxxxxx│xxxxxxxx│       │ │
│ │      │    │         │         │  ----   │        │        │       │ │
│ │      │    │         │         │  ----   │        │        │       │ │
│ │      └────┴─────────┴─────────┴─────────┴────────┴────────┘       │ │
│ │                                                                    │ │
│ │      ┌────┬─────────┬─────────┬─────────┬────────┬────────┐       │ │
│ │      │YEAR│F_MANAGER│F_SKILLED│F_WORKERS│F_OTHERS│F_SALARY│       │ │
│ │      ├────┼─────────┼─────────┼─────────┼────────┼────────┤       │ │
│ │      │19XX│xxxxxxxxx│xxxxxxxxx│xxxxxxxxx│xxxxxxxx│xxxxxxxx│       │ │
│ │      │    │         │         │  ----   │        │        │       │ │
│ │      └────┴─────────┴─────────┴─────────┴────────┴────────┘       │ │
│ └──────────────────────────────────────────────────────────────────┘ │
│   f1 = help; PgUp,PgDn = enter data; ESC = exit; F8 = store data and continue │
└────────────────────────────────────────────────────────────────────────┘
```

The Market/Sales Information is only applicable for the UNIDO application:

```
┌────────────────────────────────────────────────────────────────────────┐
│10 April 1992              Company Maintenance              13:01:00│
│ ┌──────────────────────────────────────────────────────────────────┐ │
│ │                    MARKET / SALES INFORMATION                      │ │
│ │                                                                    │ │
│ │  ┌───────────────┬──────┬──────────────┬────────┬──────┐          │ │
│ │  │DETAILS        │UNIT  │COUNTRY       │QUANTITY│VALUE │          │ │
│ │  ├───────────────┼──────┼──────────────┼────────┼──────┤          │ │
│ │  │               │      │              │        │      │          │ │
│ │  │               │      │              │        │      │          │ │
│ │  │               │      │    ----      │        │      │          │ │
│ │  │               │      │    ----      │        │      │          │ │
│ │  └───────────────┴──────┴──────────────┴────────┴──────┘          │ │
│ └──────────────────────────────────────────────────────────────────┘ │
│        f1: help, f8: accept and continue, ESC: regret                 │
└────────────────────────────────────────────────────────────────────────┘
```

Finally the Investments and the various Comments have to be recorded:

```
┌──────────────────────────────────────────────────────────────────────┐
│21 April 1992            Company Maintenance                   18:57:31│
│                                                                        │
│  FIXED ASSETS          UNIT          QUANTITY       VALUE              │
│  Land                  Hectares      _____        _____             │
│  Industrial Buildings  Sq.Metres     _____        _____             │
│  Residential Buildings Sq.Metres     _____        _____             │
│  Plant / Machinery     Number        _____        _____             │
│  Vehicles              Number        _____        _____             │
│  Others                              _____        _____             │
│                                                                        │
│                                                                        │
│  WORKING CAPITAL                     SOURCES OF FOUNDS                 │
│  Stocks of Raw Material   _____     Personal Capital      _____     │
│  Stocks of Finished Goods _____     Botswana Borrowings   _____     │
│  Stocks of Spare Parts    _____     Foreign Borrowings    _____     │
│  Cash and Liquid Assets   _____     Commercial Bank Loans _____     │
│  Debitor Owings           _____     Advances from Banks   _____     │
│  Gross Working Capital    _____     Supplier Credits      _____     │
│  Creditor Owings          _____     Nat.Dev.Bank Loans    _____     │
│  Net Working Capital      _____     Bot.Dev.Corp.Loans    _____     │
│                                      Government Scheme Grnts _____    │
│                                      Total Funds Available  _____     │
│                                                                        │
│         f1: help, RET: accept and continue, ESC: regret               │
└──────────────────────────────────────────────────────────────────────┘
```

```
┌──────────────────────────────────────────────────────────────────────┐
│10 April 1992            Company Maintenance                   13:01:33│
│                                                                        │
│                            COMMENTS                                    │
│  ┌──────┬─────────┬───────────────────────────────────────────────┐   │
│  │DATE  │COMMCODE │COMMENT                                          │   │
│  ├──────┼─────────┼───────────────────────────────────────────────┤   │
│  │__:__:│         │                                                 │   │
│  │__:__:│         │                                                 │   │
│  │                      ----                                        │   │
│  │                      ----                                        │   │
│  └──────┴─────────┴───────────────────────────────────────────────┘   │
│                                                                        │
│         f1: help, f8: accept and continue, ESC: regret                │
└──────────────────────────────────────────────────────────────────────┘
```

C3. Manufacturing Codes

The function Manufacturing Codes establish a table for maintaining these codes. More information about the manufacturing codes are to be found in the section mnfrcode under the database description.

```
┌──────────────────────────────────────────────────────────────────┐
│21 April 1992              Manufacturing Codes           10:55:36│
│                                                                  │
│   ┌─────────┬────────┬──────────────────────────────────────┐    │
│   │MNFRCODE │MNFR_NO │DESCRIBT                              │    │
│   ├─────────┼────────┼──────────────────────────────────────┤    │
│   │         │   /    │                                      │    │
│   │         │  /     │                                      │    │
│   │                         ----                            │    │
│   │                         ----                            │    │
│   └─────────┴────────┴──────────────────────────────────────┘    │
│                                                                  │
│        F1 = help, F8 = accept updates, ESC = regret updates     │
└──────────────────────────────────────────────────────────────────┘
```

C4. Area Codes

The function Area Codes establish a table for maintaining these codes. More information concerning the areacodes may be found in the section areacode in the database description.

