

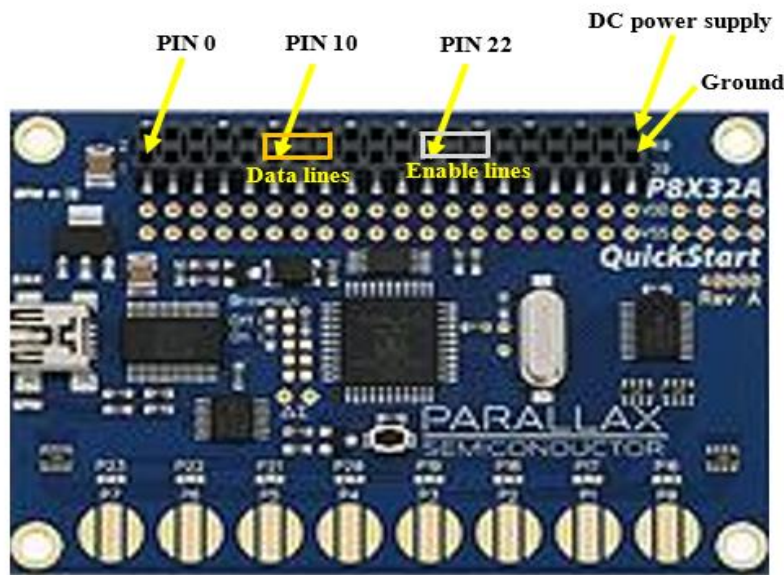
1. Installation Guide for a Propeller Tool

- a. Open the folder **Propeller IDE**, double click on **propelleride-0.30.0-amd62.exe** and follow instructions to install the IDE. The Propeller IDE is freely available to download and install at <http://developer.parallax.com/projects/propelleride/>.
- b. The IDE setup may prompt to install FTDI USB to Serial Converter driver, click **Yes** and continue to install the driver. The driver can also be installed separately by double clicking **Install-Parallax-USB-Driver-v2.10.00.exe**. The driver is freely available to download and install from the Parallax website:
<https://www.parallax.com/downloads/parallax-usb-driver-installer>.

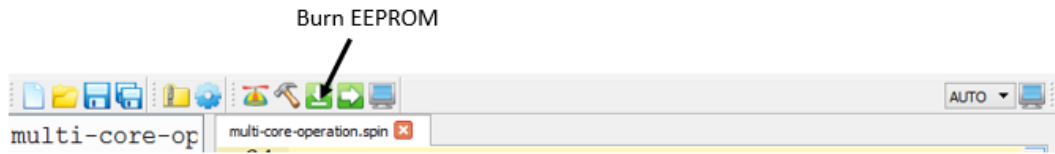
2. Programming the Programmer board

The prototype board consists of a Parallax Propeller Quickstart board and driver circuits. The driver circuits are built on different boards. 12 IO pins , and power supply pins in the Quickstart board are utilized.

- Pin 10-15 are used as data pins.
- Pin 22-27 are used as enable pins (programming pulse).



- I. Assemble the prototype board.
- II. Connect the Quickstart board to the computer using the USB cable.
- III. Using the Propeller Tool, open the spin file **multi-core-operation.spin**.
- IV. From the Propeller tool click Burn EEPROM to program the board.



- V. The board is programmed.

Graphical User Interface

3. Application Installation Guide

- i. Open **GE-setup** folder, and double-click one **GE-data-manager-v1.0.exe**.
- ii. Follow the instructions on the windows to install the application.
- iii. The installer will install the application in desktop with an Icon name – **Data Manager**.
- iv. Double click on the **Data Manager** Icon to launch the application.

