MICHIGAN ASTROBUGS

July 1984

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Where Will Bugs Attack???

Believe it or not, it's time for our 1984 "Astro-Bash"!!! We decided that because everything went so well last year, we'd still have our bash, regardless of how bad the rest of the Astrocade problems are.

The date for our 'Bash' is Aug. 4 & 5. This year it's going for a whole weekend. I guess you could say, the 'Bugs' are going out with a 'Bang'!!!

Even our meeting place is new. We'll be meeting at the Gladdens' house, 59400 9 mile rd., South Lyon, MI 48178. The phone # is 313-437-3984. To make the bash bigger, we're holding it her, so anyone from out of state can bring their tents or campers, and make a weekend of it. It should be a lot of fun!!!

If you do want to camp out, please write or call in advance, so we'll have an idea of how many people to expect. Of course, the camping will be free.

As far as food availability during the bash, this year we've decided to have a short order kitchen, rather than have to worry about hauling food and grills. We will have a crew ready, to sell hot dogs, hamburgers, chips, pop, etc. As for our campers, we'll see how many of us there are, and all pitch in for our breaklasts and dinners. Or, if you prefer, you can plan for yourselves. We will make sure our grill is available for use.

In regards to a specific time to start, we'll officially begin at 1:00 pm on Saturday. However, those wishing to camp out can come whenever!!!

Goodbye!!!

We stated in our last newsletter that the break-up of the "Michigan Astro-Bugs" was a rumor. However, we also stated that to keep it together, we needed more help in everything we do. Either no one took us seriously, or no one really cares, because we got..... no more volunteers, no more writers. no more ideas, and no more members. In fact, we're also getting no more membership renewals. Because of this, I'm sure you know what's next - no more 'Bugs'!!!

Unfortunately, because of the lack of interest, the "Astro-Bash" will be our last meeting. Its kind of hard to keep a club going with no participation. We can't keep going on a hope and a prayer.

Tournaments

Last meeting we held a fantastic football tournament. We started with six or eight teams competing for the prizes. This went on for most of our meeting, to find the champion of champions.

Because everyone had so much fun, we've decided to go double this time. We're going to have a football and a baseball tournament, so start practicing, because the competition can really get rough!!!

Remember too, that we'll be having tournaments with other games. In fact, we have lots of games and dozens of prizes. We also have our normal age divisions. No sense in trying to compete with the younger generations!!!

We're also going to have several raffles to add to our fun. We have some super prizes, and they're going to go on for both days of the bash. You wouldn't want to miss out on winning something!!

Classes

It used to be that I used this column to announce when we were having our basic or machine language classes. However, since we never got any responses or students, I've changed my topic.

Since we have a ceramic shop in the basement of our home, for those people who are coming to the bash, and don't want to spend all day standing around while the party they came with plays with the computers, we'll let you do ceramics.

Bob Gladden (Don's brother) owns the ceramic shop, and has offered his services to have people working on already cleaned and fired pieces. This will give you a chance to start a few things on your Christmas List (it's almost time, you know.

It won't cost you for the class, only for the ceramics and supplies. You just might have a lot of fun around here this year!!!

Sales

We're going to have some new things in store for you this meeting. We'll have some souvenirs from the 'Bash'. We're going to have some computer mugs, and some 'Astro-Bash' mugs. We'll also have some 'Astro-Bug' key chains. Between now and then however, we're liable to find anything under the sun for you to buy as a keepsake.

High Scores

Sneaky Snake

1-Darrell Haines.....12,993
2-Bob Retelle.....12,353
3-Rick Moses.....12,[illegible]

Cosmic Raiders - Level 9 - 3 bases

1-Ray Moses.....14,110
2-George Moses.....11,150
3-Rick Moses..... 3,775

Space Fortress - Level 9 - 3 bases

1-Geoff Siembor.....10,200
2-Brett Bilbrey..... 8,075
3-Tom Burtell..... 7,800

Galactic Invasion - Level 9 - 3 bases

1-Darrell Haines..... 1,824
2-Rex Belden..... 1,790
3-George Moses..... 1,470

The Incredible Wizard - Level 3-1 player

1-Tom Burtell.....12,940
2-Darrell Haines..... 7,610
3-Billy Zdan..... 5,[illegible]

Astro Battle - Level 4

1-Darrell Haines..... 3,110
2-Jamie Brown..... 2,360
3-Billy Zdan..... 1,560

Astro Pinball - Game #1

1-Don Gladden.....91,980
2-Rick Moses.....85,820
3-Mike Toth.....57,630

Pirates Chase - Level 9 - 3 turns

1-Peggy Gladden.....69,673
2-John Zalewski.....16,638
3-Sue Mullen.....11,158

Pac-Sam

1-Melinda Mullen.....51,820
2-Tim White.....46,780
3-Peggy Gladden.....45,[illegible]

Solar Conqueror

1-Joe McMullen..... 910
2-[illegible]

D-D-DIGITAL MANIA

We've done a lot of basic programing and maybe even a little machine language. So, what's left? Is there any thing else I can do with my computer?

YOU BET!! There is no reason why your Astrocade could not be controlling a robot, guarding your home, or talking.

Of course, these projects would require considerable experience with electronics, mechanics, and machine code to bring them about. But that doesn't mean we can't learn what it's all about.

