

# Development of Software Program for Direct Insertion into MySQL Database from Communication Interface

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**Abstract**–Personal computers changed the style of work in solving measurement problems forever. Devices with a measuring function increasingly give way to the computer system which enables the gathering, processing and analysis of the measured results. Widespread approach is the combination of comprehensive measurement hardware with personal computers, and thus creating a measurement system dependent on the software. In this paper we propose software which periodically recorded information from LPT parallel port into MYSQL relational database.

**Keywords**–Analog to Digital System, MYSQL data base, PHP, Universal Serial Bus, Local Print Terminal

## I. INTRODUCTION

The basic idea of the current work is to present the possibility for WEB-based monitoring of certain parameters of input interfaces in production environment.

In a measuring computer the most used input interfaces are Local Print Terminal (LPT), Universal serial bus (USB) and communication serial port (COM) ports [1,6,7]. In any case, an external measurement system has to be used in order to collect the information built on the basis of a high-speed multichannel analog-to-digital converters [2]. For this purpose a measuring module has been developed. The structure of the module is shown in Figure 1.

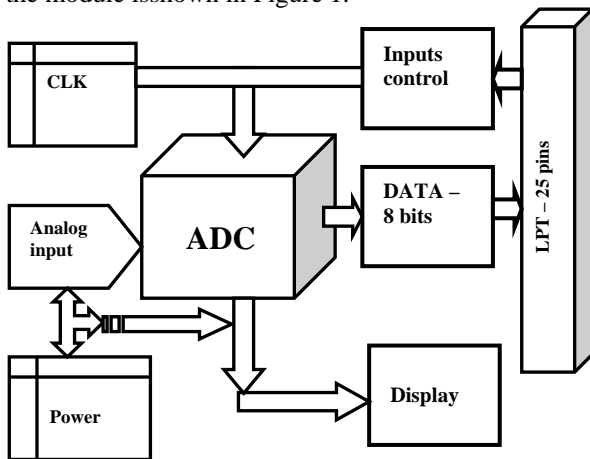


Fig.1. Digital to Analog Converter System

The analog digital converter (ADC) module management is done entirely from the personal computer (PC), by selecting the analog input or alternate analog inputs in order to account more channels. For ADC is used an IC ADC0808N – fig.1(a). In order to compare the measured and recorded value from the personal computer and this one coming from the input of the LPT port, a single mode of the ADC is provided. The signal is visualized on the 8 - light emission diodes (LED)

In order to access the recorded data from the PC, we have to configure the measuring computer as WEB server. The essential part here is that the data are stored into the relational database and can be visualised through the WEB.

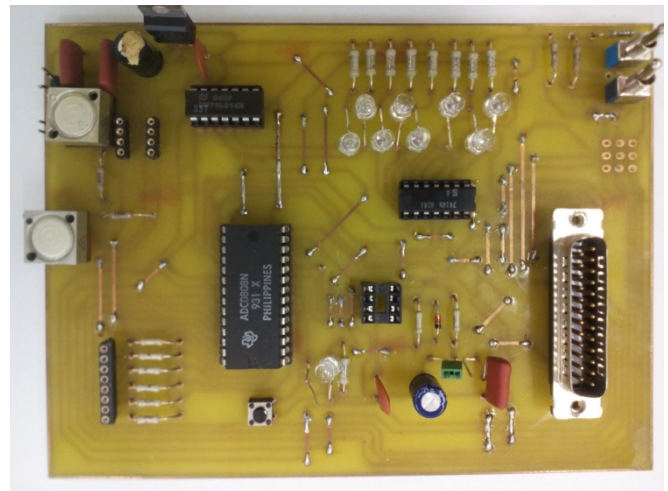


Fig.1.(a) Analog to Digital Converter Board

## II. THE WEB SERVER AND THE SOFTWARE

The paper format must be A4 (210×297 mm<sup>2</sup>). The margins are given in Table 1. For the Web server configuration Apache HTTP server, MySQL – relational database system and PHPMyAdmin – a web-based user interface for access to MySQL are used. All components are installed as a part of the XAMP package [3]. For setting up the application a new database has to be created. In our case the name of the database is LPT. Also a table with corresponding columns has to be created. They are described in Table 1 and shown in Figure 2.

```
mysql> create database lpt;
mysql> use lpt;
mysql> create table data(
id int auto_increment primary key,
port varchar(100),
data varchar(100),
time date time,
data10 varchar(100));
mysql> select * from data;
```