```
┌──────────────────────────────────────────────────────────────────┐
│21 April 1992                 Area Codes                 10:55:51│
│                                                                  │
│   ┌─────────┬──────┬──────────────────────────────────────┐      │
│   │AREACODE │URBAN │AREA                                  │      │
│   ├─────────┼──────┼──────────────────────────────────────┤      │
│   │         │      │                                      │      │
│   │         │      │                                      │      │
│   │                        ----                           │      │
│   │                        ----                           │      │
│   └─────────┴──────┴──────────────────────────────────────┘      │
│                                                                  │
│        F1 = help, F8 = accept updates, ESC = regret updates     │
└──────────────────────────────────────────────────────────────────┘
```

C5. Comment Codes

The function Comment codes establish a table for maintaining these codes. More information concerning the comment codes may be found in the section com.code in the database description.

```
21 April 1992              Comment Codes                    10:56:11

   COMCODE INCLUDES



                              ----
                              ----



        F1 = help, F8 = accept updates, ESC = regret updates
```

C6. Product Information

The function Product Information first ask for a product designation. This may be stated using the substitution characters ? and *. Based on the stated product designation a statistic showing the available information is displayed.

```
10 April 1992            Product Information                17:22:42

                              ----
                              ----



                        State Product:




                              ----
                              ----
```

```
              PRODUCT INFORMATION for xxxxxxxxxxxx

Product          Unit     Location          Capacity Quantity    Value

xxxxxxxxxxxxxxxxx xxxxxxxx xxxxxxxxxxxxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
xxxxxxxxxxxxxxxxx xxxxxxxx xxxxxxxxxxxxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
                              ----
                              ----
xxxxxxxxxxxxxxxxx xxxxxxxx xxxxxxxxxxxxx  xxxx xxxxxxxx xxxxxxxx xxxxxxxx
xxxxxxxxxxxxxxxxx xxxxxxxx xxxxxxxxxxxxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
```

Industrial Licensing System

C7. Shareholders and Directors

The function Shareholders and Directors asks for a name, which may contain the substitution characters ? and *, and displays in a table matching the names found.

10 April 1992	Shareholders and Directors			10:58:50
REG_NO	PER_NAME	COUNTRY	SHARES	OCCUPATION
xx/xxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxx	xxxxxxxxxxxxx
xx/xxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxx	xxxxxxxxxxxxx
	----			
	----			
xx/xxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxx	xxxxxxxxxxxxx
xx/xxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxx	xxxxxxxxxxxxx

C8. Industries Licensed

The function Industries Licensed asks the user for the period of the licensing and displays a 'statistic' showing companies licensed for the first time in the stated period.

INDUSTRIES LICENSED in the period 10.04.1991 - 10.04.1992

```
Company:   xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Address:   xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Phone:     xxxxxxxx
Products:  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
           xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Contact:   xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx


Company:   xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Address:   xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Phone:     xxxxxxxx
Products:  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Contact:   xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

C9. Parent Companies

The function Parent Companies allows for a direct maintenance of the parent
companies, and informs the user about the "subsidiaries" of the parent/holding
company. The system asks for a name or a registration no. The substitution
characters may be used in the name, and when more companies have been
selected, a more dedicated selection possibility is made by placing the cursor
on the wanted company in the table displayed, and pressing f8.

When the company is selected, a screen as shown below is displayed, and the
user may make updates to the company data. When the updates are entered
(pressing f8) a screen showing company data and the "subsidiary" is displayed
(see Company Maintenance, confirmation of parent company).

```
22 April 1992              Parent Companies              13:04:08

                        Parent / Holding Company
                        _____

        Name of Company:  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
        Address:          xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
        Plot No.:         xxxxxxx
        City:             xxxxxxxxxxxxxxxxxxx
        Country:          xxxxxxxxxxxxxx

                              ----
                              ----

        Press F8 to update and to see child-companies
```

C10. License Statistics

The license Statistic shows the companies licensed in a certain area and
having a certain mnfrcode, both of which are to be entered in a selection-
window:

LICENSE STATISTIC

	1987	1988	1989	1990	1991	1992
No. of new Companies	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Botswana Owned	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Joint Venture	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Foreign Owned	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
% Botswana owned	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
% Joint Venture	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
% Foreign Owned	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Urban Projects	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Rural Projects	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Proj. Employment	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Urban Employment	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Rural Employment	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Proj. Investments	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Mean Investments	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx

Investments are stated in P'000

C11. Number of New Licenses

The Number of New Licenses is stated for a certain areacode distributed by mnfrcode, or for a certain mnfrcode distributed by areacode.

NO. of NEW LICENSED COMPANIES for <areacode>

Sector	1987	1988	1989	1990	1991	1992	Sum
Beverages	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxxx
Building Materials	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxxx

Total	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxxx

C12. Ownership

The Ownership statistic can be stated for a range of years for a certain areacode distributed by mnfrcode, or for a certain mnfrcode distributed by areacode.

