

The MMBASIC User Program Library contains programs written or modified to run on the Maximite family of computers. They are provided for the benefit and edification of the Maximite community, without any warranty as to suitability for any use. They are free of any copyright and may be copied, modified and distributed as you see fit. Enjoy them and learn.

If you have written a program for MMBasic and you believe that it is worth sharing with the world please send it to [mmlib@geoffg.net](mailto:mmlib@geoffg.net) and include a short (2 to 4 line) description of what the program does for the library index either in the email or in comments in the code. If you modify one from this library and see a benefit in your mod for others, by all means submit it for inclusion. Please acknowledge the source if it is not all your own work.

Note that many email systems will refuse to transmit a file with an extension of .BAS so you may need to append .TXT to the file name before attaching it to the email.

For up to date errata, notes and news of MMBasic go to <http://geoffg.net/maximite.html>

In this listing, programs have been categorised to help you find what you want:

- **Colour Maximite programs** a collection of programs demonstrating features of the Colour Maximite. In some cases they are updated versions of programs in other categories.
- **Control and Monitoring** do exactly that and require external connections and/or hardware. They are often associated with magazine articles. e.g. Silicon Chip
- **Games** generally do not require any external connection - MagicBox is an exception
- **Stand Alone Applications** do not require external connections
- **Techniques and Demonstrations** show off MMBASIC capabilities and coding solutions
- **Tools** are programs to help with coding or running Maximite

All programs in the library should run on the Colour Maximite under the latest version of MMBasic. Those in the Colour Demos and ColourMM Library folders take advantage of the additional features of the Colour Maximite.

## What's New

### Maximite Programs

- |         |         |   |
|---------|---------|---|
| Updated | ENIGMA  | Emulates the WW2 German Enigma M4 cypher machine. Writes output to SD card. |
| Added   | ENIGMAD | DOS version of ENIGMA   |
| Added   | ENIGMAG | Generates a suggested setup for Enigma based upon a Seed.                   |

## Links to other Sites

More programs for the Maximite and ColourMite can be found on various web sites and forums. Try:

- The Back Shed - Microcontroller projects [http://www.thebackshed.com/forum/forum\\_topics.asp?FID=16](http://www.thebackshed.com/forum/forum_topics.asp?FID=16)
- MMBasic Library <http://www.g8jcf.dyndns.org/MMBasicLib/>
- Nick Marentes' Maximite Projects <http://www.maximite.net.au>
  - Donut Dilemma a multilevel game
  - BLIT Demo A small program to demonstrate the use of the BLIT command
  - SPRITE Demo Demonstrates use of Sprite and Collision commands
  - File Manager Two pane file manager
  - MAXMAN PacMan game

## Table of Contents

What's New .....	1	Donut Dilemma .....	2
Links to other Sites .....	1	EggDrop .....	3
Table of Contents.....	1	MaxiTrek.....	3
Colour Maximite programs.....	2	Arcade .....	3
Colour Demos .....	2	Breakout .....	3
CMM4_TST .....	2	Invaders .....	3
BLIT Demo.....	2	Lander .....	3
Colour-1 .....	2	Sprites3 .....	3
Colour-2.....	2	Control and Monitoring.....	3
Music .....	2	BATTERY .....	3
Julia.....	2	BATTERY2 .....	3
Colour MM Library .....	2	BATTERY3 .....	3
Clock-C.....	2	COILWIND .....	3

MMBASIC User Program Library  
Version 15 May 2015

CVanBM.....	3	DIVTEST .....	6
DCF77Clk.....	3	ENIGMA and ENIGMAD .....	6
FRIDGE.....	3	ENIGMAG.....	7
GPS.....	3	MORSE.....	7
GPS-SIM .....	3	PSYCTEST .....	7
I2C .....	4	Techniques and Demonstrations .....	7
I2CLCD .....	4	1WDS1820.....	7
I2CTIME .....	4	BBLSORT.....	7
PotTest.....	4	BIGINT .....	7
PWM.....	4	BSEARCH .....	7
Games .....	4	DATALOG .....	7
CHECKER.....	4	DATE_DAY .....	7
DONUT DILEMMA .....	4	FUN1WIRE .....	7
HAMURABI.....	4	GRAPH .....	7
HEARTS.....	4	LCD & LCD_1.....	7
HIGHIQ .....	4	MCP_POT.....	7
INVADERS .....	4	MM_Event .....	8
MAGICBOX.....	4	ONE-WIRE.....	8
MAGICSW2.....	4	PRINTER.....	8
MAXMAN.....	5	PWMSIN and PWMTRI .....	8
MMFOUR .....	5	RANDOM.....	8
MMPREY .....	5	SPRTDEMO .....	8
MMSUDOKU.....	5	SSTRING .....	8
NUMBERS .....	5	STKUTILS .....	8
REVERSE.....	5	TWINKLE .....	8
TOWERS.....	5	Tools .....	8
Functions and Subroutines.....	5	AUTORUN .....	8
AUTOLOG .....	5	BMPSHOW .....	8
BIN8 .....	5	BENCHMRK .....	8
BBLSORT1 .....	5	CRUNCH .....	9
BSEARCH1 .....	5	FILE MANAGER.....	9
CSVPARSn.....	5	FORMAT SOURCE .....	9
GETIN .....	6	HEXDUMP.....	9
PRINTER2.....	6	KEYBOARD .....	9
RTC-DOW .....	6	MAXIFONT.....	9
SPLIT.....	6	NONUMBER.....	9
Stand Alone Applications .....	6	PAGELIST .....	9
ALPHANUM.....	6	RENUMBER .....	9
Analogue_Clock .....	6	SHOW .....	9
ASTROFIX.....	6	TEXTLOOK .....	10
DATE_DAY .....	6	Change Log.....	10