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TABLE I  
LPT - DATABASE AND TABLE DATA

id	port	data	time	data10
1	0378	00FF	2013-05-25 22:06:36	255
2	0378	00FF	2013-05-25 22:06:41	255

#	Name	Type	Collation	Attributes	Null	Default
<input type="checkbox"/> 1	<b>id</b>	int(11)			No	None
<input type="checkbox"/> 2	<b>port</b>	varchar(100)	latin1_swedish_ci		No	None
<input type="checkbox"/> 3	<b>data</b>	varchar(100)	latin1_swedish_ci		No	None
<input type="checkbox"/> 4	<b>time</b>	datetime			No	None
<input type="checkbox"/> 5	<b>data10</b>	varchar(100)	latin1_swedish_ci		No	None

Fig.2. Diagram of table- DATA

The created database has to be monitored and optimised according to the time for reading and inserting into it. This is due to the fact that the developed software will insert entries into the database in a very short time (1min. -60min.). On the other hand this data has to be read and displayed by the WEB-based application.

### SOFTWARE DEVELOPMENT

The software is developed using language C/C++. For the development an integrated development environment - Microsoft Visual Studio is used [4]. The developed program has the following algorithm:

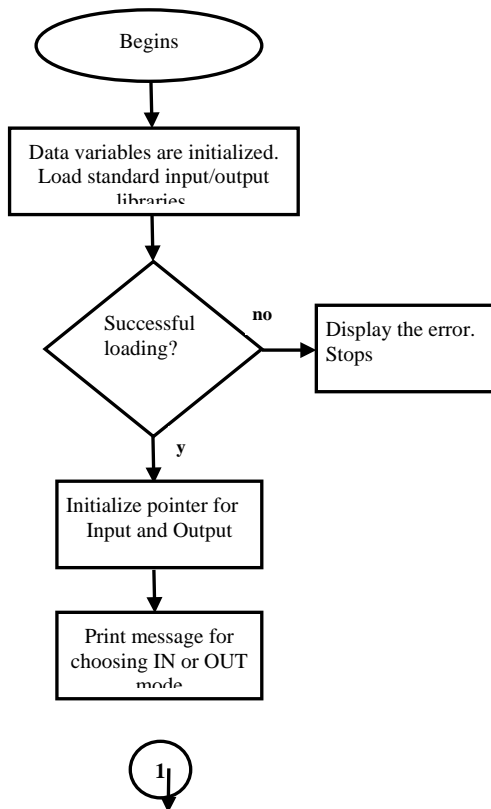


Fig.3. Program algorithm (Part 1)

First the data variables are initialised and the standard library for input/output operation is loaded. This library is used for reading and writing into the input interfaces [5]. If the library is loaded successfully the program continues, otherwise the program displays the error message and exits.

After that the pointers to the input and output functions for reading and writing are allocated. To the user is shown message for choosing the mode - IN or OUT (Fig. 3).

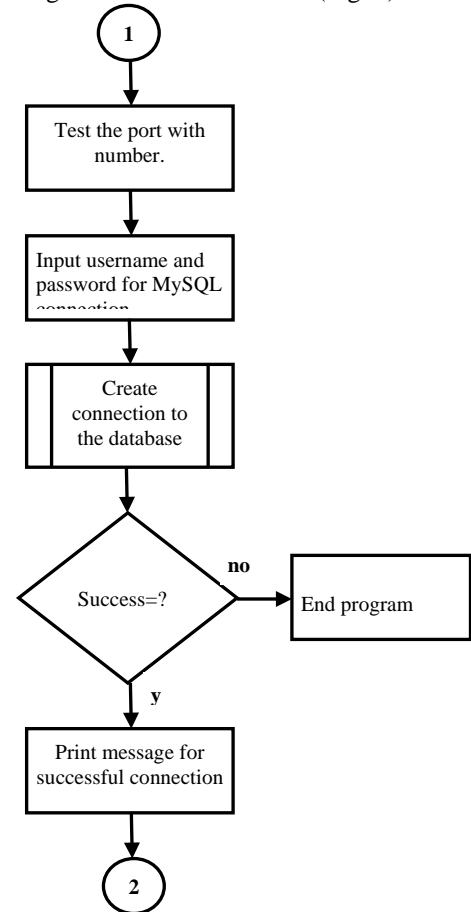


Fig.4. Program algorithm (Part 2)

After the user chooses the type of operation the corresponding branch is executed. Currently the program implemented only the IN mode.