OWNERSHIP of COMPANIES 1991 - 1992

Sector	Ownership Botsw.	Joint	Forgn.	Total	Location Urban	Rural
Beverages	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Building Materials	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx

Total	xxxxx	xxxxx	0	1	1	0

C13. Investments

The Investments statistic can be stated for two years for a certain areacode distributed by mnfrcode, or for a certain mnfrcode distributed by areacode.

INVESTMENTS for 1991 and 1992

Sector	1991 Number	Invest	Mean	1992 Number	Invest	Mean
Beverages	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Building Materials	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx

Total	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Number = Number of Companies, Invest = Investments, Mean = Investment Average						

C14. Comments

The display of the Comments can be selected for a certain areacode, a certain mnfrcode and/or a certain commcode.

```
┌─────────────────────────────────────────────────────────────────────────┐
│ 22 April 1992               Comments                         13:09:00    │
│                                                                          │
│ ┌──────────┬────────┬─────────┬─────────┬─────────┬───────────────────┐ │
│ │DATE      │REG_NO  │MNFRCODE │AREACODE │COMMCODE │COMMENT            │ │
│ ├──────────┼────────┼─────────┼─────────┼─────────┼───────────────────┤ │
│ │xx.xx.xxxx│xx/xxxx │xxxxxxxx │xxxxxxx  │xxxxxxx  │xxxxxxxxxxxxxxxxxxx│ │
│ │xx.xx.xxxx│xx/xxxx │xxxxxxxx │xxxxxxx  │xxxxxxx  │xxxxxxxxxxxxxxxxxxx│ │
│                                              ----                         │
│                                              ----                         │
│ └──────────┴────────┴─────────┴─────────┴─────────┴───────────────────┘ │
│           f1: help, f8: accept and continue, ESC: regret                  │
└─────────────────────────────────────────────────────────────────────────┘
```

C15. Employment Cadres

The Employment Cadre may be displayed for a selected year and for either a selected areacode distributed by mnfrcode or a selected mnfrcode distributed by areacode.

EMPLOYMENT CADRE for the year 1992

Sector	Botswana				Foreigner			
	Man	Skl	Wrk	Oth	Man	Skl	Wrk	Oth
Beverages	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Building Materials	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx

Total	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx

Man = Managers,   Skl = Skilled Staff,   Wrk = Workers,   Oth = Others

C16. Employment Jobs

The Employment Jobs may be displayed for two selected years and for either a selected areacode distributed by mnfrcode or a selected mnfrcode distributed by areacode.

EMPLOYMENT JOBS for the years 1991 1992

Sector	1991 jobs	%	1992 jobs	%	%
Beverages	XXXX	XX.XX	XXXX	XX.XX	XX.XX
Building Materials	XXXX	XX.XX	XXXX	XX.XX	XX.XX

Total	XXXX	100.00	XXXX	100.00	*********

C17. Computer Statistics

The Computer Statistics Table states various information concerning the database and the remaining space on the disk. Additionally it contains a hot line telephone number.

```
10 April 1992              Computer Statistics                    13:20:19


        Database Files    # Records    Last Update    Size
        AREACODE.DBF      XXXXX        XX.XX.19XX     XXXXXX
        COM_CODE.DBF      XXXXX        XX.XX.19XX     XXXXXX
        COMMENTS.DBF      XXXXX        XX.XX.19XX     XXXXXX
        COMPANY.DBF       XXXXX        XX.XX.19XX     XXXXXX
        MNFRCODE.DBF      XXXXX        XX.XX.19XX     XXXXXX
        PARENT.DBF        XXXXX        XX.XX.19XX     XXXXXX
        PERSONS.DBF       XXXXX        XX.XX.19XX     XXXXXX
        PRODUCTS.DBF      XXXXX        XX.XX.19XX     XXXXXX
        RAW_MRKT.DBF      XXXXX        XX.XX.19XX     XXXXXX
        STAFF.DBF         XXXXX        XX.XX.19XX     XXXXXX

        XXXXXXX bytes in    10 files
        XXXXXXXX bytes remaining on drive

        _____

                      Torsten Skov Rasmussen
           Grossottstrasse 2,  D-8018 Grafing,  Germany
                      Tel.: (0049) 8092 3660

                      Press any key to exit
```

D. KEYBOARD ASSIGNMENT

For the formulas and for the tables some of the keys on the keyboard are equipped with special functions as listed below. The designation (T) applies to tables and the designation (F) to forms. The designation ^ is the general used designation for the Ctrl-key.