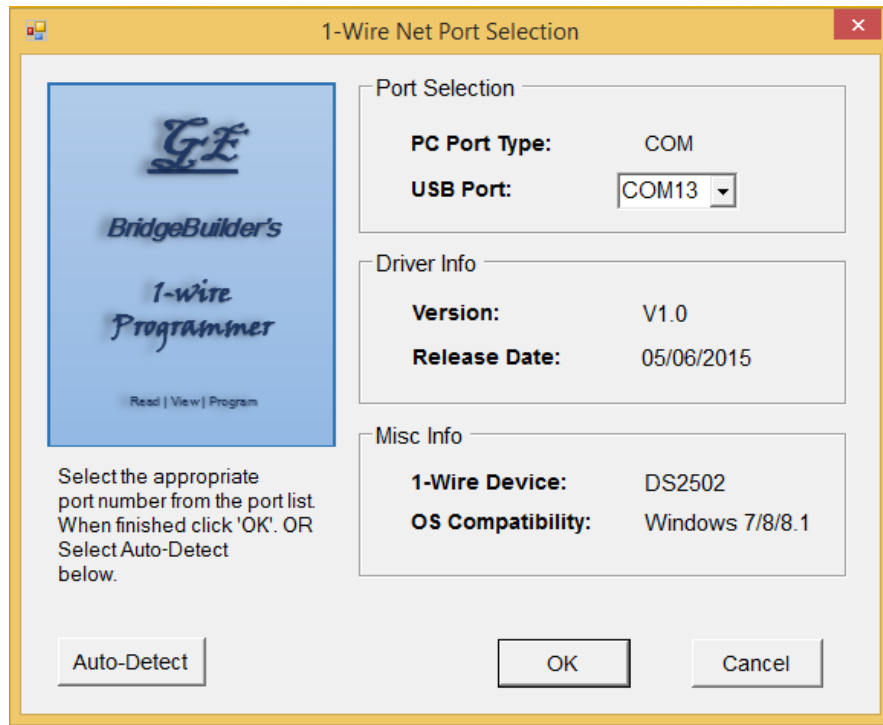
Miscellaneous guide for creating a setup executable file:

The setup executable file is created using a free-version of **Install Creator** software. If there has been any change in the application software or application Icon, the application needs to be reinstalled on the desktop computer. Go to **/path/to/GE-setup/Resources** and open **Install** by double clicking. The changes can be applied through the window. Save changes by clicking **build**.

4. User's guide for Graphical User Interface

Click **Data Manager** Icon in the desktop to open the main application window.

a) Main Window



If the USB Port does not appear on the Port selection box, select the USB Port from the drop down list and click **OK** to continue or **Cancel** to abort the program.

Alternately, click **Auto-Detect** to detect and select the USB Port. Click **OK** to continue or **Cancel** to abort the program. **Auto-Detect** is recommended.

b) Edit Data Window

All 6 ID Tags are available:

The 'ID Tag Content' window displays a table of 6 ID tags. Each tag has a 'Tag Number' column with a checkbox, and three data columns: 'Barcode', 'D.S.R.', and 'Catalog No.'. All checkboxes are checked. The data for each tag is as follows:

Tag Number	Barcode	D.S.R.	Catalog No.
1 <input checked="" type="checkbox"/>	J2930TX	3977	IOU300JKMBA
2 <input checked="" type="checkbox"/>	GOLDEN	21CH	IS400IOPKBAA
3 <input checked="" type="checkbox"/>	J2930TX	01C0	ST300UJKLLP
4 <input checked="" type="checkbox"/>	J2930TX	1020	IS200TGYUAB
5 <input checked="" type="checkbox"/>	JHNMKO	1B45	IS446AAK
6 <input checked="" type="checkbox"/>	IS5009	33	IS500GBA

At the bottom of the window are four buttons: 'Refresh', 'OK', 'Cancel', and 'Help'.

Click **Help** for more information and/or instructions.

The 'Help' window contains the following instructions:

- Available Tag Numbers are checked marked. Uncheck the Tag Number if data fields need not be changed.
- To change data fields, select the Tag Number(s) and change values in the fields.
- For each Tag Number, Barcode value must be 6 -7 characters long. A Barcode with less than 6 characters will be padded with leading spaces. The characters must include upper case letters and digits only.
- For each Tag Number, DSR value must have 5 or less characters. The characters must include upper case letters and digits only.
- For each Tag Number, Catalog Number must be 8 or more characters long. The characters must include upper case letters and digits only.
- Click OK to continue or Cancel to cancel.

