

PORTLAND

\$1.50

OCTOBER 1985

ATARI CLUB

In This Issue

NEXT GENERAL MEETING

MONDAY OCTOBER 7, 1985 - 7:00 PM

BPA AUDITORIUM, NE 9TH AND HOLLADAY

PAC BULLETIN BOARD SYSTEM

300/1200 BPS - 24 HRS - 7 DAYS

503-245-9405

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PORTLAND ATARI CLUB

(Not affiliated with ATARI, Inc.)

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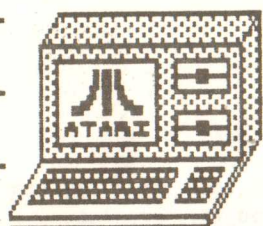
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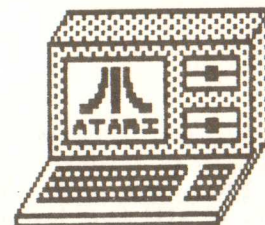
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ATARI CORP.



SIG HARTMAN

PRESIDENT ATARI SOFTWARE

PLUS

OTHER ATARI EXECUTIVES

6:30 P.M.

MONDAY OCTOBER 7TH.

BPA AUDITORIUM

N.E. 9TH AND HOLLADAY

PORTLAND OREGON

CLUB BUSINESS AND ACTIVITIES

President's Column
Chuck Hall

By the time you have received this newsletter, we will have had our first PAC picnic. With any luck it was a nice day, and we all enjoyed ourselves. I am somewhat surprised at the lack of response to this activity. We tried to get it going earlier in the year, but it took some time to get people to warm to the idea. If it wasn't successful, then I guess it will be the first and last annual PAC picnic. At first we thought to make it free to everyone, but then realized that everyone would say they would come, and we would have had to buy for that number just in case everyone did. By charging a minimal ticket price of \$1.00, it made people make a commitment, yet receive a good value for their money. It gave us an actual count of those that were really interested in attending and will let us buy accordingly.

Two incidents at the last two meetings have raised questions about the use of our facility. An additional question from one of our members about who was allowed to sell in the back room has also brought up another sensitive subject. I know that we have been over some of this before, but because it comes up at every board meeting, and now at every general meeting, some firm rules and procedures are going to have to be set and adhered to. I know that the reason many come to the meeting is to see what bargains they can find in the back room, or to unload material they no longer need. I believe that this is an important part of the meeting and I wish to see it continue. I have been accused in the past of attempting to regulate this activity and trying to force the people that sell in the back room to either share their profits with the club or make them play to a set of rules which I have made up. Nothing is further from my mind. The easiest way for me to deal with this is to turn my head and pretend that no problems exist. I'm sorry, but I can't do that. There is too much at stake.

When I talk about what is at stake here, I am talking about the club, and its continued existence. But let me first talk about the incidents I have alluded to.

During the August meeting, an exterior door to the cafeteria area was opened and the alarm went off. Instead of reporting this to security, someone forced the lid of the alarm box off and removed the battery, thereby silencing the alarm. The security guard found this after we had left. From asking the folks in the back room about this, it is very possible that none of our members were

actually involved. But the fact that it was allowed to happen is what caused the problem. I received a letter from the GSA, containing the guards report, and a list of regulations concerning our use of this facility. We have use of this facility by permit which must be renewed each year. This permit can be cancelled by the GSA at any time for infraction of the rules. We came close to having that happen. We must act responsible while in this facility at all times. Following that meeting, our Membership Secretary had to go back to the cafeteria area and clean it up. It had been left in quite a mess. If we are to continue to use this room, it will have to be left clean. We have use of this area only due to one of our members working with Tiffany to allow us that privilege. Again, they can close it off to us at any time, which they have done in the past. So I remind those people who stay in the back, that it is not me, who is going to close them down, but only themselves. If they do not want to be responsible for their actions, then they have only themselves to blame. I know it's only a few that cause the problem, but we all have to share the blame equally.

The second incident happened at the September meeting. A non-member entered the facility and refused to sign in. He was accompanied by a member who would not help enforce our sign-in policy. This incident is under investigation and as soon as I have all of the facts I will report back to you. Let me explain a little about why we have folks sign in if they do not have a membership badge. We are responsible for our own security. If someone comes in and causes a disturbance or takes something not his, we have no way of controlling the situation or identifying the person. If everybody has to wear identification, then it makes it much easier to prevent this type of activity. So it is for your protection, as well as required by the GSA, that everyone that enters be identified. We ask your help in enforcing this. We hate to have rules like this, but they are required for our use of the facility, and to help control undesired activity. Please help us.

Also during the August meeting, Supra Corp., (formerly Microbits) showed up unannounced with a van of merchandise to sell. In the past there has been a strict policy that prohibited any commercial sales in the facility. I did not protest their setting up in the back as I thought that this would be a good opportunity for our

membership to acquire some products at a good price. We have been lenient in that enforcement of the non-commercial sales policy lately. I for one, am one of the leaders of that leniency since I had never seen anything that said we couldn't have sales. Well, now I have. The federal regulations concerning use of this facility prohibit any commercial sales which generate a profit for anyone not organized legally as a non-profit entity. I'm sorry, but that's the rule. I will be addressing this subject again at the next board meeting, and I expect to have a ruling to this effect placed before you at the next meeting. The club is organized as a non-profit corporation and can therefore legally sell at the meeting. Our members will be allowed to trade or exchange their 'personal' goods as long as it is not done in a business manner, and does not violate the GSA's ruling. There is the question of those members who make a practice of buying from other sources just to sell at the meeting for a profit. This still provides a service to the membership, but if it is going to cause us to loose the auditorium, then that is most certainly a disservice. I don't know what the answer to this question is. There is no way really of identifying someone working in this way, but in most cases it is quite obvious who these individuals are. I invited their participation in helping to resolve this situation. If they refuse to help, then they can have no say in the decisions made or the outcome. I will not be party to threats from anyone for looking into this, and will promise to remain as impartial as possible. It is you the membership who have to help guide me in this. If I have to follow the word of the law, and act accordingly, then it will be up to you to help enforce it. I have been accused in the past of not allowing enough time to allow every one the opportunity to explain there side of things, so I hereby am letting you know that by the November meeting I wish to have and open forum meeting concerning this subject. I ask that you let me know that you wish to participate so that I can schedule the time accordingly. I will make have copies of the regulations available at the next meeting. If you have questions about your back room activity then please address them to the board. Companies will not be allowed to come in as Supra did, and those of you who are in business will no longer be allowed to sell at the meetings. You may represent your products, pass out price lists, or

otherwise advertise in good taste, but no cash sales can take place. I ask you to please follow these guidelines and for the sake of the group not cause problems.

What most of this is leading up to is that we need a new place to meet. If we want to support this type of activity, and as I said before, I believe that it is an important part of our organization to be able to offer this service, then we have to go someplace where we can do it. We have looked over many places that have not been satisfactory in the past. Many of them because of cost or size. We need your input. If you wish to see this activity continue, you will have to help. If you can identify a place that is large enough, please let us know. We are going to ask you at that time to help check it out for us, or let you know that we have checked it out before and found it to be lacking in some manner. But if everyone will just mention one or two places, we might find a happy solution to this.

And while I am talking about this activity, let me briefly answer another complaint I have heard from the back room. They say I don't care about them. That there is more of interest to our members going on back there on technical advancements in hardware and software than we could ever mention in the main meeting area. That many of you come only to see what the latest specials or gimmicks available are. Well, I ask "Why are they being so selfish?" Not once have any of them volunteered to present their ideas, products, new enhancements, or whatever to you the membership during the meeting. How can they complain about not being recognized as a valuable part of the organization, if they refuse to join in and contribute to the meeting overall. We are not blind to what all happens back there, but if you in the back have something that can be shared with the rest of us, then why not do so? All you have to do is ask for a slot of time during the meeting. Give us all a chance to learn something new and exciting. It would also help those that are new to our club recognize who to go to if they have technical questions or ideas. They may be looking for help on some mutual problems or design efforts which could benefit all. I don't want you locked out. I would appreciate very much your participation. I encourage you to share with us, and let us share with you.

I have been accused by some in this club, that every action I take is for personal gain and glory. If those few realized the total

continued...

expenditure of time, money, and effort that a board member puts forth in running this club, I think they would be ashamed to make those kind of statements. I have done some things this year that have been different from past presidents, but I also believe in doing things in a professional manner. I can't please all of you all of the time, but I will do what I think is necessary to keep this club one of the most active and well thought of clubs in the nation. That's right. Our reputation is spreading far and wide. Some of that is because of what I do to let people know of us, but again I am doing it for you and the club. There is no reason that we can't be the most exciting, progressive clubs in the world. When you look at the size of clubs in the major cities of this country, and look at what we have done here with a limited population center, they can't hold a candle to us. You have something to be very proud of. You are recognized by ATARI as a key user group. Third party developers and publishers are beginning to recognize that we are a group to be reckoned with. And it can only get better. If you want it to. I may beat my own drum a bit, but I consider myself an ATARIAN before all else as far as this club is concerned.

In a separate article in this newsletter, I will be advising you of what board positions are not going to have incumbents running for re-election. It is that time of year again so watch out. We are going to try and get more of you involved.

Worldwide Users Network Chuck Hall

Many of you have noticed the WUN logo used in some of the articles that we print in our newsletter, or are familiar with the attempts by ANTIC magazine in putting this group together. At this point it has been primarily ANTIC alone in trying to keep the idea alive through the SIGATARI on CompuServe. They have now hired a person to serve as WUN coordinator full time and are proceeding with plans to make this a viable organization.

I was invited to participate in their first meeting on CompuServe. I did so, and the primary result was that there was interest in this organization, and that efforts should proceed in putting it together. Some of the plans of the organization were outlined, and some thoughts about participation were discussed. One major problem I had, was that CompuServe was disconnecting me about every 10 minutes. Pretty hard to stay tuned in when you had to keep leaving and coming back. But, we did agree to meet again two weeks later.