## ***Colour Maximite programs***

All programs in this category require  
MMBasic v4.0 or later.

### ***Colour Demos***

**CMM4\_TST** a test program that demonstrates various graphics on the Colour Maximite running in MODE 4. These include coloured lines, boxes, circles and moving images on the screen using the BLIT command.

Author: Fabrice Muller

A collection of ColourMM demos from Geoff Graham demonstrating features of the ColourMM.

A readme.txt file in the folder explains each.

**BLIT** Demo - Demonstrates the BLIT command  
Download from Nick Marentes' web  
site at <http://www.maximite.net.au>

**Colour-1** - draws random colour-filled circles

**Colour-2** - demonstrates the MODE command

**Music** - plays a sequence of music files

**Julia** - plots a Julia fractal set in colour

### ***Colour MM Library***

**Clock-C** - a ColourMM version of CLOCK.  
You will find it in the Analogue Clock  
folder.

### **Donut Dilemma**

"Donuts have come alive ! Machines are running amuck! The entire factory is out of control!!

Help Antonio climb ladders, jump platforms and ride elevators to reach the top floor and shut down the power generator which will restore law and order."

Download from Nick Marentes' web site at <http://www.maximite.net.au>

## EggDrop

Why did the chicken climb the ladder? To lay some eggs of course. Grab your basket and catch those falling eggs before they break.

Author: Chris Tusa

## MaxiTrek

The old Star Trek game with multitasking and 3D colour graphics.

Author: Juri on The Back Shed

A collection of ColourMM programs by Fabrice Muller of France demonstrating features of the ColourMM. A readme.txt file in the folder explains each.

### Arcade

- an arcade game with sound

### Breakout

- shows how to use BMP, sprites, files, arrays and potentiometer input.

### Invaders

- A colour version of Space Invaders.

### Lander

- A moon lander with sound and random moon terrain.

### Sprites3

- shows coding methods for sprites, blitter and music.

## Control and Monitoring

---

## BATTERY

This is the battery capacity tester described in the Silicon Chip May 2011 article "Using The Maximite". It uses 4 relays to control the battery load.

Refer BATTERY.JPG for the circuit diagram.

Author: Geoff Graham

## BATTERY2

An extended version of the battery capacity tester described above. Additional features include:

- Draws a graph of the battery voltage on the video output as the test progresses
- Choice of constant current, power or resistance load
- Optionally saves the data in an Excel compatible file
- Optionally uses 5 relays for a finer level of load control

Author: Geoff Graham

## BATTERY3

Mods to BATTERY2:

- Added option to write the final graph to a BMP file and add a description of the battery under test and the system date (if it has been set) as headings.
- Increased y axis by 0.1v as some rechargeable batteries increase their output voltage slightly after the load has been applied.
- Removed line numbers.

Author: Geoff Graham    Mods: Hugh Buckle

## COILWIND

Describes the development of a coil winder using pulse width modulation to control motor speed and a Hall Effect transducer to count coil turns. There is a YouTube demonstration of the completed device and schematics of the interfaces. Have a look at the "I built a coil winder" document.

Latest version PWMS.BAS added 12/6/2012

Author: Ron Pugh

## CVanBM

I started as a caravanner wanting a good/better method of monitoring the status of the van batteries, the solar charging system and how long till "brownout" when free-camping. This is a work in progress.

The CVanBM folder contains program, circuit diagram and explanation.

Author: Douglas Pankhurst

## DCF77Ck

Uses three DuinoMites to program a three screen digital clock - each screen showing a part of the time (hours, minutes and seconds).

It obtains the precise time from the DCF77 radio clock signal which is very common in Germany.

Author: Tim Hagemann

## FRIDGE

This is the refrigerator temperature monitoring program described in the Silicon Chip May 2011 article "Using The Maximite".

Refer FRIDGE.JPG for the circuit diagram.

## GPS

An example of how to get data from a GPS module using the serial interface. Shows how to extract the individual fields from the data.

See <http://home.mira.net/~gnb/gps/nmea.html> for details of the GPRMC string produced by a GPS and <http://geoffg.net/maximite.html> for a number of GPS applications.