After the user chooses IN mode, he enters the time interval for inserts and the user name and password for database connection. If the connection is not successful the program is ended. Otherwise the user is printed message for successful connection. (Fig. 4)

In eternal loop program reads data from the port on every N seconds, where N is previously defined and insert the data into the database. (Fig. 5)

### III. THE RESULTS

The software is compiled and built into executable file, which can be loaded into DOS console. The software works on 32 bit operating systems. As it was shown above first we have to choose IN or OUT mode for the terminals of the LPT

port (Fig. 6). This is done by writing into the registry with address 37Ah, bit C5 in log. 1 (Fig. 7)

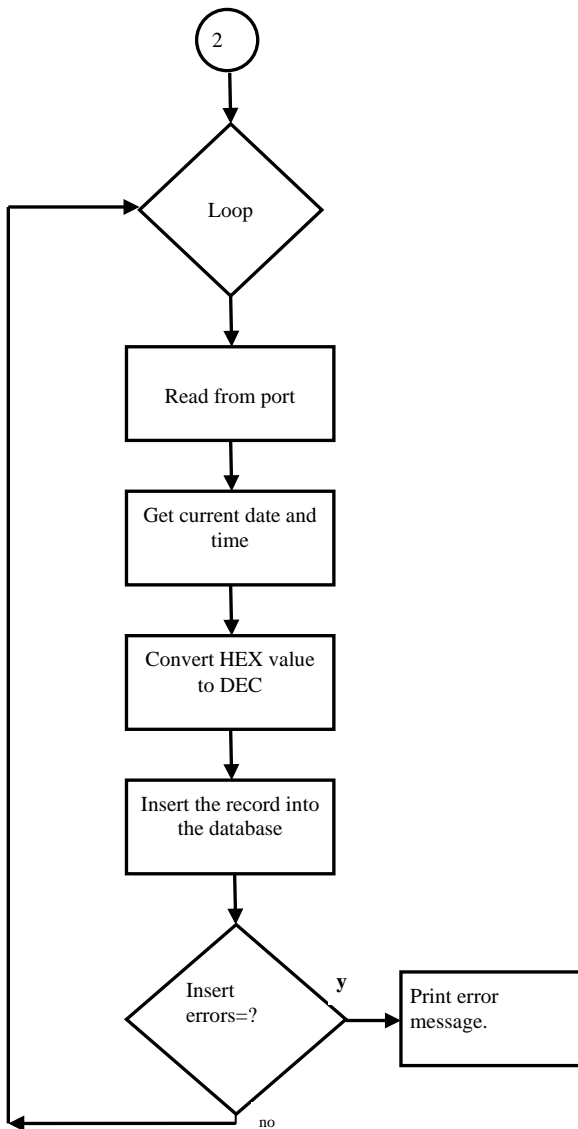


Fig.5. Program algorithm (Part 3)

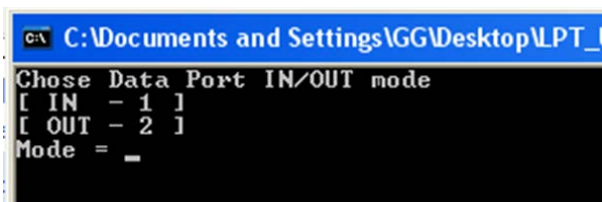


Fig. 6. ChoosetoLPTisinput or output

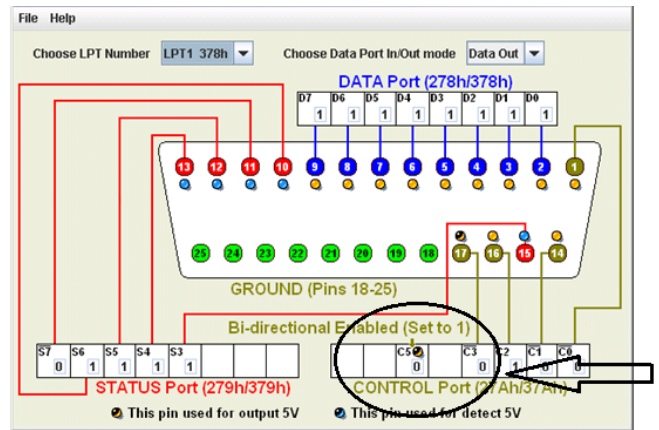


Fig.7. The control bit for select a pin is input

After initialization of the LPT port we input the time in seconds for data insertions (Fig. 8). Frequency of recording is limited due to considerations of database load. In this case, the possibilities are from 1 second to 60.