F1	Help
F2	Manufacturing Codes
F3	Area Codes
F4	Comment Codes
F6	Clear to end of Field
F8	Accept Input / Store Record
F10	Delete Record
↑	move to prev record (T) / field (F)
↓	move to next record (T) / field (F)
->	move to next position
<-	move to prev position
PgUp	move to prev page (T)
PgDn	move to next page (T)
HOME	move to start of record (T) / field (F)
END	move to end of record (T) / field (F)
RET	move to next field
DEL	delete current character
INS	toggle between insert and typeover
ESC	regret input
←	delete previous character [backspace]
→|	move to next field [tab]
|←	move to prev field [backtab]
^->	move one word to right
^<-	move one word to left
^PgUp	move to first record
^PgDn	move to last record
^END	accept and store input
^F10	copy screen to scrtofil.txt

The functions designated to the keys are either the functions assigned by DBASE or functions created within the limits of DBASE. This also means, that some of the DBASE functions, which cannot be removed, still exist. Hence the warning:

DO NOT PRESS CTRL together with ANY OTHER KEY

unless you are absolutely sure which function is designated to this set of keys.

E. HARD COPY

Normally the word hard copy means output to a printer. In the INLIC system hard copy is used to designate output to a file. The reason is that output from a system normally has to be prehandled by a word processing system such as Word Perfect, and this is also assumed to be the case with the INLIC output.

The INLIC system uses four files for it hard copies: scrtofil.txt, inlic.out, dummy.txt and inlic.txt, which are all placed in the directory \inlic\text. Forms and tables are working with scrtofil.txt and statistics are operating on the inlic.out and inlic.txt files.

The file dummy.txt is only used to setup the inlic.txt, when the system is started up, i.e. it is without contents and is copied to the file inlic.txt by the inlic.bat program.

For forms and tables the ctrl F10 key (^f10) append a copy of the screen to the file scrtofil.txt (for statistics this key is dummy). When the system is started up scrtofil.txt is reset. After the INLIC processing is completed, the screen copies in scrtofil.txt, hence has to be removed - i.e. included in or copied to another file - before the INLIC system is started up again.

The statistics functions all direct their output to the file inlic.out. This file is then displayed and may be modified with the DBASE editor. When the user returns from the DBASE editor (the display of the statistics), the file inlic.out is appended to the file inlic.txt. In other words, inlic.out always contains the last statistic requested.

The file inlic.txt is reset like the scrtofil.txt, when the INLIC system is started up, and it hence has to be saved before INLIC is used again. The saving may be done either by including the file in another (word perfect) file, by copying it to another directory or by renaming it.

Finally it should be mentioned that the key PrtScr by the BIOS (the operating system) is assigned to generate a copy of the screen on the printer.

F. THE DATABASE

The INLIC system works on 10 database files all of which are placed in the directory \inlic\database. The following table states the 10 databases, the record size and a sum up of the content:

NAME	SIZE	DESCRIPTION
areacode	70	The Areacodes
mnfrcode	74	The Manufacturing Codes
com_code	69	The Comment Codes
company	525	Basic Information and Financial Status
persons	81	Directors and Shareholders
staff	92	Employment and Salaries
parent	138	Parent Companies
products	88	Products Manufactured
raw_mrkt	72	Raw Materials and Marketing
comments	280	Remarks and Comments in the Application

In the description of the databases the following designations have been used:

Name	name of the datafield
Type	type of the datafield (num, char, date, logic)
Size	size of the datafield
Inx	states whether the field is indexed or not
Content	contents of field incl. fieldno. of the AIL1 formula

For numeric fields having decimals the size is stated as xx.y, where xx states the size of the field and y states the number of decimals.

As all companies are registered and assigned a registration number (reg. no) to identify the company, this number is also used as an identifying key in the INLIC system. All data in all database files are established with a reg.no to identify the company the data belong to.

The registration number has the form CO.<year>/<serial no.>, e.g. CO.90/678. As the identifier CO. states that the number is a registration number, this is omitted in the INLIC identifier reg. no.

Some Parent/Holding Companies, do not have a reg. no. These companies are registered in the INLIC system under an internally given reg. no. When data are entered, the reg. no -9.9999 indicates to the system, that the company has no Reg.No. The system then assigns an internal reg. no in the range -0.0001 and -9.9998 to identify the company. This reg. no is later used to identify the company.

F1. Areacode

Each company has a postal address, which states the area (city, town, village), where the company is located. The areacode is an 8-character abbreviation for such an area or location, used for instance to limit statistics to certain localities.

The codes are entered to the database file areacode with one of the INLIC functions and may be viewed as a help with one of the function keys (see the functions and see the keyboard assignments). Each company must be assigned one of the areacodes entered to the database file.

As the areacode is a key used most often in the databases, it is not to be changed. Doing this may cause invalid statistics and in certain relations programme break-down.

Connected to the areacode is an indication, whether the area is urban or rural area. In fact, the code is a logical field stating whether the area is urban. If this is so, it must be indicated with Y or T, and with N or F otherwise. The urban-field is also used for statistical purposes, but may be changed according to the actual development of the areas.

The field area allows for a more informative description of the area or location comprised by the areacode. This field may be changed as needed, but it should be noted, that the first 26 characters of the field are stated in the header of the statistics in order to indicate the area covered.

Name	Type	Size	Inx	Content
AREACODE	Char	8	Y	Areacode
URBAN	Logic	1	N	Urban = Y, Rural = N
AREA	Char	60	N	Description

F2. Mnfrcode

Each company is assigned to a manufacturing sector indicating the type of products the company is manufacturing. The mnfrcode is an 8-character wide indication of a manufacturing sector. This code is for instance used to limit statistics to cover certain products.