Author: Geoff Graham

## GPS-SIM

I have been working on a project using a GPS module and while I was testing the prototype it became a right royal pain in the backside waiting for the module to get

a fix on my location. On my workbench it sometimes took five minutes.  
So I wrote a GPS simulator and I am posting it here as it could be useful to others.  
It uses a Maximite (any type) to output a serial data stream which pretends to be an EM-408 GPS module travelling east at a fixed speed. The baud rate, the time it takes to get a lock and the speed are all configurable. The output is also echoed to the screen so anyone can use it to see what the output of a GPS module looks like.  
It has saved me hours so hopefully someone else will also benefit.  
Author: Geoff Graham

## I2C

Example of using the I2C protocol to get the temperature from a DS1621 sensor. The full description can be found at:  
[http://www.thebackshed.com/forum/forum\\_posts.asp?TID=4112&TPN=1](http://www.thebackshed.com/forum/forum_posts.asp?TID=4112&TPN=1)  
Author: Geoff Graham

## I2CLCD

This code is for driving a standard HD44780 character LCD using the I2C interface and a PCF8574. The circuit diagram is in the code.  
Author: John Gerrard

## I2CTIME

Sets and reads time from DS1307 real time clock.  
Author: Ian Quirk

## PotTest

A program to calibrate and read the value of a potentiometer connected between Maximite I/O pins 8 and 10.  
Author: Graeme Anderson

## PWM

A "pwm" program with several variables it can be used to run an inverter or what ever you may find suitable for it.  
If you have problems getting it to run, try installing the hex MMBasic ver 2050 provided (author unknown - possibly Gerard).  
The main buss "a" will depend on the primary input voltage...everything else speaks for itself...  
Author: Gerard Sexton (seco61 on The Back Shed)

## Games

---

See also **Colour MM Library** above.

## CHECKER

A game based on the old 'One Check' solitaire checker game from creative computing.  
Author: Bill Brown

## DONUT DILEMMA

An arcade game by Nicholas Marentes.  
See ColourMM Library above

## HAMURABI

The game of Hamurabi. You can try your hand at governing ancient Sumeria for a 10-yr term of office. It was popular on the Tandy TRS-80 computer many years ago.  
Author: David Ahl  
Ported: Peter Turnbull

## HEARTS

A version of Hearts and Bones, similar to the one on the HP 200LX Palmtop Computer in 1991. Capture as many Hearts as you can without stepping on a Bone. In many ways it is like Minesweeper.  
Author: Hugh Buckle

## HIGHIQ

A game based on the program high i-q from creative computing.  
Origin: Creative Computing  
Ported: Bill Brown

## INVADERS

This is a version of the Space Invaders game for the Maximite.  
It must be run using MMBasic v3.0A or later as it relies on some advanced features of this version to control the invaders. It looks best if played on a composite PAL monitor but it will also run fine on a VGA monitor.  
Author: Fabrice Muller (France).

## MAGICBOX

This is rewrite of the magic switchboard program to suit MMbasic.  
This program uses the four switches connected to pins 11, 12, 13 and 14 and the output (either white LEDs with colour tops or 6Vcoloured lamps) connected to Pins 15,16,17 and 18. The lamps will require driver transistors. You can see a demonstration on YouTube at [www.youtube.com/watch?v=0IGP8nQLANU](http://www.youtube.com/watch?v=0IGP8nQLANU).  
Origin: Picaxe technical for the picaxe 18x  
Ported to MMbasic by Bill Brown

## MAGICSW2

Another version of Magic Switchboard based on Bill Brown's port to MMBasic.

Author: Keith Williams

## MAXMAN

The game of PacMan rewritten by Nick Marentes for Maximite. Version 1.2 is compatible with both Mono and Colour Maximite running MMBasic v4.2  
Best to download the latest version from Nick's web site at <http://www.maximite.net.au>

## MMFOUR

A port of the old Microbee game of Connect Four.  
Ported: Glenn Littleford

## MMPREY

A short graphical environment simulation  
Ported from a old Apple II program in ETI magazine 1982  
Author: Phil Cohen ETI  
Ported: Glenn Littleford

## MMSUDOKU

SUDOKU v1.0 for Maximite MMbasic v3.1 by Raros/BFTI from an idea by Digitalquirk for the Vic20. There are two versions; one with a graphical intro and the other that goes straight to the game. Well worth a try.  
Author: Raros on The Back Shed forum

## NUMBERS

A simple memory test program whereby a number appears on the screen and you must type that number within the time limit. Each time you answer, the number grows by one random digit.  
You can go into the program and lengthen the time the numbers are displayed... but they get quicker as time goes by.  
Author: Frank Papadopoulos from an old magazine  
Submitted by: sparkey265@hotmail.net.au

## REVERSE

A simple game that challenges you to set a row of numbers in order in the minimum of moves.  
Origin: Creative Computing

## TOWERS

A game of Towers of Hanoi. This one is for the MiniMite with a VT100 terminal such as Tera Term.  
Author: Bert Holmes

## ***Functions and Subroutines***

---

## AUTOLOG

In the event that you need to log something, and in the likely event that the logger will need to run for a few

days, then this routine will come in handy. The routine could be a GOSUB, a defined subroutine passing the data you want to log as an argument, or even an interrupt if the data to log was short.  
See comments in the code for a full description.  
Author: Grogster on The Back Shed - March 2014