Only 4 ID Tags are available:

The Tag Number check boxes are unchecked and disabled, and the data fields are disabled for unavailable ID Tags.

The dialog box titled "ID Tag Content" has three tabs: "Edit Data", "Record List", and "Hex Data". The "Edit Data" tab is active. It contains a table with 6 rows. The first column is "Tag Number" with checkboxes. The next three columns are "Barcode", "D.S.R.", and "Catalog No.", each with a text input field. The last two rows (5 and 6) have disabled checkboxes and input fields. The first four rows (1, 2, 5, 6) have checked checkboxes and active input fields.

Tag Number	Barcode	D.S.R.	Catalog No.
1 <input checked="" type="checkbox"/>	J2930TX	3977	IOU300JKMBA
2 <input checked="" type="checkbox"/>	GOLDEN	21CH	IS400IOPKBAA
3 <input type="checkbox"/>			
4 <input type="checkbox"/>			
5 <input checked="" type="checkbox"/>	JHNMKO	1B45	IS446AAK
6 <input checked="" type="checkbox"/>	IS5009	33	IS500GBA

Buttons: Refresh, OK, Cancel, Help

Erasing data:

To erase data from an ID Tag, delete the data from the appropriate text box that you want to remove data from, and click **OK**. In the message box, click **Yes** to continue or **No** to cancel. Multiple data can be removed from multiple ID Tags.

The screenshot shows the 'ID Tag Content' dialog box with three tabs: 'Edit Data', 'Record List', and 'Hex Data'. The 'Edit Data' tab is active, displaying a table of ID tags and their associated data fields. A confirmation dialog box titled 'Erase data !' is overlaid on the main window, asking 'Do you want to erase DSR from ID Tag 1 ?' with 'Yes' and 'No' buttons.

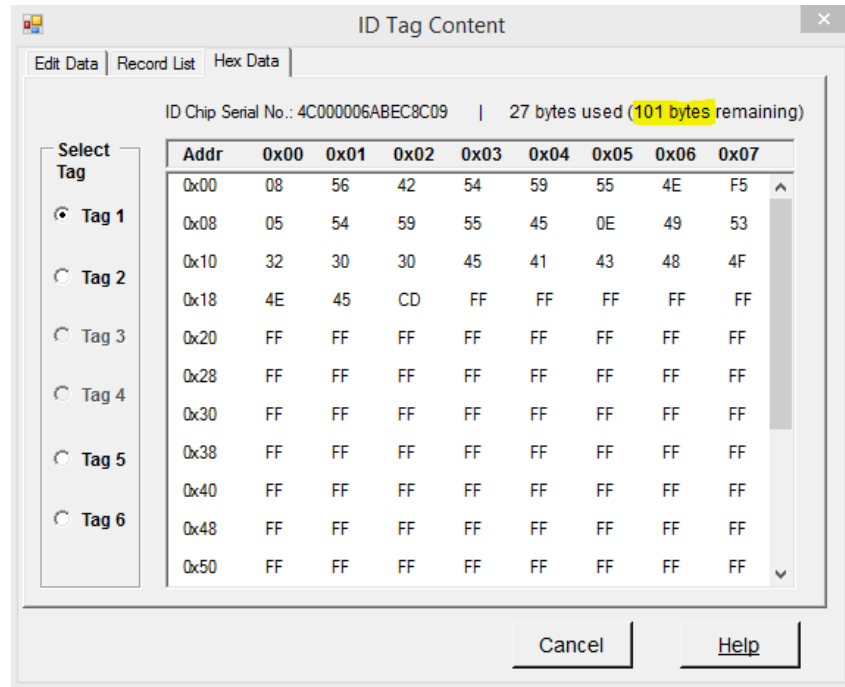
Tag Number	Barcode	D.S.R.	Catalog No.
1 <input checked="" type="checkbox"/>	J2930TX		IOU300JKMBA
2 <input checked="" type="checkbox"/>	GOLDEN	21CH	IS400IOPKBAA
3 <input type="checkbox"/>			
4 <input type="checkbox"/>			
5 <input checked="" type="checkbox"/>	JHNMKO		
6 <input checked="" type="checkbox"/>	IS5009		

Buttons at the bottom: Refresh, OK, Cancel, Help.