The second meeting was held September 12th on CompuServe and I again participated. This meeting was to discuss the selection of a group of directors to direct the efforts of the organization. Several ideas were discussed and expounded upon. Antic originally thought that a permanent board be established with Themselves, Atari, some Commercial interests, and a user group representative from each of 10 different regions in the country. The user group representative would be chosen based on size of group and amount of activity. It was suggested to modify this by defining what size actually met (newsletter mailing list or active participants) and to define activity as that which led to the well being of ATARI and third party publishers and manufacturers. It was also suggested that for the time being, the board be made up of those that actually were participating, and that a date be set in the future for other group leaders to apply as regional representatives after they had the chance to see what it was all about, and to decide if they really did want to participate.

Representatives of Batteries Included and DRJ were also present and have offered to support this effort in many ways. I will report on this to you once I have received my copies of the meeting transcript. I believe this will be of a benefit to all ATARI users and I will be participating in it as long as I believe that it is a viable organization, and as long as I am still welcome.

This is another indication that our club has earned national attention and that we are thought of as a continuing and strong supporter of ATARI.

*1986 Elections
Chuck Hall*

Here it is October already, time again for us to try and convince you to become more involved in our club. The greatest way to get involved is to join us in trying to run this growing organization. I promise you, it will be a challenging and rewarding experience.

I mentioned at the last meeting that I would announce those positions that would not have an incumbent running for them. I have polled our current board members and they have passed on their wishes to me.

The following will be running for re-election in their current positions.

Tom Brown - Sig Coordinator
Dan Gibson - Secretary/Treasurer
Chuck Hall - President

(I think I almost felt a mass groan on that last name).

All other positions are unannounced and nominations are open. If you wish to nominate someone, or run for the position yourself, please contact me or announce it at the next meeting. Those that have accepted nomination or have decided to try for a position, will be expected to present themselves to the membership during the November meeting, and also to prepare a small piece about themselves for the newsletter. It really helps if we get a feeling for who our candidates are. I don't want you to feel that just because a current board member is going to run for re-election, that you cannot run for the same position. This is your chance to participate or to change the direction of the club, if you do not believe in its current course. You can have a lot more enjoyment and reward from this experience if you really want to. Put you will also have to put in a little of yourself. I hope to hear from you candidates soon.

There are two board positions that are not elective positions. These are SYSOP(s) and Newsletter Editor. Steve and Debbie Billings have agreed to stay on as SYSOPs and we thank them for this effort. Any of you that use our bulletin board know the unselfish efforts put in by Steve and Debbie in maintaining this important part of our club. (Applause)

I have spoken at the last two meetings about Clyde Pritchard stepping down as Editor. Clyde has had this position over two years now, and has done one heck of a job. I can't praise him enough for the efforts he has put forth. And of course I

don't want to forget Debbie. When Clyde has to work, or needs help to get it all done, she is right there. The newsletter SIG is a team. We all have our responsibilities and duties. It is a team effort, but when you get right down to it, it takes someone like Clyde to get it all put together and to put out a product that we can all be proud of. I know that I have mentioned this before, but we are mainly known around the country by the image we put forth in the newsletter. We have seen it grow from a few pages stapled together, to the polished product it is today. I have received compliments on the newsletter from ATARI and other user groups across the country. It is a product the Clyde and Debbie, and for that matter, all of us can be immensely proud of. We don't want to see this end. Clyde has done a great job for some time now, and he wishes to take a rest. We are going to miss his dedication and efforts.

But now it is time for someone else to step forth and take over. Normally you would look inside the Newsletter group for someone to step up and assume responsibility. But, those of us who work on or contributed to the newsletter, are also the key players in other parts of the club. To take on this additional responsibility is just not possible for most of us. Therefore we must look to you our membership for a new editor. But, don't forget, the rest of us will still be there. And of course Clyde and Debbie will still be there to help out. If you are in the least interested then please contact Clyde or myself and let us know. We desperately need your help and welcome it.

Ok, in quick review here are the positions that have no incumbent running for them; Vice President, Membership Secretary, Club Librarian, Special Projects Coordinator, Program Chairman, and Sergeant-at-Arms.

We will need to fill these positions so please give them your consideration.

Board Meeting Notes Dan Gibson

The August board meeting was held at 7pm on August 21st at IB Computers. Attending were the following, Jim Link, Clyde and Debbie Pritchard, Chuck and Jean Hall, Dave Holliday, Lloyd and Floyd Suiter, Jim Berry, Steve and Debbie Billings.

At the September general meeting Lloyd Suiter will be premiering a new PAC club disk, SkI Construction Set. This is an excellent BASIC program. Lloyd will also demonstrate a new air traffic controller program called Kennedy Approach from Microprose. Dave Holliday will bring us up to date on the PAC picnic. The picnic will on Sunday, September 22nd at Creston Park on SE 42nd and Powell. Hamburgers, hot dogs, chips, soft drinks, etc. will be provided by the club. Price is only a dollar. Under 6 are free. Gates open at 12:00 noon. Jerry Anderson will give us an update on the Kerr Center. We will be selling 30 pieces of Electronic Arts software at \$10 each. The profits will go towards the purchase of a disk drive for the kids at the Kerr Center. At the September meeting we will have a bunch of door prizes to give away including Kennedy Approach, Paper Clip, Print Shop, Halleys Comet, T-shirts, bags, and PAC software. Free tickets will be passed out at the door. Special Interest Groups (SIG's) will be introduced and explained by group leaders.

The booth at Washington Square over Labor Day didn't materialize due to a lack of volunteers. We will try again at a later date. The club will be purchasing two 1050 disk drives for club disk duplication. By making the copies ourselves we save about a dollar per disk. We will be turning in an insurance claim for the screen that was ripped off at a prior meeting. (To whoever took the screen, I hope your @!&#?% rots off.) An article in USA today reports that 520ST's are selling well. 50,000 ST's have been sold so far with 10,000 of those in the USA. 150 programs for the ST's may be out before the end of the year. It has also been rumormongered that AT&T is interested in marketing the 520ST under its own name and that Atari will license the Unix operating system from AT&T for the ST. At the October meeting Sig Hartman, Dave Duberman, and possibly a Tramel or two will be our honored guests. Don't miss this meeting and come early for a good seat.

As of this writing, the balance in our checking account stands at \$2,037. At the last meeting software sales totaled \$192, and \$600 for memberships.

Membership Notes Debbie Pritchard

The P.A.C. membership is still rising. That's good news! Once again the September meeting was a busy one for me. It is always fun to meet the new people. I just wish I had more time to talk to each one of you.

Let me get out my soap box for just a moment. It is once again time to think about the new year and new board members. Once again it is time to ask yourself what can I put back into this club. This year on the board has been very rewarding for me and also very busy. For example last year in September we mailed 353 newsletters to the membership, this year in September we mail 487, so we have add a lot of new people to our group and we have kept a lot of old faces with us. But if some of you don't come forward with some help for us old board members we are going to get really burned out. Most of us have been involved for over two years and it is time for some new faces and new ideas. Think about what you can do for your club and also think about the good feelings you will get when you put some of yourself into this club. It is really a lot of fun! No more soap box from me, but thank you for listening.

Now, to the good stuff. We added 18 new memberships in the September meeting and welcomed back several old members with renewals. Welcome to all of you.

New Members

Frank Stendal	Jon Roulet
Joan Portenga	Gary J. Lacara
M. Dwane Graven	Leon Selvidge
Janet Horellou	John Tangney
David Hayden	Doug Dingus, Jr.
Sharon Moore	Roger Stevenson
Dale Thomas	Steve Gentis
Gary Douglas	David Sigafoos
Chae Shin	Lauris Rodier

See you at the October meeting.

Special Interest Groups
Thomas Brown

SIG activity has been slow these past few months, but now that summer is almost over I expect SIG interest will increase. To help those of you who are not familiar with SIG's, each month I will try to **SPOTLIGHT** one of the groups with a photograph of that Sig in the Newsletter, time and space permitting. The Beginner's were spotlighted at the September General meeting, and I will continue this until all SIG's are spotlighted.

Business Applications

Is still on the inactive list, but we'll be working on this one, because business applications is an important area for the ATARI COMPUTERS, both 8 bit and 16 bit.

Meeting Information

Here is a list of meeting dates/times for some of the SIG's:

Assembler SIG

Dates: 1st & 3rd Tuesday
Oct 1th & 15th
Time/Place: 7:30 PM. / Call.
Leader: Clyde Pritchard
Phone: 648-0461

Beginner's SIG

Dates: 2nd & 3rd Tuesday
Oct 8th & 15th
Time/Place: 7:00 PM / Call.
Leader: Elanna Schlichting
Phone: 285-4471

Modem & Communications SIG

Dates: 2nd & 4th Monday
Oct 14th & 28th
Time/Place: 7:00 PM / Call.
Leader: Jerry Andersen
Phone: 655-3914

ATARI ST SIG

Dates: 2nd & 4th Thursday
Oct 10th & 24th
Time/Place: 7:00 PM / IB Computers
Leader: Pat Warnshuis
Phone: 246-3724

For information on Sig activity call SIG Leaders or myself, Tom Brown, 644-6674, I'm always looking for new ideas and ways to help the existing SIG's, so let's hear from you.

Enjoy Your ATARIS!

Beginner's SIG
Scott Burr

During the two weeks in August in which the Beginner's SIG meetings were to be held, Elanna was on vacation and asked if I could head the group while she was gone.

The first meeting consisted of continuing work on the PAC introduction pamphlet. Using any and all ideas from the people who showed up at the meeting, we started work on the pamphlet layout. We included information on what the PAC club has to offer its members and a small description on each of the SIG groups without compromising the limited space available.

When interest started to wane by the majority of the people there, I decided to conclude the construction of the pamphlet and gave out printed copies of the ideas that came from the group. That way, everyone could take it home and expand on them for the next meeting.