## BIN8

A library of functions and subroutines that perform bit manipulation on 8 bit numbers. The routines include left/right shift, bit set/clear and more.  
Written by crackerjack.  
Added ClearBit sub by Bert Holmes 28 July 2014

## BBLSORT1

A bubble sort is a very simple technique for sorting an array. It is efficient for small amounts of data.  
This two subroutine sorts a text array into ascending Non-case-sensitive sequence. See the note in the code about the collating sequence, which can easily be changed to sort into case sensitive or numeric sequence. Because MMBasic cannot yet pass whole arrays by reference (hopefully it will one day), it cannot be included as a defined subroutine so you will need to replace the array name with the one you wish to sort. Requires MMBasic v3.1 or later due to use of defined subroutine SWAP x,y.  
Ported from GW-Basic by Hugh Buckle

## BSEARCH1

A Binary Search routine for a text array, which has been sorted in non-case-sensitive ascending order. A binary search routine is an efficient way to find a matching value in a sorted array.  
If a matching value is found, it returns the array index in Indx and sets the variable Found = 1. If not, it returns Found = 0.  
You can easily modify this routine to search a case-sensitive sorted array or a numeric array. See comments in the program.  
Because MMBasic cannot pass arrays by reference to Defined Subroutines, you will need to change the array name to the one you wish to search.  
Author: Hugh Buckle

## CSVPARSn

Four separate solutions for parsing a CSV string. The task was raised in The Back Shed topic "Parsing a CSV string" in March 2013. Solutions provided by:  
CSVPARS1      CircuitGizmos  
CSVPARS2      TZAdvantage  
CSVPARS3      VK4TEC  
CSVPARS4      ShoeBuckle  
All will run in MMBasic.exe under DOS with the exception of CSVPARS3 which requires file input. TZAdvantage provided a couple more variations of his solution on The Back Shed in the same topic.



## GETIN

Gets user input with a timeout period. Use this as a substitute for LINE INPUT, if you need to get user input, but still have the MM exit if there have been no keypresses after a certain time. Works on MM and CMM only. Does not work on the MM chip (no keyboard!).

Author: Grogster of The Back Shed 2013, with cursor contributions by TassyJim of TBS.

## PRINTER2

A printer subroutine for dot-matrix parallel-port printers. The code supports paper-out and a busy timeout so the sub won't get stuck forever if the printer is busy or otherwise fails to respond.

Written by Graeme Rixon

Concept by CircuitGizmos with BUSY line suggestions by robert.rozee of TBS forums.

## RTC-DOW

This code will setup and call a function to calculate the name of the day of the week from the settings of the RTC in the MM or MM clone. It is accurate out to the year 2300 and beyond.

See comments in the code for more details.

Function written by TBS forum member TZAdvantage. Array and RTC handling by TBS forum member Grogster. Developed in January 2014, on The Back Shed Forums.

## SPLIT

Subroutine to split a delimited string of characters into individual substrings and return those substrings in a string array.

As you can't pass arrays in MM Basic, the returned array will always be named splitup\$().

The program automatically calculates the number of substrings in the string and the size of the largest substring, then scales the array accordingly.

The number of substrings is returned in array position 0 and the maximum length of each substring is returned in array position 1.

See The Back Shed forum topic for more info at [http://www.thebackshed.com/forum/forum\\_posts.asp?TID=5996](http://www.thebackshed.com/forum/forum_posts.asp?TID=5996)

Author: Doug Pankhurst

## ***Stand Alone Applications***

---

### ALPHANUM

Alphanum was written as an aid to solving cryptograms, in that it helps to know which are the most common letters and double letters in a typical document. It reads a plain text document (.txt) and counts the number of times each letter appears in it and the number of times each double letter appears. Counts

of each letter and double letter are written to a .CSV file so that they can be input to a spreadsheet such as Excel or OpenOffice Calc for further analysis and the percentage of each letter and each double letter is shown in a bar graph.

Subsequent executions of Alphanum can accumulate totals by adding counts from this document to counts in the .CSV file from previous runs. In this case, the bar graphs first show the results from the input text document on its own and then from the accumulated totals. You can toggle back and forth between the two pairs of graphs to highlight the changes.

### Analogue\_Clock

An animated analog clock complete with second hand. Drawn using the graphic capabilities of MMBasic. CLOCK.BAS is a version for the B&W Maximize.

Author: Eugene Villar

Ported: Bob Devries

Modified: Hugh Buckle

CLOCK-C.BAS was modified by Geoff Graham for the Colour Maximize.

### ASTROFIX

A program to help you track an astronomical body. It uses an EM408 GPS module interfaced to a Maximize or Colour Maximize running MMBasic V4.3A.

Connection and operation details are contained in Astrofix Readme.txt.

Author: Ray Alger

### DATE\_DAY

The Gregorian calendar came into use in 1582, so day of the week for a particular date is not relevant for dates prior to the year 1582, although this program will generate a day of the week from the year zero to the year 9999.

Author: Theo Reimer

### DIVTEST

Division practice for 6 year olds. See Basic Divide Program on the Back Shed forum.