The manufacturing sectors are collected in groups. If a manufacturing group is selected for a statistic, all the sectors belonging to the group are included in the statistics. If a sector is selected, only the manufacturing sector is included in the statistics.

Connected to the mnfrcode is a decimal number (mnfr_no). This number having two leading digits and two decimals (e.g. 12.34) is used to distinguish groups and sectors, and to determine which sectors are in which groups. A group has an integer, i.e. the 2 decimals are zero, as mnfr_no. The sectors belonging to a group has the same integral part as the group, e.g. the sector 12.34 belongs to the group having the mnfr_no 12.00.

The mnfrcodes are entered to the database file mnfrcode with one of the INLIC functions and may be viewed as a help with one of the function keys (see the functions and see the keyboard assignments). Each company must be assigned one of the mnfrcodes entered to the database file.

As the mnfrcode is a key used in most of the databases, it is not to be changed, and neither is the mnfr. no. Doing this may cause invalid statistics and in certain relations programme break-down.

The field described allows for a more informative description of the products covered by the mnfrcode. This field may be changed as needed, but it should be noted, that the first 26 characters of the field are stated in the header of the statistics in order to indicate the products the statistic is covering.

Name	Type	Size	Inx	Content
MNFRCODE	Char	8	Y	mnfrcode
MNFR_NO	Num	5.2	N	manufacturing number
DESCRIBT	Char	60	N	description of product

The manufacturing code stated in the following table are included in the base system. These codes may be changed before use according to the actual needs:

MNFRCODE	MNFR_NO	DESCRIBT
@MEAT	1.00	Meat and Fish Products
meat	1.10	Meat and Meat Products
fish	1.20	Fish and Fish Products
@DAIRY	2.00	Dairy and other Agro Based Products
dairy	2.10	Dairy Products - Milk, Ice, Cream etc.
grain	2.20	Grain Milling - Sorghum, Wheat, Maize etc.
dryfood	2.30	Dry Food packaging
food	2.40	Other Food Products
@BEVERAG	3.00	Beverages
softdrnk	3.10	Soft Drinks
spirits	3.20	Beers, Wines and Spirits
bakery	3.30	Bakery Products
@TEXTIL	4.00	Textiles
spinning	4.10	Spinning, Weaving and finishing
knitted	4.20	Knitted and Crocheted fabrics and articles
wearng	4.30	Wearing apparel and other articles
@LEATHER	5.00	Tanning and Leather Products
tanning	5.10	Tanning and dressing of leather
footwear	5.20	Footwear
@CHEMIE	6.00	Chemical and Rubber Products
chemical	6.10	Chemical Products
rubber	6.20	Rubber Products
@WOOD	7.00	Wood and Wood Products
sawmill	7.10	Sawmilling and Planning of Wood
woodmnfr	7.20	Manufacture of Wood Products
@PAPER	8.00	Paper and Paper Products
paper	8.10	Paper and Paper Products
print	8.20	Printing and Publishing
@METAL	9.00	Metal Products
motor	9.10	Assembly of Transport Mashines
metal	9.20	Other Metal Products
@BUILD	10.00	Building Materials
build	10.10	Building Materials
ceramic	10.20	Ceramic Products
@PLASTIC	11.00	Plastic Products
@ELECTR	12.00	Electrical Products
@HNDCRFT	13.00	Handicraft

F3. Commcode

The commcode is an 8-character code used to classify the various types of comments and remarks entered and asked for in the application for a license (the AIL 1 formula). This code makes it possible to lookup only those comments, which have to do with a certain topic.

The commcodes are entered to the database file com_code with one of the INLIC functions and may be viewed as a help with one of the function keys (see the functions and see the keyboard assignments). Each comment must be assigned one of the commcodes entered to the database file.

As the commcode is a key used often in the database file comments, it is not to be changed. Doing this may cause problems in having all comments concerning a selected topic displayed.

The field includes allowance for a more informative description of the kind of comments and remarks covered by the commcode. This field may be changed as needed.

Name	Type	Size	Inx	Content
COMMCODE	Char	8	Y	commcode
INCLUDES	Char	60	N	kind of comments

F4. Company

This database is used for data, which only have to be represented once for each company, i.e. where only 'the latest news' are of interest.