Programming the EPROM:

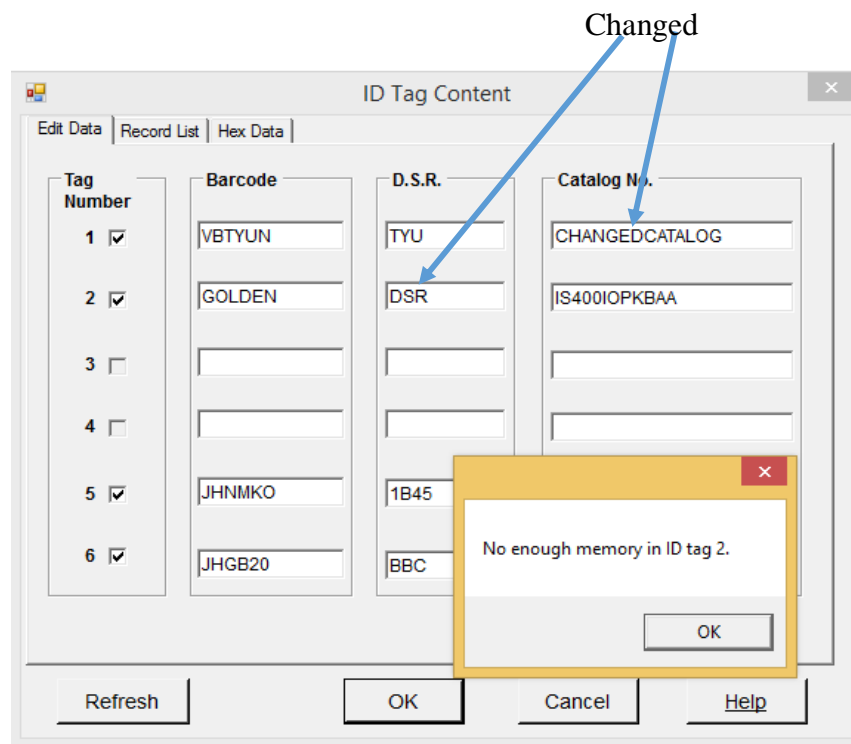
Check how much memory is available in the ID Tag by clicking on the **Hex Data** tab.

For example: Tag 1 in has 101 bytes remaining (enough memory to program).