Author: YT2059 on The Back Shed forum

Modified: Hugh buckle to remove line numbers and substitute DO loops for GOTOs.

### ENIGMA and ENIGMAD

This program emulates the infamous ENIGMA M4 machine used by German U-Boats to encrypt messages during the Second World War. The updated version writes the encoded/decoded text to a file.

Plenty of information on these machines can be found on the web including authentic WW2 encrypted messages.

ENIGMA for MaxiMite, ENIGMAD for DOS

See **Enigma.pdf** for instructions.

Author: Ray Alger

## ENIGMAG

Creates a suggested setup for either of the two Enigma emulators based upon a text seed.  
Runs on MaxiMite and DOS.  
Author: Hugh Buckle

## MORSE

This will generate Morse code for any message that you type in. It will flash the front panel power LED and generate a sound (you need to connect amplified speakers to hear the sound).

## PSYCTEST

This program is just for a bit of fun. It is a psychological type testing program that the author modified for MMBasic from some old program that he had had floating around for about 25 years. The coding techniques may be interesting and useful.  
Author: Graeme Anderson

## Techniques and Demonstrations

### 1WDS1820

Based on ONE-WIRE.BAS this program uses the 1-wire protocol to determine which version of the Dallas DS18x20 family is connected to the 1-wire bus and the method of connection, ROM code and temperature. Using this information you can easily devise a program using the ROM codes to interrogate multiple devices on the same 1-wire bus without the need to use a ROM Search routine.  
Author: Ian Delaney

### BBLSORT

Demonstration of the Bubble Sort routine BBLSORT1.  
Author: Hugh Buckle

### BIGINT

A demonstration of MMBasic's ability to handle large integers. It uses integer maths to calculate 1, 1×2, 1×2×3, 1×2×3×4, etc., the successive factorial numbers. The limit in MM Basic is the length of a string or 255 digits. At this stage, only positive integers are allowed as inputs. Now I need to go the next step and allow negative numbers.  
This code is SLOW and I have not made any attempt to speed it up. Working in base 1000 (3 digits at a time) is the obvious way to gain speed but this exercise was a proof of concept rather than good code.  
It needs MM Basic V3.1 as it uses user defined subroutines.  
Author: TassyJim on The Back Shed forum 7/2/2012

## BSEARCH

Demonstration of the Binary Search routine BSEARCH1.  
You could use BSEARCH in conjunction with the Bubble Sort which is also in this library as Hugh has done in this demonstration code.  
Author: Hugh Buckle

## DATALOG

This is a demonstration of how the Maximite can be used as a datalogger. Pins 1 to 10 are set as analogue inputs while pins 11 to 20 are set as digital inputs. The data is written once every second to the file "DATALOG.XLS". This is an Excel compatible spreadsheet file.

## DATE\_DAY

DAY OF THE WEEK FOR ANY DATE  
Developed January 2012 for MMBasic 3.1

The Gregorian calendar came into use in 1582, so day of the week for a particular date is not relevant for dates prior to the year 1582, although this program will generate a day of the week from year zero to the year 9999.

Author: Theo Reimer

## FUN1WIRE

A demonstration program that shows how to get the temperature from Dallas DS18B20. It is similar to ONEWIRE.BAS except that it uses a function instead of a subroutine.

## GRAPH

This is a demonstration of the Maximite's capability for drawing graphs on the video display.

## LCD & LCD\_1

A driver for standard 16 x 2 LCD displays. Note: This has been updated for MMBasic 3.1 and uses defined subroutines which are much easier to use. The first few lines are an example of how to use the driver. Refer to the file LCD.pdf for details of how to connect the LCD to the Maximite.

James Deakins says the updated version, LCD\_1.BAS, works with 20 x 4 displays, and should work with 16 x 1 and 8 x 1 displays, although he hasn't tested them. It may even work with a 40 x 4.

Author: Geoff Graham  
Updated: James Deakins

## MCP\_POT

Small program that demonstrates using the SPI functions to communicate with the MCP4xxx rang of chips from Microchip. These chips include one or two digitally controlled potentiometers and they give the

Maximite the ability to adjust a potentiometer from within a MMBasic program.  
Author: Geoff Graham

## MM\_Event

These files provide an example of an Event Driven framework that:

- uses circular First In, First Out (FIFO) event queues comprised of String Arrays.
- debounces switch inputs.
- uses Bit flags stored in a numeric variable.
- comprises two co-operating Finite State Machines (FSM).
- uses non blocking timers (10ms and 1sec) for delays.
- uses events to move between states and communicate between FSM's.
- displays State/Event changes.
- demonstrates the use of pointer to a SUB (ON var GOSUB A0,A1,A2,...).