Name	Type	Size	Inx	Content (AIL_1.14)
REG_NO	Num	7.4	Y	Registration no. (AIL_1.1.0)
REG_DATE	Date	8	N	Registration date (AIL_1.1.0)
FILENO	Char	10	Y	File Number (AIL_1.off.use)
FILEDATE	Date	8	N	Date of Filing (AIL_1.off.use)
LIC_NO	Num	8	Y	Licence no. (AIL_1.off.use)
LIC_DATE	Date	8	N	Licence date (AIL_1.off.use)
APPENDDATE	Date	8	N	Date od admission
COMPANY	Char	40	Y	Company name (AIL_1.1.0)
TRADENAME	Char	40	N	Trade name (AIL_1.2)
ADDRESS	Char	40	N	Addr of company (AIL_1.4)
PLOTNO	Num	8	N	Plotno. (AIL_1.4)
CITY	Char	20	N	Location of company (AIL_1.4)
TELEPHONE	Num	8	N	Tel. of company (AIL_1.4)
TELEX	Num	8	N	Telex of company (AIL_1.4)
FAX	Num	8	N	Fax of company (AIL_1.4)
MNFR_NO	Num	5.2	N	mnfr_no
MNFRCODE	Char	8	Y	mnfrcode
AREACODE	Char	8	Y	areacode
PARENT	Num	7.4	Y	Reg_no of parent
COMMENC⁻	Date	8	N	Date of commence (AIL_1.15.d-e)
OWN	Char	1	N	see below
INVESTMNT	Num	8	N	see below
LAND_QNT	Num	8	N	Hectare land
LAND_VAL	Num	8	N	Value of land
INDBLD_QNT	Num	8	N	Sq.meters industrial buildings
INDBLD_VAL	Num	8	N	Value of industrial buildings
RESBLD_QNT	Num	8	N	Sq.meters residential buildings
RESBLD_VAL	Num	8	N	Value of residential buildings
PLANTS_QNT	Num	8	N	Number of mashines
PLANTS_VAL	Num	8	N	Value of mashines
VEHICL_QNT	Num	8	N	Number of vehicles
VEHICL_VAL	Num	8	N	Value of vehicles
OTHER_UNIT	Char	10	N	Unit of 'others'
OTHER_QNT	Num	8	N	Quantity others
OTHER_VAL	Num	8	N	Value of other fixed assets
RAW_STCK	Num	8	N	Stocks of raw material
GOODS_STCK	Num	8	N	Stocks of finished goods
SPARE_STCK	Num	8	N	Stocks of spare parts
CASH	Num	8	N	Cash and liquid assets
DEBITORS	Num	8	N	Debitor owings

Name	Type	Size	Inx	Content (AIL_1.14)
GROSS_CAP	Num	8	N	Gross working capital
CREDITORS	Num	8	N	Creditor owings
NET_CAP	Num	8	N	Net working capital
PERS_CAP	Num	8	N	Personal capital
PRV_B_BORR	Num	8	N	Botswana borrowings
PRV_F_BORR	Num	8	N	Foreign borrowings
COMM_LOANS	Num	8	N	Loans from commercial banks
ADVANCES	Num	8	N	Advances from banks
CREDITS	Num	8	N	Credits from suppliers
NDB_LOANS	Num	8	N	Nat. Dev. Bank loans
BDC_LOANS	Num	8	N	Bot. Dev. Corp loans
GRANTS	Num	8	N	Government scheme grants
FUNDS	Num	8	N	Total funds available

The field own states whether the company is owned by Botswana citizen (B), is a joint venture company (J) or is owned by non-citizen (foreigners - F).

The field investmnt contains the original invested funds, i.e. it is put equal in the field funds, when the company is admitted.

A file no. has the syntax: ILA<manufacturing number>/<sequence number>. However, as the file no. is not used internally in the INLIC system, the field file no. is restricted to 10 characters with no restrictions on the syntax.

The missing restrictions also applies to the licence number (lic_no) and for the same reason, except that it has to be a number.

F5. Persons

This database is used to represent data, which might exist in several incarnations for each company, but which only have to reflect to current state.

Name	Type	Size	Inx	Content
REG_NO	Num	7.4	Y	Reg_no (AIL_1.1.0)
PER_NAME	Char	30	Y	Name of person (AIL_1.1.a & b)
COUNTRY	Char	15	N	Nationality (AIL_1.1.a & b)
SHARES	Num	8	N	No. of shares (AIL_1.1.a)
OCCUPATION	Char	20	N	Occupation (AIL_1.1.b)

F6. Staff

Data in the staff-database must exist once for each year for each company.

Name	Type	Size	Inx	Content (AIL_1.7)
REG_NO	Num	7.4	Y	Registration no.
YEAR	Num	4	Y	Year of statement
C_MANAGER	Num	4	N	Managers/Supervisors (citizens)
F_MANAGER	Num	4	N	Managers/Supervisors (foreigners)
C_SKILLED	Num	4	N	Skilled staff (citizens)
F_SKILLED	Num	4	N	Skilled staff (foreigners)
C_WORKERS	Num	4	N	Unskilled workers (citizens)
F_WORKERS	Num	4	N	Unskilled workers (foreigners)
C_OTHERS	Num	4	N	citizens
F_OTHERS	Num	4	N	foreigners
C_SALARY	Num	8	N	salaries for citizens
F_SALARY	Num	8	N	salaries for foreigners
L_SH_PAID	Num	8	N	Paid local shares
F_SH_PAID	Num	8	N	Paid foreign shares
L_SH_UPAID	Num	8	N	Unpaid local shares
F_SH_UPAID	Num	8	N	Unpaid foreign shares

P7. Parent

The parent-database contains information over parent / holding companies.

Name	Type	Size	Inx	Content (AIL_1.1.d)
REG_NO	Num	7.4	Y	reg_no
COMPANY	Char	40	Y	Name of company
ADDRESS	Char	40	N	Addr of company
PLOTNO	Num	7	N	Plotno
CITY	Char	20	N	Location
COUNTRY	Char	15	N	
APPENDDATE	Date	8	N	

P8. Products

Data in this database can appear several times for each company. The collection of the records associated with a certain company indicates the current status.