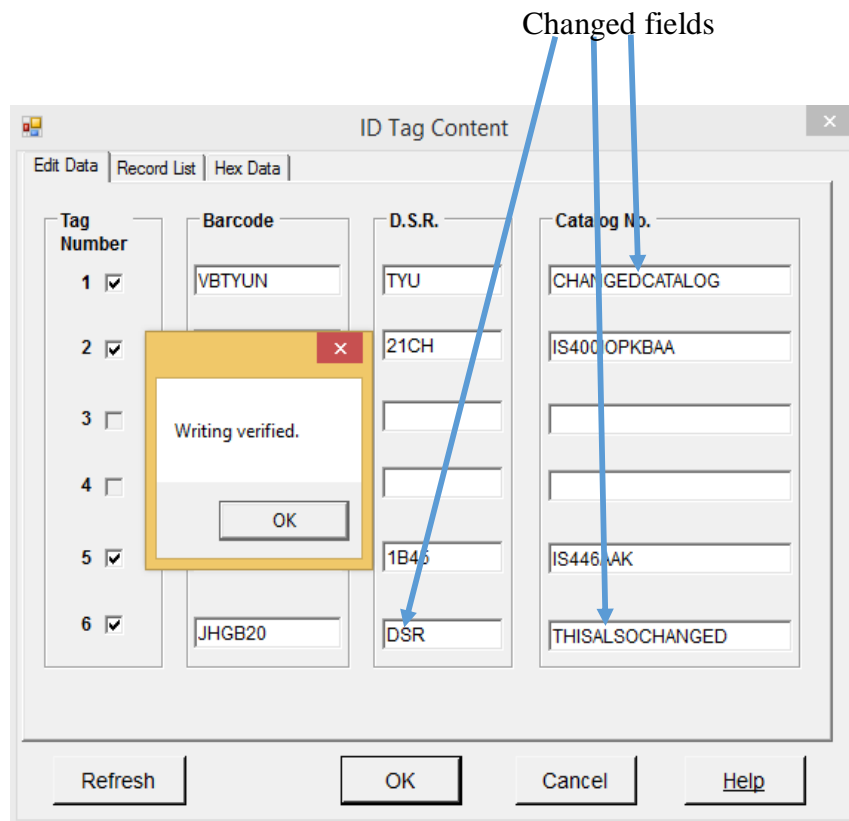


Replace the data field(s) with desired data value (ASCII characters), and click **OK**.

If there is not enough memory in the ID Tag, a message box will appear.



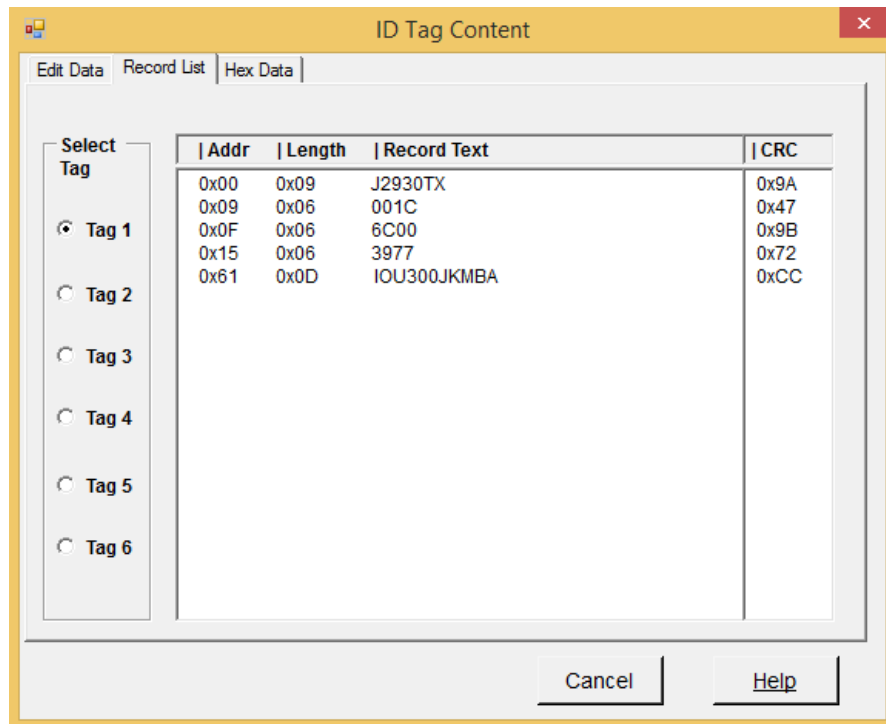
After programming data in the memory, a message box will pop-up to indicate that the writing operation is successful.



If the writing is unsuccessful, a message box will indicate which data field(s), and which ID Tag(s) failed the operation.