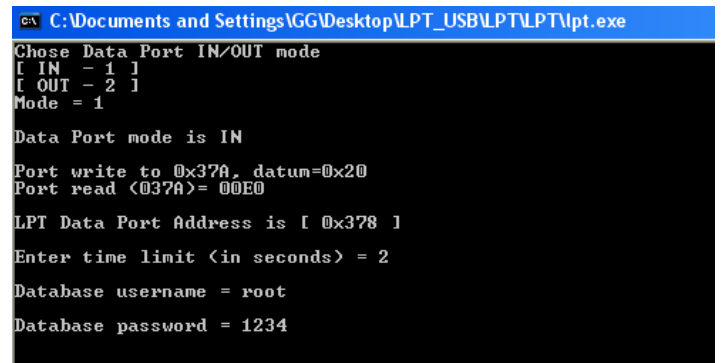


Fig.8. Insert data base user name and password

We input the username and the password for database connection and the time. In Fig. 8 the time is limited to 2 seconds. The connection between the program and the database is done through ODBC drivers for MySQL. They are additionally installed and configured (Fig.9).

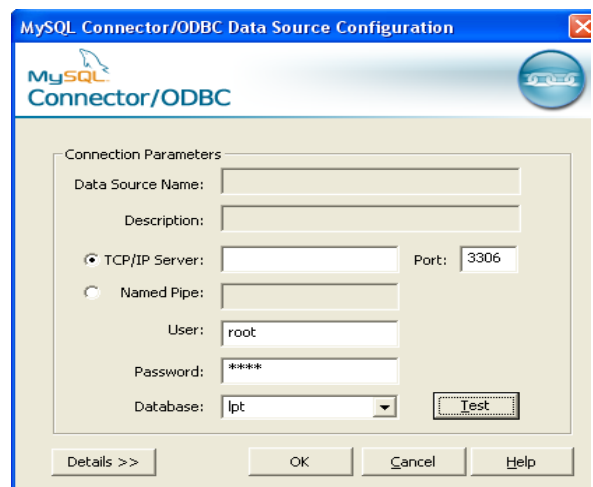


Fig.9. Driver for connection whit data base

As a result the measured data is stored into the database. For every record the date and time are stored (Fig.10)

```

C:\Documents and Settings\GG\Desktop\LPT_USB\LPT\LPT
Database username = root
Database password = 1234
>>>> Successfully connected to MySQL <<<<
>>>> Press !X! to exit <<<<
Inserting data into MySQL...
>> insert into data(port,data,time) values
<'0378','00FF','2013-06-18 19:31:50'>
Sleeping 2 seconds ...
Inserting data into MySQL...
>> insert into data(port,data,time) values
<'0378','00FF','2013-06-18 19:31:52'>

```

Fig.10. Writing in data base – intervals is 2 second

The console has to be active, i.e. minimized for the time the information will be gathered. The stored data into the database (Fig.11) can be additionally processed and displayed into the WEB-based application.

id	port	data	time	data10
1	0378	00FF	2013-05-25 22:06:36	255
2	0378	00FF	2013-05-25 22:06:41	255
3	0378	00FF	2013-05-25 22:06:46	255
4	0378	00FF	2013-05-25 22:06:51	255
5	0378	00FF	2013-05-25 22:06:56	255
6	0378	00FF	2013-05-25 22:07:01	255
7	0378	00FF	2013-05-25 22:07:06	255
8	0378	00FF	2013-05-25 22:07:11	255
9	0378	00FF	2013-05-25 22:07:16	255
10	0378	00FF	2013-05-25 22:07:21	255
11	0378	00FF	2013-05-25 22:07:27	255
12	0378	00FF	2013-05-25 22:07:32	255

Fig.11.Stored data into the database

However, for the purpose dynamic PHP web application has to be developed. The application will allow remote monitoring of the port processes (through the web) and also sorting the information, parameters classifications and drawing graphics for the collected data. This however is a matter of a further development.

#### IV. CONCLUSION

The presented work purpose an example solution for reading data from the LPT port and writing it to the MySQL database. The benefit of this solution is that it allows remote monitoring of port processes through the website. Developed is a ADC module connected to LPT port on the PC. Developed and software under windows to record the information in the database. Computer is configured as a WEB server, has a developed simple website to check the parameters.

#### REFERENCES

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