Name	Type	Size	Inx	Content
REG_NO	Num	7.4	Y	Registration no.
PRODUCT	Char	20	Y	Name of product
PLOT_NO	Num	8	N	Plot no of manufacture (AIL_1.3)
VILLAGE	Char	20	N	Location of manufacture (AIL_1.3)
UNIT	Char	8	N	Measuring unit
CAPACITY	Num	8	N	Capacity of production equipment
QUANTITY	Num	8	N	No of units produced
VALUE	Num	8	N	Value of units produced

F9. Raw-mrkt

Records in this database might exist in several incarnations for each year and for each company. The records might contain data over the raw materials used by the company or data describing the market of the company.

Name	Type	Size	Inx	Content
REG_NO	Num	7.4	Y	Registration no.
YEAR	Num	4	N	Year of statement
TYPE	Char	1	N	R (raw material) or M (market)
DETAILS	Char	20	N	Details of material
UNIT	Char	8	N	Measuring unit
COUNTRY	Char	15	N	Country of import(R) / export(M)
QUANTITY	Num	8	N	Quantity of material
VALUE	Num	8	N	Value of material

F10. Comments

The comment-database contains the comments and the remarks associated with each company. Each record contains one comment.

Name	Type	Size	Inx	Content
DATE	Date	8	Y	Date of comment
REG_NO	Num	7.4	Y	reg_no
MNFRCODE	Char	8	Y	mnfrcode
AREACODE	Char	8	Y	areacode
COMMCODE	Char	8	Y	commcode
COMMENT	Char	240	N	the comment

G. IMPLEMENTATION

The INLIC (INdustrial LICensing) System consists of the 2 general purpose utilities menu and password, some extensions to the DBASE 4 programming tools and the INLIC program, which is written in the DBASE 4 programming languages.

The INLIC program consists of 4 DBASE4 programs: inlic.prg, company.prg, procs.prg, setup.prg and a dos file named inlic.bat. The latter is used as startup procedure for the inlic system.

To speed up the initialization of the system, the program setup.prg is used to define and load some generally used program data such as the menu. Changes of these data require the program to be executed once.

For the same reason none of the DBASE application tools (report, forms, screen etc.) have been used.

The functions generating output of the form type are generated with the DBASE functions @_say_get and read, the tables with the browse command, and the statistics with the ? command. That is, the statistics are first written to the file inlic.out with the ? command, and this file is afterwards displayed and may be edited with the DBASE modify_file command.

Appending and deletion of records has been specially considered. When a record has to be appended to an empty set of records, the browse command cannot be used. The table driven input of data hence has to append a blank record to the set of records and if the user regrets the input of data, the record has to be deleted again. Using the DBASE tool for deleting records might cause the database to be filled up with empty deleted records.
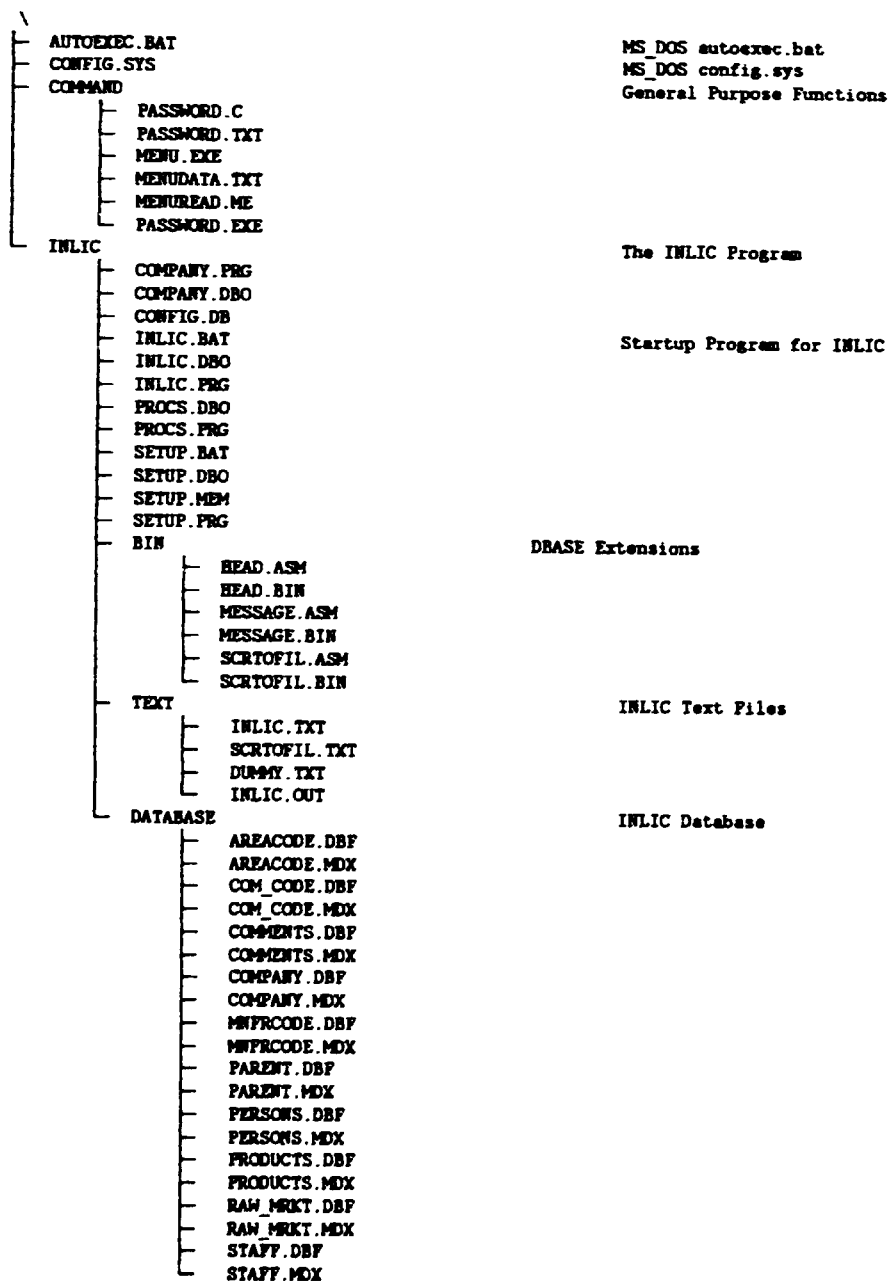
On the other hand this might be avoided using the BEGIN/END TRANSACTION and the ROLLBACK functions of DBASE. However, these functions slows down the system as all transactions are described in a separate file and the system is slow enough.