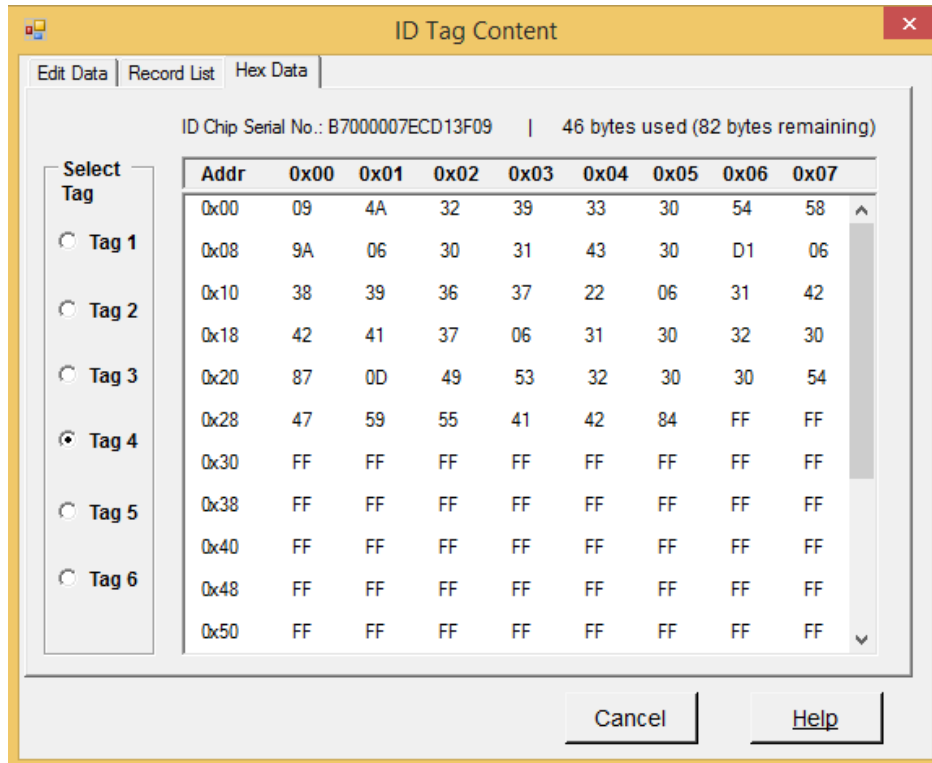
c) Record List Window

Click the Tag number under **Select Tag** to view the data Record Text from the specific ID Tag memory.



d) Hex Data Window

The chip serial number is a 16 hex string that is unique to the ID Tag. Select the appropriate ID Tag under **Select Tag** to view the hex data stored in the EPROM of the specific ID Tag.



Click **Help** for more information.

Command Line Interface

5. User's guide for Command Line Interface

- 5.1) Command Line Interface requires a console like command line terminal such as *cygwin*, *PoweShell*, or *Git Shell*. Windows' built-in cmd window can be used as well. However, for convenience, third-party command line terminals are recommended.

Cygwin and *Git Shell* are freely available to download and install.

- 5.2) Open the terminal, and cd into the directory where the executable file for the Command Line Interface is stored.

\$ cd C:/Users/...../GE-cmd

The following are the instructions for using commands to perform reading and programmign operatoin on the ID Tags.

a) Help

Helo command - \$./exefile help operation

Example: **\$./Program.exe help read**

Notations for operatons: **read** – reading, **write** – programming, **erase** – erasing

b) Read

Read command - \$./exefile read-command tag-number

Examples,

- i. Read one ID Tag - **\$./Program.exe read 5**

If ID Tag 5 is available, it will display ID Chip Serial number, Record List, and Hex Data on the terminal.

```

$ ./Program.exe read 5
Searching for hardware.....
|*****|
ID Chip: 5
Chip Serial No.: BC000007ECCEEB09

=> Record List:
|-----|
| Addr | Length | Record Text | CRC |
|-----|
| 0x39 | 0x08 | JHNMKO | 0xF7 |
| 0x58 | 0x06 | 1845 | 0xB2 |
| 0x5E | 0x0A | IS446AG0 | 0x6D |
| 0x6D | 0x05 | AAK | 0x22 |
|-----|

=> Hex Data:
|-----|
| Addr | 0x00 | 0x01 | 0x02 | 0x03 | 0x04 | 0x05 | 0x06 | 0x07 |
|-----|
| 0x00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0x08 | 00 | 00 | 00 | 00 | EA | 00 | 00 | 00 |
| 0x10 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0x18 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0x20 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0x28 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0x30 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0x38 | 00 | 08 | 4A | 48 | 4E | 4D | 4B | 4F |
| 0x40 | F7 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0x48 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0x50 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0x58 | 06 | 31 | 42 | 34 | 35 | 82 | 0A | 49 |
| 0x60 | 53 | 34 | 34 | 36 | 41 | 47 | 30 | 6D |
| 0x68 | 00 | 00 | 00 | 00 | 00 | 05 | 41 | 41 |
| 0x70 | 4B | 22 | FF | FF | FF | FF | FF | FF |
| 0x78 | FF | FF | FF | FF | FF | FF | FF | FF |
|-----|

114 bytes used (14 bytes remaining)
|*****|
Reading completed.