The rest of the first meeting was taken up by a lengthy discussion on Atari DOS 2.5. We covered the differences between DOS 2.5 and DOS 2.0; the addition of a new function to DOS 2.5, and the inclusion of four additional programs (RAMDISK.COM, SETUP.COM, DISKFIX.COM and COPY32.COM) that enhance the usefulness of standard Atari DOS.

At the second meeting we completed a rough design for the pamphlet. Here I wish to give credit where credit is due, James Miller who brought his printer and word processor so we could get an example of what the pamphlet will look like and who also did most of the typing, Randy Leong for designing and working on the front cover of the pamphlet, Tom Comerford for helping initiate the work and keeping the whole thing going, Quinten Rippey for the use of his copy machine that allowed us to cut and paste to our satisfaction, and finally, to all who attended the past two meetings for their participation and ideas.

Well, that's all for now. See you at the next meeting.

*Communications SIG
Jerry Andersen*

The Modem SIG has been meeting twice each month since June and we had 10 people at our last meeting. We have been working on a couple of disks for the club; one for the 1030, one for the MPP and one for Hayes modems. We usually have some type of a demo at each meeting, for example our next meeting on Sept. 16th. we will be looking at a modem program called amodem 7.0. This program is supposed to work with the Hayes, MPP, 835, 1030, Volkmodem, Mark II, and other modems. It looks very promising and I hope it will do everything that it claims. If you are a beginner, come to one of our SIG meetings and we will make every effort to help you understand you modem and how to use it. See you at a Modem SIG meeting.

*Kerr Center
Jerry Andersen*

On September 2nd I was able to get the Kerr Center computer up and running. We had 7 game cartridges that were donated at the August meeting. One member of the club donated a 19 inch color TV to use with the computer. Its an old set and may need to be replaced. I donated an old computer cabinet that I didn't use any more. I received another game cartridge at the September meeting and we collected \$11.78 at the door. We will have the jar at the sign-in table again at the October meeting. We need to raise enough money to at least get them a disk drive for their computer. The kids at the Kerr Center really enjoy the computer. I wish to thank all the people who have donated things and money for the Kerr Center.

*Beginner's Class
Elanna Schlichting*

Need help getting started?
Don't know where to go?
We've got the answer!

The Beginner's SIG will give an introductory class to help you get your computer up and rolling. It will begin in October, and will be four weeks long. The time and dates will be announced at the October meeting.

Free to PAC members. If interested, call me at 285-4471.

SIG Contact List

The following is a list of our current groups and the contacts for each:

ADVENTURE GAMES	
Russ Schwartz	646-6418
SIGASM (ASSEMBLER)	
Clyde Pritchard	648-0461
ATR-8000	
Jim Scott	281-6724
BEGINNERS	
Elanna Schlichting	285-4471
BULLETIN BOARD	
Steve & Debbie Billings	246-1751
BUSINESS APPLICATIONS	
Thomas Brown	644-6674
MODEM & COMMUNICATION SIG	
Jerry Andersen	655-3914
NLSIG (NEWSLETTER)	
Clyde Pritchard	648-0461
ST SIG	
Pat Warnshuis	246-3724



ATARI 520ST NOW IN STOCK!!

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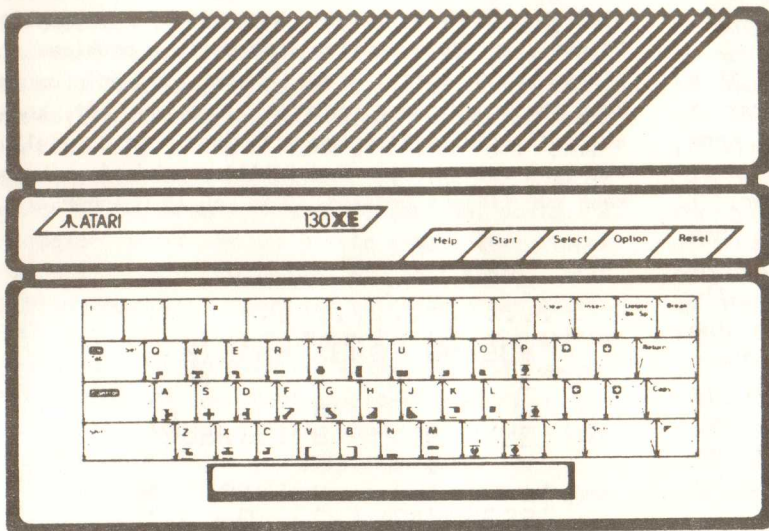


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NEWS AND REVIEWS

ATARI Visits Portland
Chuck Hall

If you remember some time ago, I mentioned in my columns and at the meetings that I hoped one day to be able to announce that ATARI would visit us. I have not let up in that effort, and now it is coming to be. I encourage all of you to come to the October meeting and join me in welcoming Sig Hartmann, President of Atari Software, and Dave Duberman, User Group Coordinator, to Portland. We are still hopeful that maybe Mr. Jack Tramiel and/or other members of his family may also be able to join us. I believe this visit is a positive sign that the Portland Atari Club is getting the recognition due, of being one of the strongest supporters of ATARI. We held in there during the real down days of ATARI, and we are still holding in there while the company is going through a complete re-organization and re-growth period. ATARI is nothing like it was in the old days. It is hardly a skeleton of its former self. We are very proud and happy to be the object of this visit. So come early. Bring your cameras, your questions, your problems, your well wishes, or whatever, and plan for one of the best meetings this club has ever had. I have invited the officers of other Northwest Atari clubs, and retail stores to join with us also. It should be quite a night.

I might pass on a few of my thoughts at this time on ATARI, and what it means to me. First of all, I am an ATARI owner. Those of you who know me, know to what extent that means. When I first started looking for a personal home computer, I looked at as many as I could. At that time, I had been in Data Processing as a professional for 16 years. So when I was looking, I knew basically what I really wanted. After evaluating the available machines, their capabilities, and their prices, the ATARI 800 was a natural. Actually, if I would have had \$2000+ I would have probably gone for an IBM but luckily I didn't. Since that time I have kept up with the latest products of ATARI and have not been disappointed yet.

As most of you know, I visited ATARI during this past spring. I was amazed at what I saw, or should I say, what I didn't see. From reading about a company that had thousands of employees, and buildings galore, it was something else. First of all, there was hardly anybody around. Wires and cables were strung everywhere. The company had really trimmed down. They were starting over, and brought themselves down to a size that was manageable and yet not so hard on the pocketbook. But everybody I talked to, had an

attitude that this thing was going to succeed. In my younger days (not that long ago) I too would have the same energy level on the job and work all of those crazy hours. They do seem to be a dedicated bunch down there. Yet, I have very seldom had trouble getting someone to respond to a question or help resolve a problem. Even during all of the delays getting the ST's, I would get hold of somebody to talk to. I may not have got the answer I wanted, but they answered.

I am not an expert on business and business economics. But in reading some things about Jack Tramiel, a couple of things stand out. He is going to make money. And he learns from past experience. When and/or if they ever go public, I will probably pick up some stock just to see what will happen to it. But that is only a personal ambition, and I do not in anyway suggest that anybody else do the same just because they read it here. I think that we are once again getting in on the ground floor of a new and exciting ATARI and that it may be a very pleasant ride to the top once again.

So if you have some thoughts you wish to share with us or ATARI please come to the October meeting. Everybody must have their membership badges. We are expecting some seating problems so please come early, take a seat, and help us to keep the crowd under control. I do not yet know what all ATARI will bring with them, but hopefully we might see some new and exciting products. Lets keep our fingers crossed. See you in October.

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.....
. HI CHHIKERS PARSER .
. I L .
. K S L .
. ZORKIII S A L .
. O F E A .
. ZORKI R T D .
. C THEMITS .
. R N F A .
. E A O A N I E .
. ENCHANTER L I L S .
. R S H P D .
. INFOCOM T T A .
. S T X E .
. SUSPENDED .
. C T .
.....

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ANSWERS: ADVENTURE

Mindwheel
Steve Billings

Way back when, Synapse software company announced that they were coming out with a new text adventure game. The first one was to be called "Mindwheel". This adventure game was foretold to be the next generation of text adventure game. In fact it was called an electronic "novel". Which I guess is supposed to be classier than a text adventure. Anyway it was announced, advertised and talked about approximately 6 months before it finally appeared on the shelf just recently.

I am still awaiting the other "novels" announced called "Essex" (space ship rescue), "Brimstone" (knights of the round table), "Breakers" (interplanetary smuggling), and "Ronin" (Japanese Samurai).

Part of the problem must have been because Synapse was bought out by Broderbund, so they had to change all the labels to say "A Synapse and Broderbund Production". These things take time! Well, Mindwheel is here now so I will tell you about it...

The packaging harps on the point that this program is an "Electronic Novel". Along with the software is a small hardbound book which is the introduction to the game. You begin by reading the book that explains the premise of the game. The plot is you are in a world of the future where anarchy is threatening to destroy the world. There are riots and assassinations all over and other bad things. The government is losing hope of restoring any order. In desperation they contact a Professor Virgil who has a wild theory that claims the electrical discharges of the human mind continue bouncing around the universe after death. With his big computer he can tap into the matrix generated by these bouncing brainwaves and reenter the thoughts of important people in history.

This is where you slip your two disks into your **two disk drives** and slip into gear.

Via your Atari you enter the minds of some famous people of this fictitious universe. The plan is that you will gain knowledge and experience from these minds that will lead you back to the beginning of time where the first man named "Cave Master" invented things like the lever, the flint knife, cave paintings and ritual chanting. The Cave Master was the proud owner of an object called the Wheel of Wisdom that helped to do these things. This is the thing you are after. The Wheel of Wisdom, if you can obtain it, is expected to save the world from destruction.

The style of the game is bizarre. Since you

are entering into the bouncing echoes of minds, you can expect to run into some strange people and events. The quality is dreamlike and often nightmarish. Neat, I liked it a lot. I think this is the programs strongest point.

There are some word puzzles in the game. If you like riddles, it has several good ones for you. Some of the answers are imbedded in other parts of the script. There are hard riddles too, so be prepared for some head scratching and hair pulling. Thats what makes it fun, right?