The code example turns on & off the toggling of a LED only when a pushbutton switch has been pushed 3 times and remains pushed, all within 2 seconds.  
Author: Simon Whittam

## ONE-WIRE

A demonstration of using both the defined subroutines and 1-wire features introduced in version 3.1. This subroutine encapsulates the code necessary to get the temperature from a Dallas DA18B20 temperature sensor. If you include this subroutine in a program it will be the same as adding a temperature measuring command to MMBasic.  
Author: Geoff Graham

## PRINTER

A method of printing from Maximite to a dot matrix printer. The full information thread can be found at [http://www.thebackshed.com/forum/forum\\_posts.asp?TID=6520&PN=0&TPN=1](http://www.thebackshed.com/forum/forum_posts.asp?TID=6520&PN=0&TPN=1)  
Author: CircuitGizmos on TBS

## PWMSIN and PWMTRI

Two interrupt driven programs to blink the front panel LED. Both use pulse width modulation to produce a 'soft' flash. Rather than just switching the LED on and off by toggling Pin 0 and pausing in between, this program effectively modulates the width of pulses sent to Pin 0 so that the LED appears to shine brightly, dims again then repeats.; PWMTRI uses a triangular wave whereas PWMSIN uses a SIN function.  
You could use this code to indicate that a program is still running.  
Author: Graeme Anderson

## RANDOM

Using this program you can append to a file (to add some data in the first place) then read/write records using random record numbers.  
Author: Geoff Graham

## SPRTDEMO

Animates eight sprites randomly around the screen. This demonstrates the use of the SPRITE and COLLISION commands.  
Author: Nick Marentes

## SSTRING

Code that demonstrates a way of storing small strings efficiently. Normally each string takes up 255 bytes. With this method each string takes up less space. See SString.readme.txt in the library for a full explanation.  
Author: TassyJim from The Back Shed

## STKUTILS

A set of commands for string manipulation in a stack, queue and list.  
Author: Doug Pankhurst

## TWINKLE

A demonstration of the Maximite's ability to turn on and off any pixel.

## Tools

---

## AUTORUN

A sample file demonstrating the use of AUTORUN.BAS to setup options in MMBasic on startup. This example includes loading often used commands into the programmable function keys and setting the prompt.

## BMPSHOW

A program for loading and displaying bit map images (BMP format). The zip file includes some images to practice on.  
Author: Bruce Mitchell

## BENCHMRK

A series of benchmark tests derived from those published by the US magazine Kilobaud in 1977 that could be used on any version of BASIC and would give an idea of how fast the computer ran. With slight modifications and the addition of an eighth test these 'benchmark' programs were adopted by the UK magazine Personal Computer World and all their computer reviews were accompanied by a list of the benchmark timings.



Ported to MMBasic by Rob Severson  
For further information see  
[http://en.wikipedia.org/wiki/ABC\\_800](http://en.wikipedia.org/wiki/ABC_800)  
and

<http://www.geocities.ws/peterochocki/computers/pcwbm.html>

## CRUNCH

3 programs which together compress MMBasic source code into 255 character records, stripping out comments and unnecessary characters and replacing labels, variable, function and subroutine names with one and two characters.

Can be used to speed up execution, reduce code size for imbedded applications and to disguise the logic of a program. See the ReadMe.pdf within the folder.

Version 2.4

Author: Hugh Buckle

## FILE MANAGER

File Manager is a simple file manager program to manipulate files on the SD drive.

It is a dual pane file manager, modelled on the immensely popular Directory Opus for the Commodore Amiga allowing the user to batch transfer files from one window pane to the other.

Author: Nick Marentes

Download: from <http://www.maximite.net.au>

## FORMAT SOURCE

A utility to format MMBasic source in a standard format. Rules are given in the introduction when you run the program. You set the indent size. Handles source with and without line numbers and lines with multiple statements.

Updated 15/3/2013 to run with implied RUN command.

FORMAT infile[.bas] outfile[.bas] [indent] [/P]

Updated 13/4/2013 to run from another program using CHAIN

Optional **Indent**, a value between 1 and 6, is the indent at each level. If omitted, indent is 2 characters.

Optional **switch /P** lists the formatted code to the screen, pausing at a screenful (press a key to continue). See readme.txt in the FORMAT folder.

Author: Hugh Buckle

## HEXDUMP

Dumps a text file to the screen in hex and ascii. Useful for analysing a text file contents.

Author: Douglas Pankhurst

See also TEXTLOOK in this library.

## KEYBOARD

This program will show you the codes generated when various keys on the keyboard are pressed. Use this to find the codes associated with special keys such as the function keys.

## MAXIFONT

A full screen editor for creating and editing font files. Several versions added.

Author: Dennis Wyatt

## NONUMBER

Removed - out of date - contact [mmllib@geoffg.net](mailto:mmllib@geoffg.net) for the last available version. Please note that it does not handle all situations successfully.

## PAGELIST

This lists any text file to the screen page by page, accounting for wrapped lines.

Similar to LIST, but not confined to loaded .BAS files.

It is useful for looking at text files generated during data acquisition on the MM itself.

Emulates Unix PAGE from the 1980s.

Author: Rodney Entwistle

## RENUMBER

Renumbers programs that have line numbers. Replaces the Renumber command which is no longer in MMBasic and adds some new features. See the readme.pdf within the folder.

Author: James\_From\_Canb on The Back Shed

## SHOW

Another example of a hex dump program which is useful for analysing a file's content in hex. Originally designed to dump text files. Usage is pretty simple, like a DOS command, you can run it in direct run mode also!