```

If ID Tag 5 does not exist, the program will exit.

```

$ ./Program.exe read 5
Searching for hardware.....
|*****|
The ID Chip 5 does not exist.

```

- ii. Read all ID Tags - **\$./Program.exe read all**
Data of all available ID Tags will be displayed on the terminal.

- c) Write
Write command,
 - i) \$./exefile write
 - ii) Enter the number of ID Tags to program.
 - iii) Command: tag-number data1 data2 data3
 - iv) Enter, and continue to enter commands for all ID Tags.
 - v) When asked to continue, enter **y** to continue or **n** to cancel.

Example: **\$./Program.exe write**

Data sequence in the command: Barcode, DSR, Catalog Number

Note –

Date entry order:

- When entering less than 3 data fields, enter the data in hierrarchical order such as barcode and catalog, dsr and catalog, or barcode and dsr.

```
$ ./Program.exe write
Searching for hardware.....
|*****|
ID Chips 1, 2, 5 and 6 are available for programming.
Number of ID Chips to program : 2
1) Enter command : 1 JHY122 2C00 IS200PKMMBAA
2) Enter command : 6 IS200PKMMBAA
Writing.....
ID Chip Barcode DSR Catalog
-----
1 084A48593132321C 063243303095 0E4953323030504B4D4D4241417A
6 0E4953323030504B4D4D4241417A
Do you want to continue ? (y/n) : |
```

- An error message will be printed, if input data entry is incorrect.

Barcode entry:

- A Barcode is 6-7 characters long string with upper case letters and digits. A barcode with 5 or less characters long will be padded with a leading space. User will be prompted to continue or cancel the operation after entering the command.

```
1) Enter command : 6 JKMN
In ID Chip 6 the barcode with 5 or less characters will be padded with leading space(s).
Do you want to continue ? (y/n) : |
```

DSR entry:

- A DSR is 1-5 characters long with upper case letters and digits.
- If only DSR or DSR and catalog number are to be entered, add '|' at the end of DSR data value. Example: **YUJHM | IS200OIKJMNJH** (IS200OIKJMNJH is the catalog number).

```
1) Enter command : 6 IJKL|
Writing.....
ID Chip Barcode DSR Catalog
-----
6 06494A4B4CE9
Do you want to continue ? (y/n) : |
```

- Multiple DSR values are separated by '|'.
Example: **YUH300 1C200 | HJN89 | 34AB IS200JKGH200**

Catalog Number entry:

- A catalog number is 8 or more characters long string with upper case letters and digits.

- The software is capable of processing upto 18 characters long catalog number.
- The program will recognize the first entry data as catalog number if the length of the entry data is 8 or longer.

```

1) Enter command : 6 IS200IOJK
Writing.....
ID Chip      Barcode      DSR      Catalog
-----
6            08495 3323030494F4A4B96
Do you want to continue ? (y/n) : |

```

The program will exit if there is not enough memory in an ID Tag or the program will exit with a verification message after the writing operation is complete.

If the writing operation fails, the message will indicate which ID Tag(s) the operation has failed.

d) Erase

Erase command - \$./exefile erase tag-number data1/data2/data3, up to tag-number 6

Example: \$ **./Program.exe erase 1 b/c/d, 5 c/d, 6 d**

Data notations,

b – barcode, **c** – catalog number, **d** – DSR

```

$ ./Program.exe erase 1 b\c\d, 5 c\d, 6 d
Searching for hardware.....
|*****|
Erasing data.....
Do you want to erase Barcode, DSR, and Catalog-number from ID Tag 1 ? (y/n) : y
Do you want to erase DSR and Catalog-number from ID Tag 5 ? (y/n) : y
Do you want to erase DSR from ID Tag 6 ? (y/n) : y
Do you want to continue ? (y/n) : |

```

Enter **y** to continue or **n** to cancel.