For this reason a special technique is used to append blank records:

The INLIC function APPEND BLANK appends a blank record to the database. If the input is regretted (by pressing ESC) the record has to be deleted, which is done with the procedure CLEAR_RECORD. This procedure cleans the record to look as if it were just appended with APPEND BLANK. However, the record is also deleted. When a new record is needed, the procedure GET_RECORD is called. This procedure first looks for a deleted record at the bottom of the database. If such a record exists it is recalled, otherwise a new record is created with APPEND BLANK.

G1. Directory Structure

The files included in the system are placed in the following directory structure:

```
\
├── AUTOEXEC.BAT                        MS_DOS autoexec.bat
├── CONFIG.SYS                          MS_DOS config.sys
├── COMMAND                             General Purpose Functions
│       ├── PASSWORD.C
│       ├── PASSWORD.TXT
│       ├── MENU.EXE
│       ├── MENUDATA.TXT
│       ├── MENUREAD.ME
│       └── PASSWORD.EXE
└── INLIC                               The INLIC Program
        ├── COMPANY.PRG
        ├── COMPANY.DBO
        ├── CONFIG.DB
        ├── INLIC.BAT                   Startup Program for INLIC
        ├── INLIC.DBO
        ├── INLIC.PRG
        ├── PROCS.DBO
        ├── PROCS.PRG
        ├── SETUP.BAT
        ├── SETUP.DBO
        ├── SETUP.MEM
        ├── SETUP.PRG
        ├── BIN                         DBASE Extensions
        │       ├── HEAD.ASM
        │       ├── HEAD.BIN
        │       ├── MESSAGE.ASM
        │       ├── MESSAGE.BIN
        │       ├── SCRTOFIL.ASM
        │       └── SCRTOFIL.BIN
        ├── TEXT                        INLIC Text Files
        │       ├── INLIC.TXT
        │       ├── SCRTOFIL.TXT
        │       ├── DUMMY.TXT
        │       └── INLIC.OUT
        └── DATABASE                    INLIC Database
                ├── AREACODE.DBF
                ├── AREACODE.MDX
                ├── COM_CODE.DBF
                ├── COM_CODE.MDX
                ├── COMMENTS.DBF
                ├── COMMENTS.MDX
                ├── COMPANY.DBF
                ├── COMPANY.MDX
                ├── MNFRCODE.DBF
                ├── MNFRCODE.MDX
                ├── PARENT.DBF
                ├── PARENT.MDX
                ├── PERSONS.DBF
                ├── PERSONS.MDX
                ├── PRODUCTS.DBF
                ├── PRODUCTS.MDX
                ├── RAW_MRKT.DBF
                ├── RAW_MRKT.MDX
                ├── STAFF.DBF
                └── STAFF.MDX
```

G2. DBASE Extensions

The programming commands of DBASE is extended with 3 binary functions, which are located in the directory \inlic\bin. All 3 functions are binary in the sense of this word used by DBASE and are hence to be loaded into the DBASE program (INLIC) by the DBASE command 'load' and to be activated using the DBASE command 'call'.

All 3 functions are written in assembler, and the source code as well as the compiled program are to be found in the above mentioned directory.

(a) The function HEAD receives one text parameter, which is written centered on the line 5 between the positions 10 and 70 of the screen. This line and these positions are used to indicate the currently executed subfunction of the INLIC main function stated in first line.

(b) The function MESSAGE receives one text parameter, which is written centered on the last line of the screen.

(c) The function SCRTOFIL receives none or one text parameter. When one parameter is stated, the function closes a file already opened, and if the parameter is not empty (not equal "") the file stated as parameter is opened. When no parameters are stated, the function copies the content of the screen into the currently opened file.

Example:
```
call scrtofil "scrtofil.txt"  && open file
call scrtofil                 && copy screen to file
call scrtofil ""              && close file
```