One thing that we were blessed with is our microprocessor is a Z-80. This MPU is especially suited for this sort of thing. Another is the expansion bus in the back of the machine. These50 connections provide us with everything we need,to do any thing we want.

If this sounds simple, it isn't. But,in a while, you will, at least under- nd it.

Now, DON'T go probing around with a bunch of wires to see what might happen. You could easily damage your machine, permanently!! The purpose of this series is to try explaining the use and operation of these control lines, address lines, and data lines and to,eventually, put them to use. So lets get started.

First off, IF statements are a form of logic that control the flow of a program, that is, true/false, on/off. And if you've, at least, played with machine code, you should be aquainted with "1"'s and "0"'s. This same form of logic is what controls the "hardware" connected to our Z-80 MPU. But how are "1"'s and "0"'s transmitted along copper lines?

Just as 3 volts will power a flashlight,& 110 volts would burn out the bulb, instantly, the signals to and from the computer have to be within certain voltage parimeters. There are several families of logic which are separated mainly by differing voltage requirements for their signals. I won't attempt t discuss all of these, only to compare two of these families.

These two happen to be the most common:TTL (transistor/transistor logic) and C/MOS (complementary metal oxide).

C/MOS requires maximum 1.5 volts for logic "0" and minimum 3.5 volts for logic "1".

TTL requires 0.4 volts maximum for logic "0" and 2.4 volts minimum for logic "1". To make this easier, let's concern ourselves with just TTL and forget the rest for now.

TTL has specific voltage parameters that represent these logic levels "0" low and "1" high as shown by this chart:

LOGIC	LEVEL	MINIMUM	MAXIMUM V.
0	LOW	0.0 VOLTS	0.4 VOLTS
1	HIGH	2.4 VOLTS	5.0 VOLTS

To put this into prospective, let's take an example from page 99 of your Bally Basic Manual. Look at #14,$\overline{RD}$ which is one of the contacts of our expansion bus. This is the read line and it is connected to the Z-80, various components inside the Astrocade and any extended memory you might have attached.

This line is used for various reasons and at various times during the execution of a program. One of which is "reading" memory. When data is requested from a memory location, this $\overline{RD}$ line swings from a high"1", to an active low "0". This then becomes the necessary signal for the memory chips to pass the data along to the data bus. The data bus, by the way, are lines D0 thru D7 which pass the 8 bits that represent 0 to 255 decimal. (Send SASE for free convertion chart). The bar over the top of $\overline{RD}$ means that this signal is active low or that $\overline{RD}$ will only go low during a read operation. This is exactly how memory distinguishes a read from a write operation.

$\overline{RD}$	LOW DURING A READ
RD	HIGH DURING A WRITE

Next time,we will further discuss the expansion bus and, hopefully, understand it. For now, remember the two charts above. I'd appreciate questions or answers, projects or ideas from experts and novices alike.

Ed Horger

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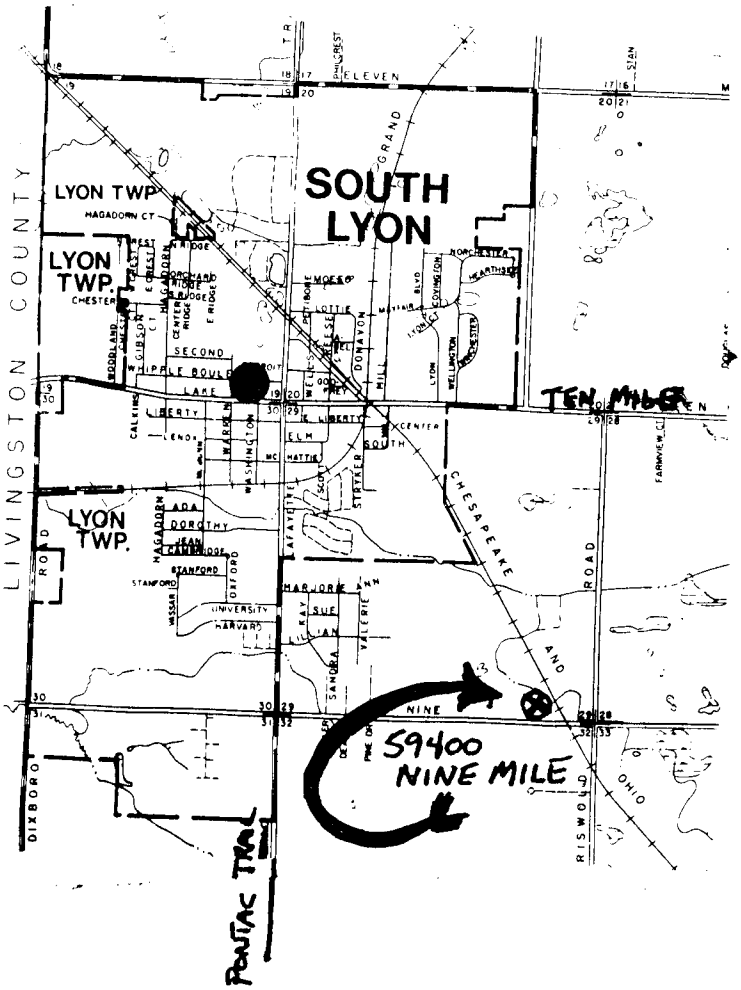

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