"Type [options] filename.extension"

valid options are:

/?, /i, /I : help/info page

/c, /C : continuous mode; show text continuously instead of pausing every page

/h, /H : hex mode; show text in lines of 16 bytes, this is always paused .

Options can't be mixed.

The last column in hex mode shows the ascii of the bytes in this way:

ascii values from 0 to 31 are displayed as spaces

ascii values from 32 to 126 are displayed as actual ascii

ascii values from 127 to 255 are displayed like the ones from 0 to 127 but reversed

If it's executed without arguments you will be asked for filename, you can put options before the filenames.

If no options is passed then the file is displayed in text mode paused every page.

It displays bmp files too, simply type "SHOW picname.bmp" (where "picname" is the filename of the bmp file you want to view) you can still see the hex data with the /h command (SHOW /h picname.bmp).

the output. The printables are echoed and the non-printables listed by their ASCII codes.  
It is useful for seeing exactly what is in a text file (e.g. tabs).  
Emulates a similar Unix program from the 1980s.  
Author: Rodney Entwistle  
See also HEXDUMP in this library.

## TEXTLOOK

This reads any text file character by character and dumps each character to the screen, which then pages

---

## Change Log

27/4/2015	Added	ENIGMA	Emulates the WW2 German Enigma M4 cypher machine.
11/4/2015	Added	ASTROFIX	Helps you track an astronomical body using an EM408 GPS module and Maximite.
14/12/2014	Added	BATTERY3	An updated version of Battery2 with option to save the final graph to BMP file.
	Updated	CRUNCH	See ReadMe.pdf in CRUNCH 2.4 folder. Major change to format of source keyword files.
1/11/2014	Added	Printer2	Printer subroutine for dot-matrix parallel-port printers
6/8/2014	Added	ClearBit	to Bin8.bas function/subroutine library
	Added	Towers	Towers of Hanoi game for MiniMite with VT100 terminal
9/6/2014	Added	Printer	Method of printing from Maximite to dot matrix printer
6/3/2014	Added	Autolog	Automatic daily logfile creation - builds a new filename for each day.
27/2/2014	Updated	GETIN	Subroutine to get input with a timeout period - fixed a bug.
8/2/2014	Added	GETIN	Subroutine to get input with a timeout period - useful for menu system.
27/01/2014	Added	RTC-DOW	Displays the name of the day of the week based on the MM RTC.
	Added	DCF77Clk	A clock using the DCF77 radio signal
20/9/2013	Added	GPS-SIM	GPS simulator, making it easier to code and test GPS output.
	Added	MM_Event	An example of an Event Driven framework.
	Added	Split	A routine to split delimited substrings.
14/7/2013	Updated	Crunch	Added new MMBasic v4.4 commands and parameters to reserved name lists.
	Updated	GPS	
	Updated	One-Wire	
	Added	Random	Demonstration of random file access
	Added	SprtDemo	Demonstrates the SPRITE and COLLISION commands

MMBASIC User Program Library  
Version 15 May 2015

7/6/2013			
Added	Renumber	Replaces the in-built MMBasic function and adds some new features.	
Added	Crunch	A suite of utilities to compress MMBasic source code.	
7/5/2013			
Added	EggDrop	Reincarnation of an old arcade game for the Colour Maximite	
Updated	FORMAT	Fixed minor bug and tidied up code.	
14/4/2013			
Added	MaxiTrek	The old Star Trek game with multitasking and 3D colour graphics.	
Added	SHOW	Another example of a hex dump program	
Updated	FORMAT	You can now RUN or CHAIN to Format from another program.	
29/3/2013			
Updated	FORMAT	To fix formatting a single line IF within a multi-line IF and change action of /P switch.	
15/3/2013			
Updated	FORMAT	Added code so it can be run with the implied RUN command announced in MMBasic 4.3A	
8/3/2013			
Added	CSVPARSn	4 different solutions to parsing a comma separated variable (CSV) string. Added to Functions and Subroutines.	
3/3/2013			
Added	Format	Formats Basic source code to consistent rules.	
12/2/2013			
Added	STKUTILS	Commands for string manipulation in a stack.	
1-2-2013			
Added		Links to other sites	
Added	BLIT demo	A small program to demonstrate the use of the BLIT command	
18-1-2013			
Updated	AlphaNum	Fixed a problem which prevented the output .CSV file from being produced	
Updated	MaxMan	Now compatible with both Mono and Colour Maximite running MMBasic v4.2	
Removed	MaxiMenu	Out of date	
15-11-2012			
Added	PotTest	A program to calibrate a potentiometer	
Added	PSYCTEST	A port of an old psychology test	
11-11-2012			
Added	PWMTRI	Pulse width modulation of the front panel LED using a triangular wave	
Added	PWMSIN	A variation of the same program but using a SIN function	
24-10-2012			
Added	hexdump	Dumps text file to screen in hex and text	
Added	CVanBM	Solar charge and battery monitor for caravan	
Updated	Music.bas	Fixed a fault in Music.bas in Colour Demos	
Added	SString	Demonstrates a way of storing small strings efficiently	
28-08-2012			
<b>Colour Demos folder</b>			
Added	CMM4_TST	A test program that demonstrates various graphics on the Colour Maximite running in MODE 4.	
<b>ColourMM Library folder</b>			
Added	Clock-C	A version of Clock for the ColourMM - Find it in the Analogue Clock folder	
Added	Lander	An updated version of Lunar Lander	
Added	Invaders	A colour version of Space invaders.	
<b>B&amp;W Maximite Programs</b>			