The game has a good a vocabulary and a sophisticated parser. It can understand complex statements such as "Pick up the candy bar and the rose. Go south." Unfortunately it is also very slow, much slower than Infocom games like "Zork" or "Hitchhikers Guide". At times it is exasperatingly slow. It first reads your input, analyzes it, then prints it back to you, then searches for a response and prints that. It spends a lot of time accessing the disk drives. Text adventures are time consuming enough without this much clunking around.

I briefly mentioned earlier that the game is on two disks. Ergo it requires two disk drives running at one time. If you don't have two drives forget it or borrow one. Also on the back of one of the disks is a free bonus. There is a sector copy program called Syncopy. It is great because it will sector copy in standard density, enhanced density and double density. I strongly recommend that you back up the game disk immediately. I kept getting disk read errors when I tried playing the original disks, but had no problem using the back up copies. It was as if the originals were only lightly imprinted if that is possible.

The disks are not copy protected, but to start the game you have to look up a word in the book part and type it in. It asks for a different word each time. This is an effective form of copy protection, but is a real pain if you misplace your book.

There also seemed to be a few lingering, bugs in the game. Maybe it was just my copy but, there is one point in the game that if I do something the computer starts reading everything on the disk. This is good if you want to cheat, but I am not that kind of guy, heh heh..

I liked this game. The writing was good, the challenge was fair, the concept terrific. If they can just speed up the parser and clear up all the bugs they would have a real winner.

P.S. A special thanks to Todd for responding

continued...

to my request last month for help on Ghostbusters. Either he is the only one who has finished Ghostbusters, or else he is the only one who reads these reviews. I would like to hear from everyone playing Mindwheel also. I am having a problem dealing with the soldier with the stone legs.

Slipped Disk Lloyd Suiter

This is a review of an old program. An old program you say! Yes, an old program. In fact this program is so old it was written for the Atari 400/800 48K system. So why do a review of an old program, because as the disk librarian for the Portland Atari Club all I ever hear is what's new for my Atari, not what's good for my Atari. With so many new members and new Atari owners I really wish that people would take a look backward and see what has already been done on the Atari computer and then discover what a great product we really have.

At this time I am using a word processing program called Word Magic/Graphic Magic. I know we (you and I) already have a word processing program so why do a review on another one. Well, I'll tell you why, because, so there! At least that's the answer I always get from my children when I ask them why. But to put it in different terms the reason I am reviewing this program is because I want to show you what this program is capable of and then do a little comparing to another famous machine.

O.K. lets get down to brass tacks. What does this program do? Well, I already said that it is a word processing program so it does word processing stuff. For example: you can Edit files, Load files, Save files (supports more than one drive), print files, etc. etc. But it also does some special things like print preview. That means you can get a look at what your letter will look like before you print it. It also has several DOS functions built in, 3 speed scrolling up and down the letter, and all the basics like search command, block move, copy, and replace commands.

It has insert mode or overstrike mode and you can change back and forth on the run. It tells you how much room you have left in memory right on the screen, does error reporting in human english not computer talk, and supports many different printer commands. In fact the instructions that come with the program have almost three full pages of information on different printer commands. All in all for the money it is a good a word processor as Atariwriter, Hompak, Text Wizard, or some others.

But now for the good part. What machine uses a mouse to control the cursor? No this program doesn't have a mouse that goes with it but you can plug in a joy stick, or track ball that works just like a mouse (you can also set the speed of the cursor control) and boy is it smooth. Now I know that other machine has a lot more memory than my hard at work little old 800, but you can chain any amount of files together to form a very long letter if you want. You're still saying the other machine will do more. Well hang on! How about graphics build right into your letter. That's right, this program will let you put graphics at any place in your letter, and no you don't have to use some low powered drawing program. How about using Micropainter, Bgraph, Koloa Pad, Atari Touch Table, or any Graphics mode 8 picture. Now boy that's power.

Have you guessed what computer we have been talking about? Sounds like a hamburger. Well for the money you could buy a lot of hamburgers. Now lets see what all these capabilities cost you in the world of Atari. You could buy an old 800 or new 800XL for less than \$100.00, you need a disk drive - used 810's cost less than \$100, and a printer (you need an Epson or Gemini for graphics) under \$300, and an interface less than \$60, grand total \$560. Oh, yes I forgot the cost of the program. you can get the program from APX Classics from Antic, cost \$19.95. Can't beat that! The cost of the Mac not including the \$300 or so for the word processing program around 3K. Hang on to your pocket book. Apple strikes again.

Oh did I mention mail merge how about a typing buffer headers and footers being able to add text to your pictures \$19.95 Atari your the greatest!!!!

Editor's Note: A summary of Word Magic's features can be found elsewhere in the newsletter.

Word Magic
Lloyd Suiter

Blue Collar Software Presents, WORD MAGIC

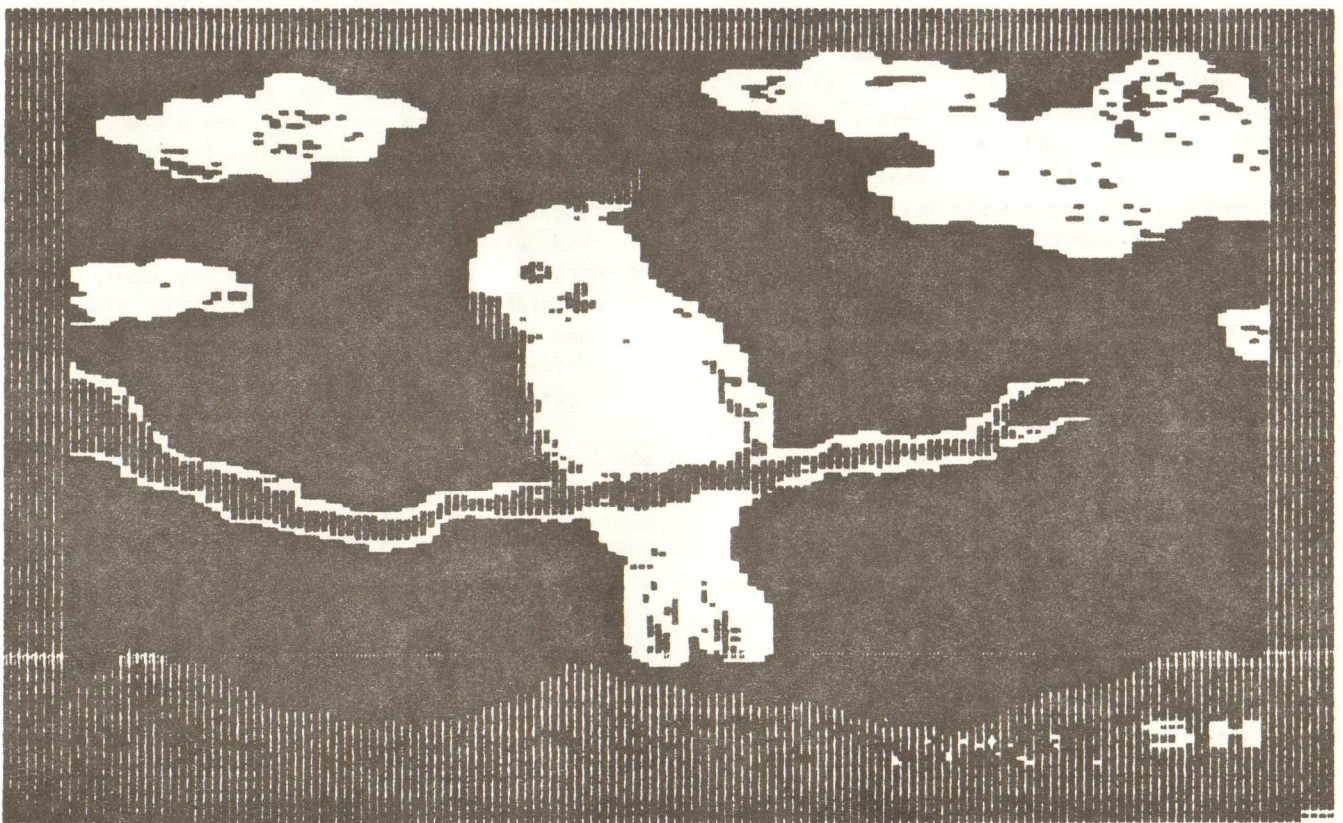
Most word processors print with one character style even though many printers support different styles. When using Word Magic; printing italic, enhanced, double size, underlining, superscript, and subscript characters are fully supported. Any of these styles can be combined at any time, and the printed lines will still justify correctly. Pictures from most drawing programs can also be inserted anywhere within a page. Try that with any other word processor.

Word Magic is a full feature word processing program. Here are just some of the features:

- On-line help files
- Automatic print formatting
- Full screen cursor control
- Cursor to start of line or file
- Move block of text to new file
- Delete block of text
- Global search + replace
- Display of room available
- Auto page headings + footers
- Scrolling (3 speeds)

- Chain files together
- Five line spacing values
- Super + Subscripts
- All machine language
- Type ahead buffer
- Automatic whole word wrap
- Cursor to end of line or file
- Search with conditional char.
- Copy block of text
- Search + replace
- Repeat last search
- Tab stops
- Auto page numbering
- Use joystick or Trackball
- Insert files
- Hanging indent for outlines
- Print special characters
- On Screen prompts

Any Atari graphics mode 8 picture; B-Graph, Micropainter or Micro-Illustrator (Koala pad, Atari Touch tablet) can be inserted in a page. Also, text can be added to a picture before printing.



HOW TO DO IT...

Build Your Own Custom Computer Desk
Larry Layton

Have you ever wished you had just a little more room on your computer work station to place manuals, floppy disks or notebooks? Ever felt cramped because your work stations has a computer, disk drive, modem and monitor all piled together on a small desk, with no extra elbow room? Well, if you've thought about any of the above questions, then you have surely gone out and shopped for a really nice sized comfortable computer work station.