MMBASIC User Program Library  
Version 15 May 2015

Added	BigInt	Somehow was left out of the last update.
Updated	Clock	In Analogue folder. Minor changes.
Removed	Nonumber	No longer handles all situations - contact <a href="mailto:mmllib@geoffg.net">mmllib@geoffg.net</a> for last available version.

21-8-2012

This is the first distribution of the Library with programs for the Colour Maximate. They are all contained in 'Colour...' folders and for these you will need to download MMBasic v4.0 or later.

<b>Colour Maximate Programs</b>	These programs all require MMBasic v4.0 or later.	
Added	Colour Demos	A set of programs from Geoff Graham demonstrating new colour features. A readme.txt file explains the purpose of each
Added	ColourMM Library	A set of test programs from Fabrice Muller of France demonstrating Colour Maximate features. A read me in ColourMM Library explains each demo.

<b>B&amp;W Maximate Programs</b>	These programs all require MMBasic v3.2C or later	
Added	BigInt	Somehow got left out of the last update

20-7-2012

Added	Numbers.bas	A simple memory test
Added	PWM.bas	to run an inverter or other like application

12-6-2012

Added	PWMS.BAS	to Coilwind folder - the latest version of Ron Pugh's coil winder control program
-------	----------	---

18-4-2012

Added	Bin8	A library of functions and subroutines that perform bit manipulation on 8 bit numbers
Added	Fun1Wire	Demonstrates how to get temperature from Dallas DS18B20
Added	Hearts	The game of Hearts and Bones found on HP 200LX Palmtop Computer circa 1991
Added	MCP_POT	Demonstrates using SPI functions to communicate with MCP4xxx range of Microchip chips

6-4-2012

Added	I2CLCD	code for driving HD44780 character LCD using the I2C interface and a PCF8574
Added	MAXMAN	PacMan game ported to MM by Nick Marentes
Added	1WDS1820	uses the 1-wire protocol to find which version of the Dallas DS18x20 family is connected

12-3-2012

Added	COILWIND	Coil winder using PWM motor control and Hall Effect turns counter.
Added	PAGELIST	Lists a text file to the screen, wrapping long lines.
Added	TEXTLOOK	Dumps a text file character by character to screen; non-printables in ASCII.

4-3-2012

Added	I2CTIME	Sets and reads time from DS1307 real time clock
Updated	MAXIFONT	Several new versions added including one without line numbers.

25-2-2012

Added	MMSUDOKU	Sudoku for Maximate from Raros of the BlackFire Team Italy
Added	BENCHMRK	Benchmarks devised by Kilobaud magazine & adopted by Personal Computer World
Added	DATE_DAY	Returns the day-of-week for any given date
Added	DIVTEST	A program for young children to practice simple division
Updated	MAXIFONT	Several new versions added including one without line numbers.
Updated	LCD_1	An update to LCD which should support larger displays

10-2-2012

Added	BIGINT	Shows MMBasic can do big integer maths. Calculates integer factorials to 55.
Added	DATE_DAY	Print day of the week for any date from year 0000 to 9999.
Added	MAGICSW2	Alternative version of Magic Switchboard
Updated	LCD	Supports 20x4 displays. Should work with 16x1, 8x1 and possibly 40x4.
Updated	BATTERY	To set default values if <enter> pressed
Updated	BATTERY2	Corrected output file name and minor formatting changes

Note: Some of these additions and updates require MMBasic v3.1 or later because they use a defined subroutine.

MMBASIC User Program Library  
Version 15 May 2015

29-1-2012

Added	BSEARCH	A binary search routine to find a matching value in a sorted array.
Added	MAGICBOX	A seemingly magic device ported from PicAxe - uses external hardware
Added	ONE-WIRE	A demonstration of using both the defined subroutines and 1-wire features
Updated	BBSORT	With a defined subroutine mimicing GW-Basic SWAP x,y
Updated	NONUMBER	To fix a problem when there is more than one reference to a line number plus support for keywords Open, I2CEN and I2Sen.

Note: Some of these additions and updates require MMBasic v3.1 or later because they use a defined subroutine.

18-1-2012

Added	INVADERS	Space invaders game
Added	MAXIFONT	Font editor
Added	NONUMBER	Removes line numbers and replaces with labels where necessary
Added	ALPHANUM	Aid to cryptography - Shows percent of each letter in text documents
Added	BBSORT	Bubble sort taken from GW-BASIC on-line manual
Updated	CLOCK.BAS	to ask for date and time.
Updated	BATTERY2	To allow <enter> key to select default values
Updated	MMPREY	Minor fix
Removed	RENUMBER	No longer relevant
Removed	TESTPINS	A test program