But what happened? Well if you are like me, you found out real quick that those real nice and comfortable computer work stations can cost you a small fortune!! Needless to say, my hopes of having a great work station were shot down.

Well what would you say if I told you that you could have that "dream work station" for under \$100.00? Do I hear any bidding for one real nice computer desk at \$100.00? You really don't look to be suprised... but what if I told you that you could have the "dream work station" for under \$50.00!!!! Oh... now you want to be my best friend!!! Well listen up friend, because there is one little catch (you knew there had to be some strings attached). The catch is, you've got to build it yourself!!!

Now don't go and throw this page of the newsletter in the trash just because you cannot cut a straight line with a electric saw. I've got it all solved for you, because I know the answer, after totally wrecking the first desk I tried to build. So I got smart and checked around town, and I found a sure way to build a great work station that almost anybody could build (except maybe your average state representative or congressman - they don't have enough extra time, as they are to busy figuring out how to raise taxes). All you have to do is follow the step by step instructions listed below (which even a 4 year old could do... right?).

Supplies Needed

(1) 4' x 8' x 3/4" sheet of "Dakua" (pronounced dah-ku-ah) plywood, which can be purchased from Parr Lumber for \$33.60 per sheet. You can use some other type of plywood, but this Dakua stuff is beautiful! This Dakua plywood will be used for the legs, leg back brace, desk top and monitor stand.

(1) 2" x 4" x 8' piece of wood, get the type called "clear stock" as it is free from knots and looks real nice. This can be purchased from Parr Lumber. This wood will be used for bracing the legs of the work station.

Approx. 24' of 1/4" hemlock "screen mold", which can be purchased from Parr Lumber for \$0.10 per foot. This "screen mold" will be used to cover-up all the "rough" edges on the plywood, and it will give the work station a very finished look.

A few sheets of #180 sandpaper for wood, which can be purchased from Parr Lumber or Fred Meyer real cheap.

Some 1-5/8" drywall screws, which can be purchased from Parr Lumber or Fred Meyer for \$2.75 per lb (you will need about a 1/2 lb). These work real nice, as they have a real good finished look and screw-in flush to the wood surface. These screws will be used to screw together all the pieces of plywood and 2" x 4" x 8'.

Some #3 x 1-inch "brite finish" finishing nails, or if you prefer, some 1-inch colored "paneling nails" which will match the color of the wood. These can both be purchased from Parr Lumber or Fred Meyers. The cost is, \$0.69 per lb for the #3 x 1" nails; or \$0.79 for 2.5 ounces of the colored paneling nails. These nails will be used to attach the "screen mold" to the rough edges of the plywood pieces.

A 32 ounce can of "Watco" danish oil finish. This can be purchased at either Parr Lumber or Fred Meyers for about \$6.00 for a 32 oz can. I like the "natural" color as it really shows off the beauty of the Dakua wood. Note: you can use any finishing type materials you prefer, but I really prefer the Watco danish oil finish as it is easy to use, provides excellent results and gives long lasting protection to the wood.

You will also need the following tools; a "foam rubber" tipped paint brush to apply the Watco finish to the wood, a drill (either electric or hand type) and either a phillips or regular screwdriver.

Notice I never said you would need an electric saw or table saw! Well the reason is: if you purchase the Dakua and 2" x 4" x 8' wood from Parr Lumber, they will pre-cut all the pieces of wood into the exact sizes you want!!! The additional cost for pre-cutting the wood is only \$1.00 per cut. While this may sound like a lot to some of you, the total cost of cutting all the pieces for the work station is less than \$10.00 - and you never have to worry about making that "fatal mistake" if you were to cut the wood yourself (nothing worst than spending \$33.60 on Dakua "firewood" because you cut it wrong or crooked).

Getting Started

First either use the plans I have provided or design your own work station. Then be sure to lay out the way you want the dakua wood to be cut out, because if you do not specify exactly how you want Parr Lumber to cut the wood they may end up making "wasteful" cuts out of the wood you just paid for!! So be very careful and plan out on paper exactly how you want to pieces to be cut out from the 4' x 8' sheet of dakua plywood.

After Parr Lumber has cut your pieces of wood, take them home and start sanding off all rough edges with the #180 sandpaper. There is no need to sand the "face" of the wood as it will scratch the beautiful grain patterns in the dakua wood, so just sand the rough edges!!

Next apply the Watco danish oil finish to each piece of Dakua wood, and to the "screen mold". You had better read the directions on the container, as I don't have enough room here to list all the instructions and precautions. One major note: This Watco stuff is very easy to apply, all I did was paint it on and let it dry! When the first coat of finish dried, I applied a second coat and the results were super!! Just be sure not to smoke when applying this stuff, as it is real flammable (in other words... try not to burn down the house).

Once all the finish has dried you will be ready to start assembling the pieces. First start by cutting pieces of the "screen mold" to fit over the edges of the Dakua plywood. You will not need to cover all the edges of the plywood, as some of them will be hidden from view. I prefer to cut each piece of screen mold as it is needed, by holding it up to the edge of the plywood and marking where the cut should be (I used a steak knife to cut the screen mold....really!).

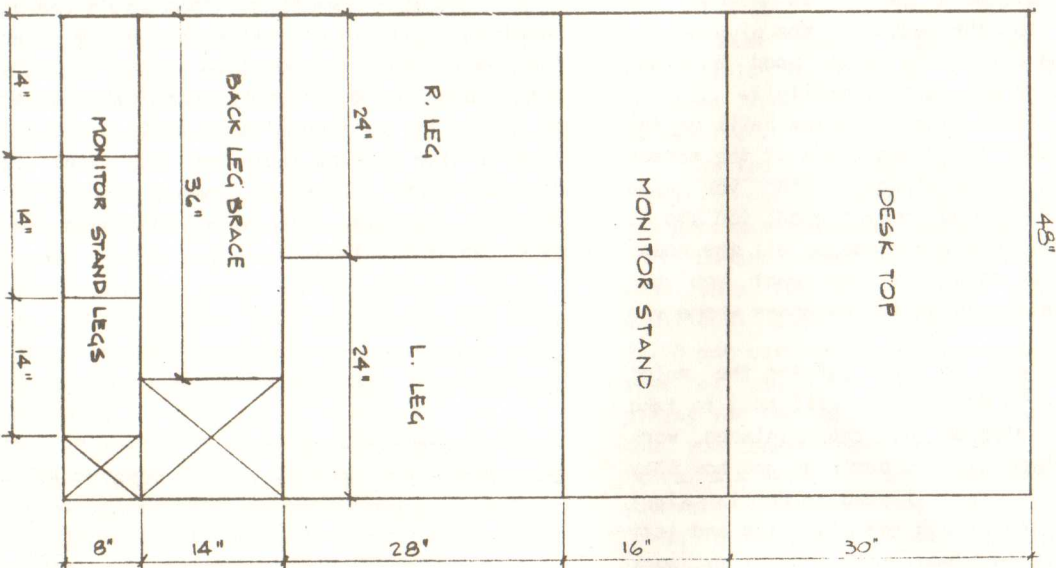
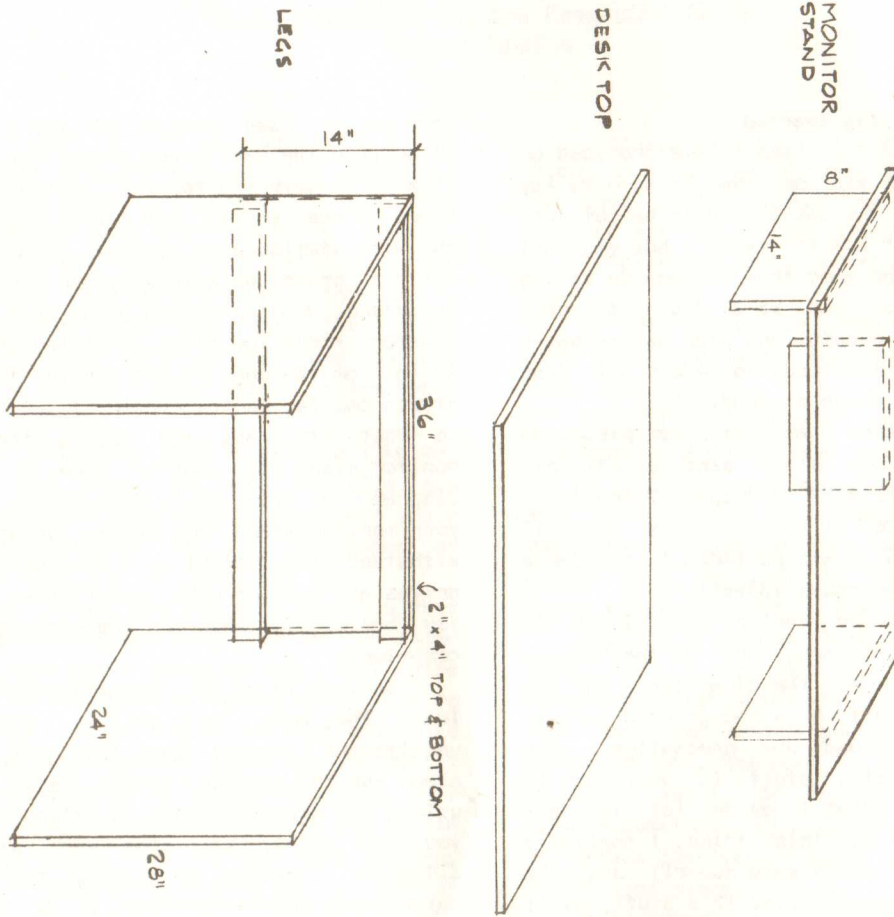
Next use either the finishing nails or the paneling nails and attach each piece of the screen mold to the edges of the plywood. After you have all the pieces of plywood looking good, you should use the #180 sandpaper and clean up all the rough edges on the screen mold. If you want you can re-apply more Watco finish to the areas where you did the sanding.

Now you are ready to start putting the major pieces together. To do this you will need to take a look at the diagram of the finished work station. Note where all the parts go and how they are positioned. All you will need to do is start with the legs and attach the right leg and left leg to the back brace piece. When I built my work

station, I used pieces of the 2" x 4" x 8' to strengthen the back brace piece. One piece of 2" x 4" x 8' at both the top and bottom of the back brace piece worked out really nice, and it made the work station very stable. Then assemble the monitor stand by attaching the three legs to the top piece. One leg should go on each side on the monitor stand top piece. Each leg should be about 2" in from the edge of the monitor top piece. Then attach one leg in the middle of the monitor stand so that its ends are facing the two outside monitor stand legs (better take a look at the diagram on this one). This middle leg will give your monitor stand the extra support needed to withstand the weight on a monitor, loads of disk drives and lots of other stuff (like dinner and a few beers, for when you are working late on your computer).

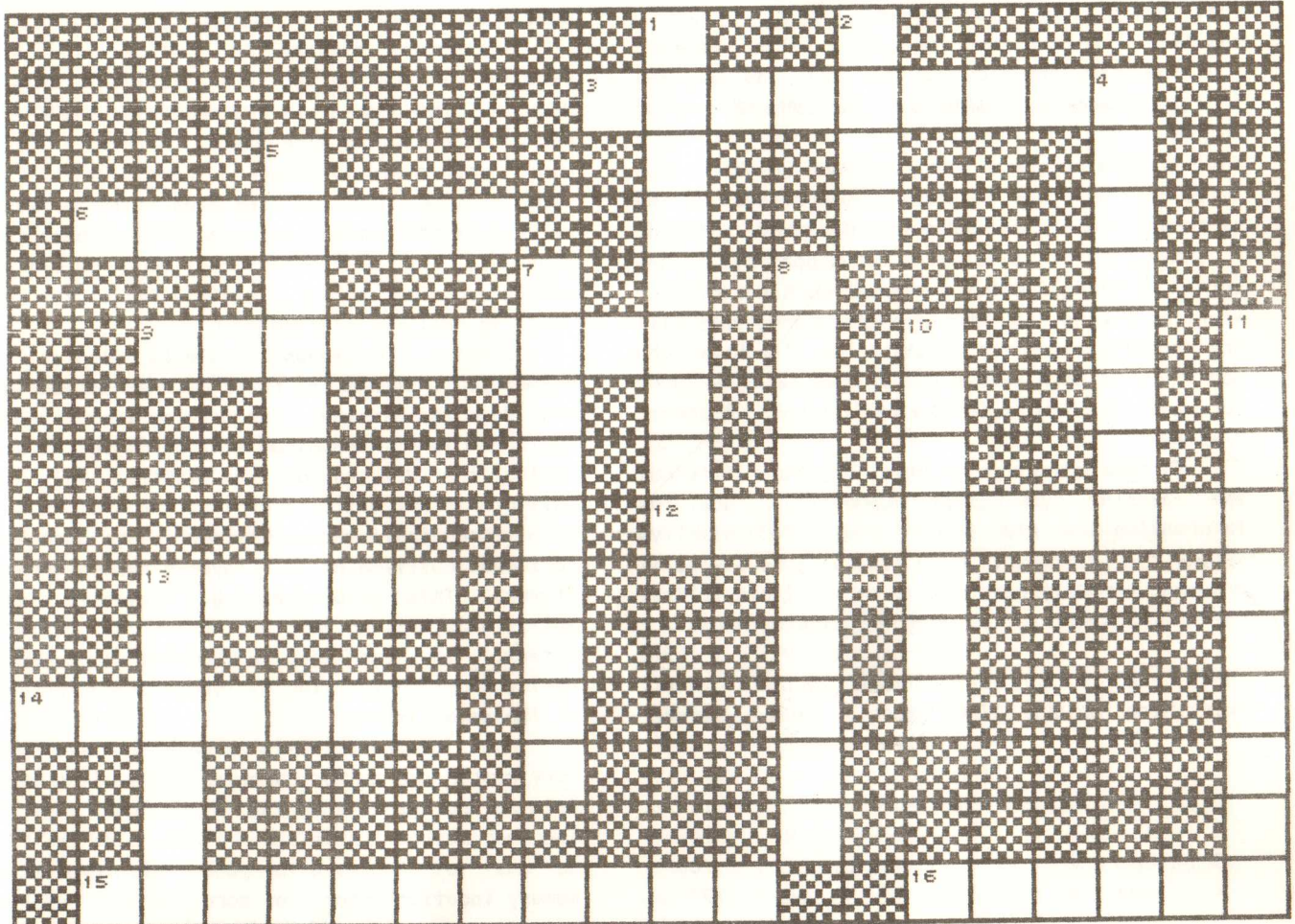
Believe it or not, you are done!! I prefer to leave the work station in three separate un-attached pieces: the leg unit, the desk top piece and the monitor stand. This way, by not using the drywall screws to attach them together, you can easily move the work station to a different location by simply taking the three major parts apart. Remember, if you build the leg unit sturdy and strong it will support your computer and other items really well.

Once you have built your new work station, the first thing you will notice is just how great it is to have some extra elbow room. All of a sudden you've got plenty of room for manuals, extra floppy disks, some notebooks, and even a picture of your spouse (or maybe a picture a your dream "520 ST"). Having all this extra space will require a little discipline though, as if you are like me... you will soon find yourself using the extra space to "drop" your work-clothes after work or to pile up mountains of dirty dishes. But it sure is nice knowing that when you want to get down and dirty and really "pump some plastic" keys on your computer, your work station is there and ready for the action.



Crossword Puzzle
Russell Schwartz

ADVENTURE



This crossword puzzle's theme is adventure games. I'll give you one hint in addition to the clues that follow. The answers (except for two) are adventure game titles. Here are the clues.

Across

- 3. Rude awakening from cold sleep.
- 6. All these adventures come from here.
- 9. Zork IV?
- 12. You saw it happen, but who?
- 13. The one that started it.
- 14. Meet the Dungeon Master.
- 15. _____ Guide to the Galaxy.
- 16. What these are famous for.

Down

- 1. Aye matey, one of the new ones.
- 2. What kind of adventures these are.
- 4. Whodunit?
- 5. One more after this. (But what will they call it?)
- 7. Space case.
- 8. Floyd: I found a ball.
- 10. Holes, holes, everywhere, but not a pyramid in sight.
- 11. We all live in a yellow.....
- 13. Dragons and unicorns and princesses, oh my!

Display Lists Larry Brigman

Have you tired of Basic programming because all of your displays look so normal compared to that new game you just bought? If you are new to the Atari computer then you have a lot to learn.

The Atari has 3 custom VLSI chips helping the 6502 processor do some of the house-keeping chores. One of these chips is the ANTIC, a full-fledged processor in its own right. The ANTIC chip controls the display and allows all the different graphic modes to be programmed. Listing 1 shows all of the display modes possible on one screen. Listing 2 shows the inner-workings of your Atari by making page zero screen memory, this will not normally crash the machine as long as you don't try to poke values blind; type GR.0 <RETURN> (or use <SYSTEM RESET>) to return to a normal display.

To take advantage of this programmability of the display you must understand how the information is displayed. The ANTIC displays memory in different mode according to a special program, normally referred to as a display list. The following is a list of ANTIC display modes:

ANTIC Mode	BASIC Mode	# of Colors	Scan line/ mode line	Pixels/ mode line	Bytes/ line	Bytes/ screen
Character Modes:						
2	0	2	8	40	40	960
3	none	2	10	40	40	760
4	none	4	8	40	40	960
5	none	4	16	40	40	480
6	1	5	8	20	20	480
7	2	5	16	20	20	240
Map Modes:						
8	3	4	8	40	10	240
9	4	2	4	80	10	480
A	5	4	4	80	20	960
B	6	2	2	160	20	1920
C	none	2	1	160	20	3840
D	7	4	2	160	40	3840
E	none	4	1	160	40	7680
F	8	2	1	320	40	7680

Along with the modes, the ANTIC can display from 1 to 8 blank lines. Blank lines are useful in breaking up sections of display. Several other operations are included in the instruction set, such as; horizontal and vertical fine scrolling, reload screen memory pointer, jump (used to allow ANTIC to cross a 1K boundary in the display list), jump vertical blank (end of display), and display

list interrupts. As you can see, with all of the ability, the ANTIC chip can do a great deal with custom displays.

The screen display is vertical in nature because of the of the time invovled to draw the display. The display is redrawn every 1/60th of a second on a line by line basis. With this fact in mind, your custom display can have only 192 scan lines. Look back to the mode list, one of the columns is the number of scan lines each mode consumes. All of the different mode you use must add to aproximately 192, less is fine but more tends to roll the picture.

Listing 3 shows a simple display list interrupt to change the color of the screen half way down the display. The display list interrupt (DLI) allows for processor control of the display during the drawing of the display. This makes multiple colors easily available. A DLI can do more than just change colors, like change the horizontal position of a player-missile graphics player. This allows a single player to display multiple objects up to the number of DLI's in effect. You can also change the character set during a DLI, displaying different character sets on the same display.

Most of the articles on display lists show a very cumbersome method of pokes and fooling the OS into putting the data in the place you want it. The best method I have found is allowing the OS to do most of the work for you. This involves two memory locations that are normally not changed. Location 87 (decimal) is the current basic graphics mode and 88 & 89 is the top of display memory for the OS. These locations are only changed when you do a graphics command like GRAPHICS 0. By changing these locations you can put text on any line easily. Listing 4 puts most of what I have disussed into practice. Listing 5 is the DLI routine in assembler.

Listings 3 and 4 could crash your system if the data statements are not typed correctly, so please save them before running the program. I tried to keep this as simple as possible where it can be used by all BASIC programmers up to the challenge. Assembly language is best taught by a professional like Chris Crawford, (elsewhere in this issue) so I won't try explaining my assembly routines in much detail.

Listing 1

```

10 DL=PEEK(560)+256*PEEK(561):REM ***** DISPLAY
LIST POINTERS
20 ? "+";:FOR I=0 TO 22
30 ? "THIS IS LINE ";I
40 NEXT I
50 ? "THIS IS LINE 23";
70 FOR I=3 TO 15
80 POKE DL+6+I,I
90 NEXT I
95 POKE DL+6,32
100 GOTO 100

```

End of Listing 1**Listing 2**

```

10 DL=PEEK(560)+256*PEEK(561):REM FIND THE DISPLAY
LIST
20 POKE DL+4,0:POKE DL+5,0:REM POINT ANTIC TO
DISPLAY ZERO PAGE UP

```

End of Listing 2**Listing 3**

```

10 DLIST=PEEK(560)+256*PEEK(561)
20 POKE DLIST+15,130
30 FOR I=0 TO 19
40 READ A:POKE 1536+I,A:NEXT I
50 DATA 72,138,72,169,80,162,88
60 DATA 141,10,212,141,23,208
70 DATA 142,24,208,104,170,104,64
80 POKE 512,0:POKE 513,6
90 POKE 54286,192

```

End of Listing 3**Listing 4**

```

10 GRAPHICS 7+16:REM THE LARGEST MEMORY MODE IN
THE CUSTOM DISPLAY
20 DL=PEEK(560)+256*PEEK(561):REM FIND DISPLAY
LIST
30 POKE DL,240:REM 8 BLANK LINES + DL! TO PREVENT
I/O FROM DESTROYING COLORS
40 POKE DL+3,66:REM FIRST LINE GR.0 W/LMS
50 POKE DL+6,144:REM 2 BLANK LINES
60 POKE DL+7,6:REM GR.1 MODE
70 POKE DL+8,144:REM 2 BLANK LINES
80 POKE DL+93,144:REM 2 BLANK LINES
90 POKE DL+94,2:REM GR.0
100 POKE DL+95,2
110 POKE DL+96,65:REM JUMP VERTICAL BLANK
120 POKE DL+97,PEEK(560):REM MUST HAVE TOP OF DL
IF I/O IS ON

```

```

130 POKE DL+98,PEEK(561):REM HIGH BYTE
132 POKE 87,0:REM MAKE O.S. THINK IT IS GR.0
134 POKE 752,0
135 ? "MIXED MODE DEMO"
136 POKE 87,1
137 ? #6;" WITH GRAPHICS"
Note - The "H" in line 137 is inverse video.
139 POKE 87,7
140 A=PEEK(88):B=PEEK(89):A=A+60:REM MOVE OS WRITE
SCREEN MEMORY POINTER
150 POKE 88,A:POKE 89,B+INT(A/256)
160 COLOR 1
170 FOR I=0 TO 159 STEP 3
180 PLOT 0,0:DRAWTO I,83:NEXT I
190 COLOR 2
200 FOR I=159 TO 0 STEP -3
210 PLOT 159,0:DRAWTO I,83:NEXT I
220 COLOR 3
230 FOR I=0 TO 159 STEP 3
240 PLOT 79,83:DRAWTO I,0:NEXT I
250 A=A+84*40:POKE 88,A-INT(A/256)*256:POKE
89,B+INT(A/256)
260 POKE 87,0:POSITION 0,0:POKE 752,0
270 ? " THIS IS JUST A SAMPLE OF WHAT MIXED":?
"MODE DISPLAYS CAN DO.";
280 IF PEEK(1536+128)<>0 THEN 350
290 FOR I=0 TO 36
300 READ D:POKE 1664+I,D
310 NEXT I
340 CLOSE #1:POKE 207,5:POKE 206,0:REM SET COLOR
TABLE TO LOOK AT PAGE 6
350 POKE 512,128:POKE 513,6:REM ASSIGN DLI VECTOR
360 POKE 54286,192:REM ENABLE DLI'S
370 RESTORE 2000:FOR I=0 TO 15:REM COLOR TABLE
380 READ D:POKE 1536+I,D
390 NEXT I
400 GOTO 400:REM USE SYSTEM RESET TO EXIT
999 REM MACHINE LANGUAGE --- TYPE CAREFULLY ---
1000 DATA 72,152,72,160,4,141,10,212
1010 DATA 136,177,203,153,22,208,208,248
1020 DATA 165,203,216,24,105,4,133,203
1030 DATA 201,16,208,4,169,0,133,203
1040 DATA 104,168,104,64
1999 REM BACKGROUND COLOR IS NOT CHANGED
2000 DATA 63,32,0,0:. LINE 0
2010 DATA 0,128,25,15:. LINE 1
2020 DATA 120,54,248,24:. GRAPHICS
2030 DATA 32,63,0,0:. TEXT WINDOW

```

End of Listing 4

Dealer's Corner

Assembler Listing of DLI

```

0100 ; DLI ROUTINE
0110 ; WILL HANDLE 4 IRQ'S WITH MAPPED
0120 ; COLORS
00CB 0130 ZTEMP = $CB
D40A 0140 WSYNC = $D40A
D016 0150 PFO = $D016
0000 0160 *= $0680
0170 ; color table starts a 600H
0180 ; START OF DLI
0190 ;
0680 48 0200 PHA ; SAVE A
0681 98 0210 TYA
0682 48 0220 PHA ; SAVE X
0683 A004 0230 LDY #4
0685 8D0AD4 0240 STA WSYNC
0688 88 0250 LOOP DEY
0689 B1CB 0260 LDA (ZTEMP),Y
068B 9916D0 0270 STA PFO,Y
068E D0F8 0280 BNE LOOP
0690 A5CB 0290 LDA ZTEMP
0692 D8 0300 CLD
0693 18 0310 CLC
0694 6904 0320 ADC #4
0696 85CB 0330 STA ZTEMP
0698 C910 0340 CMP #16
069A D004 0350 BNE OUT
069C A900 0360 LDA #0
069E 85CB 0370 STA ZTEMP
06A0 68 0380 OUT PLA
06A1 A8 0390 TAY ; RESTORE Y
06A2 68 0400 PLA ; RESTORE A
06A3 40 0410 RTI
    
```

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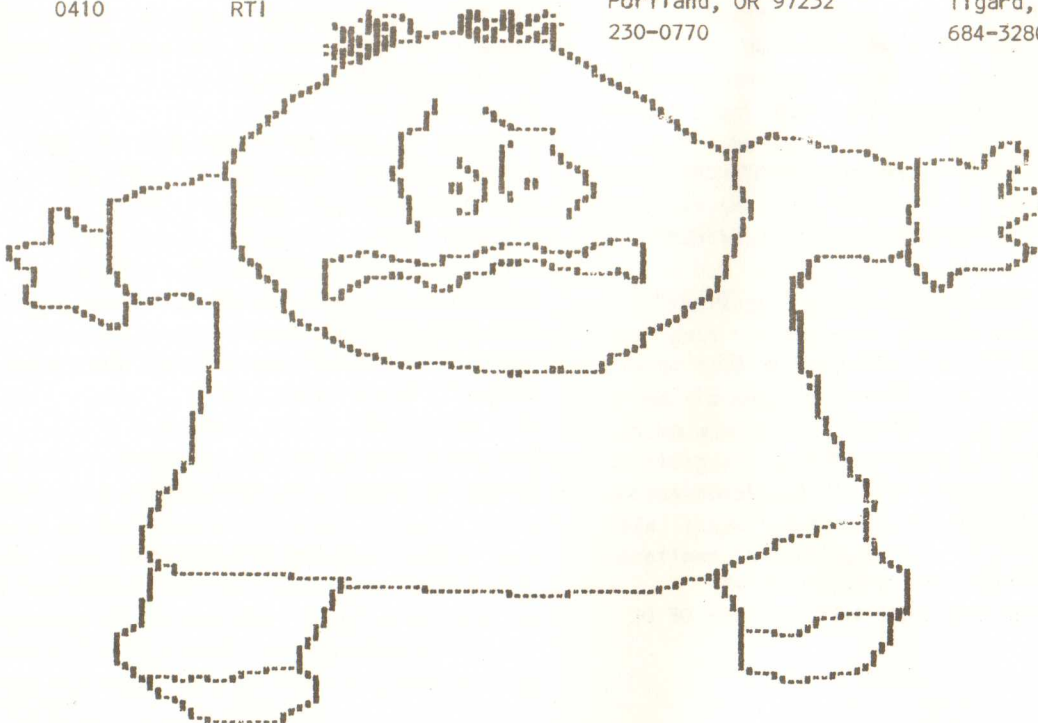
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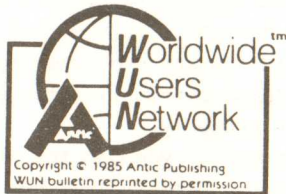
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Assembly Language Class Lesson 2
Chris Crawford



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Chris Crawford Assembly Language Course
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6502 Arithmetic

In this lecture I will take up the problem of arithmetic on the 6502. I choose this topic only because it is fairly simple to do on the 6502. There are a couple of nerve-jangling problems associated with 6502 arithmetic, but I will breeze over those in a very cavalier fashion.

Before we can do arithmetic, though, you must know a little bit about number systems. There are three that you must know: decimal, binary, and hexadecimal.

Decimal is the standard number you have used since grade school. You count 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, and then you reach 0 again, so you put down a 1 in the tens place and resume counting from 0.

Binary works the same way, except that there are only two digits, not ten. The two digits are 0 and 1. You count 0, then 1, then you reach 0 again, so you put down a 1 in the twos place and resume counting from 0. Thus, counting from 0 to ten in binary like this:

Decimal	Binary
0	0
1	1
2	10
3	11
4	100
5	101
6	110
7	111
8	1000
9	1001
10	1010

In binary, instead of having ones, tens, and

hundreds places, we have ones, twos, fours and eights places. It takes a lot more digits to express a number in binary, but then again, we have only the two numerals 0 and 1 to work with, so what does one expect?

The hexadecimal number system is a base-16 system. In this system, you count from 0 to 16 like so 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E ,F,10. The 10 in hexadecimal really means 16 in decimal. So 10 is 16, right? Black is white, truth is likes....stay with assembly language long enough and you'll believe anything.

Actually, it's easy to avoid confusion. We use little prefixes to tell you and the computer whether a number is expressed in decimal, binary, or hexadecimal. No prefix means decimal. A \$ prefix means hexadecimal; a % means binary. Thus %10 means 2 while \$10 means 16, but 10 means just plain old 10. Hexadecimal is not hard to learn at all; if you go into any store you will see that they use hexadecimal on all their signs.

Addition and Subtraction

Addition with the 6502 is very simple; it uses the ADC instruction. This instruction means "Add with Carry"; I'll get to the Carry part in just a moment. For now, let me explain the instruction. The ADC instruction has an operand, normally a location in memory. When the instruction is executed, it takes the contents of that memory location and adds that value to the value in the accumulator.

It leaves the sum of the two numbers in the accumulator. This of course destroys the old value in the accumulator. You can use the immediate mode of addressing with the ADC instruction, in which case it adds the value itself. Thus, "ADC # 9" will add a 9 to the contents of the accumulator, while "ADC FISH" will add the contents of address FISH to the accumulator.

Subtraction is just like addition. The instruction to use is SBC, which means "Subtract Borrowing Carry". Again, I'll tell you about the Carry part in a moment. This instruction subtracts the operand from the contents of the accumulator, leaving the result in the accumulator, it also can be done in either immediate mode (e.g. SBC#5) or absolute mode (e.g., SBC GOAT).

Word Length Problems

If that were all there were to arithmetic with the 6502, programmers would be paid a lot less. The first killer problem is that the 6502 uses 8-bit words; that is, the numbers that the

continued...

6502 stores and works with are only 8 bits wide. This means that the biggest number the 6502 can comprehend is 255. Uh-oh! What happens if you want to have a checkbook balancing program and you have more than \$255? What happens if you get more than 255 points in your "Decapitate the Orphans" game? In fact, what happens if you just ignore the limit and add, say, 10 to 250?

Well, believe it or not, the 6502 will give you an answer of 4. Why? The number system that the 6502 uses is like a wheel, with 0 at the top, counting clockwise 1,2,3,...all the way up to 255, which lies right next to the 0. If you go up from 255 you just wrap around past the 0 and start all over. Similarly, if you subtract 2 from 0, you'll get 254.

The solution to all this is provided by the Carry bit, discussion of which I've been putting off until now. The Carry bit is a flag that the 6502 uses to remember when it has done arithmetic that carried it over the boundary between 0 and 255. By using it properly, you can solve your arithmetic problems.

The first trick to using the Carry bit is to use multi-byte words. This means that, instead of using a single byte to store a number, you use several. For example, if you use two bytes to remember a number, you can store a number as large as 65,535. Three bytes lets you go to 16,777,215. Four bytes lets you go to 4,294,967,295. Big enough for you?

To use multi-byte arithmetic, you set up a series of additions or subtractions. Suppose, for example, that you want to add two two-byte words. The program fragment to do this would look like this:

```
LDA    LOFISH
CLC
ADC    LOGOAT
STA    LOANSR
LDA    HIFISH
ADC    HIGOAT
STA    HIANSR
```

This little fragment of code assumes that the first two-byte value is called (LOGOAT, HIGOAT), and that the , HIANSR). The new instruction, CLC, stands for "Clear Carry" and it means that the Carry bit should be set to 0. It should always be used with all additions except chained additions like this one.

The code does the following: first it adds the two low values. If the addition resulted in a wraparound (result greater than 255), then the

Carry bit was set; otherwise, it was cleared. Then it performed the second addition, adding in the value of the Carry bit (That's why we call it "Add with Carry"). Thus, if a wraparound occurred, an additional one was added into the high sum. This system insures that multi-byte addition works properly.

For subtraction, you use the SEC instruction ("Set Carry"). Otherwise, you handle subtraction the same way that you handle addition. In both addition and subtraction, though, the low bytes must be handled first, then the higher bytes in the proper order (lower to higher).

Decimal & Signed Arithmetic

There are two variations on standard 6502 arithmetic. Both are so rarely used that I will not treat them here. The first is decimal arithmetic using the Decimal flag. This allows you to set up an automatic decimal adjust mode. This is useful in certain types of arithmetic, primarily BCD arithmetic.

If you don't know what this is, don't bother with the Decimal flag. Your program should always begin with the instruction CLD, which means "Clear Decimal Flag". I will tell you this just once: failure to clear the decimal flag is the source of the most frustrating and impossible-to-trace bug in the 6502. Every single program should start with the instruction CLD.

The second arcane bit of 6502 arithmetic is signed arithmetic. It uses the V flag ("overflow"). Signed arithmetic is always confusing and seldom useful. In 7 years of working with the 6502, I have never had need of it. Don't bother.

Limitations on 6502 Arithmetic

There are quite a few limitations on 6502 arithmetic. There is no facility for multiplication and division; you have to write subroutines to do that. You must design your programs to make do with 8-bit words; failing in that, you must use multi-byte arithmetic, with its consequent price in speed and TAM. All in all, arithmetic is a real pain on the 6502. This is the major reason why most 6502 programs do so little arithmetic.

Assembly Language Class Lesson 3 *Chris Crawford*

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Boolean Logic

A great deal of programming involves the use of Boolean logic. This is a standardized system for handling logical manipulations. It's sort of like algebra for logic. You must understand Boolean logic if you are to write assembly language programs, so let's get started.

Where algebra deals with numbers, Boolean logic deals with propositions. A proposition is just a statement such as "Fred eats worms." It can take only two possible values -- True or False. In our programs we seldom bother with broad and glorious propositions such as "Love is the universal language of truth" or "War is the extension of policy by other means". Instead, we normally deal with propositions such as "The joystick trigger has been pressed," or "There is a diskette in the disk drive."

When we use Boolean logic with a computer, we may think in terms of true and false, but the computer is actually working with 1's and 0's. We use the following convention: a 1 corresponds to a Boolean value of "true", while a 0 corresponds to a Boolean "false".

Using this system we can represent propositions inside the computer. However, programming requires more than the mere representation of data; we must also be able to manipulate that data. This brings us to the Boolean operators. There are four common Boolean operations necessary for most programming practices:

Not - This is the simplest of Boolean operators. It takes a single Boolean value as an input and produces as its output the logical converse of the input. Thus, a true input yields output, while a false input generates a true input.

Or - This Boolean operator takes two Boolean values as its input and generates a single Boolean value as its output. The value of the output depends on the values of the inputs according to the following rule: If one input is true OR the other value is true, then the output is true.

Otherwise, the output is false.

And - This Boolean operator is just like the or-operator, except that it uses a different rule. Its rule is: If one input is true AND the other input is true, then the output is true; otherwise the output is false.

Exclusive-Or - This Boolean operator is just like the or-operator, except that its rule is: If one input is true, OR the other input is true, BUT not both are true, then the output is true; otherwise, the output is false.

When we use the 6502 for Boolean operations, you must remember that the operations are eight bits wide. Instead of working with one bit at a time, we use all eight bits of a word in parallel. The bits in a byte are independent and do not affect each other in any way -- at least as far as Boolean operations are concerned.

The 6502 has three instructions for performing Boolean operations. These are AND, EOR, and ORA. The first performs an and-operation. For example, consider the following code:

```
LDA FISH
AND GOAT
```

This will first Load the accumulator with the value of FISH. It will then And the contents of the accumulator with the contents of GOAT. The result of the and-operation will be left in the accumulator.

The AND-instruction can use an immediate operand if you desire, just as the ADC-instruction can. The EOR-instruction provides the exclusive-or operator. It works just like the AND-instruction. The ORA instruction provides the or-operator in just the same way.

If you wish to obtain the NOT-operation, just use EOR #\$FF; this will invert each bit in the accumulator. Because NOT is so easily reproduced with EOR, there is no special NOT instruction in the 6502.

Applications of Boolean Logic

If you have any sense at all, you are probably asking, "What good is all this Boolean nonsense? What would I use it for?" Four applications are available:

Program Logic - Many times our programs encounter rather complex logical situations. The program must be able to load a file; if the FMS is in place and there is a diskette in the disk drive, and the diskette has the file we are looking for, or the file specification calls for a cassette load, then we will load the program. Many programming problems involve such Boolean

continued...

operations, Keeping them straight is certainly a headache.

Masking Bits - Sometimes we need to isolate particular bits in a byte. For example, in Eastern Front (1941) I used the character value to store the unit type. The color of the unit was encoded in the upper two bits of the byte, the type in the lower six bits. If I wanted to get only the unit type, I had to mask out the upper two bits. This I did with the following code fragment:

```
LDA    UNITCODE
AND    #$3F
```

The AND-instruction eliminated the upper two bits, leaving me with just the unit type. Bit-masking like this is useful in many situations. We use it frequently when we pack bits into a byte to save memory. It is also handy with input handling. If you want to read the joystick port, you frequently mask out the bits in turn to see which is active.

By the way, you mask out bits set to 1 with the AND-instruction. You mask out bits set to 0 with the ORA instruction. The logic is reversed.

Setting and Clearing Individual Bits - We also use the AND and ORA instructions to set or clear individual bits within a byte. This is most often useful for handling arrays of flag bits.

Folding Bytes Together - This little fragment of code will fold bytes together:

```
LDA    FISH
EOR    GOAT
AND    MASK
EOR    GOAT
STA    ANSWER
```

This is a magical piece of code. See if you can figure out what it does. Experiment with two values of MASK; \$0F and \$F0.

Shift and Rotate Instructions

The 6502 also has instructions that allow you to shift the bits around inside a byte. The first of these are the shift instructions. One, ASL, shifts a byte to the left; the other, LSR, shifts a byte to the right. Thus, the byte %01101011, when shifted left, becomes %11010110. Each bit is shifted one position to the left. The leftmost bit is rudely pushed right out of the byte and falls away ("Aaaaaaaaaarrrrrrgggg!"). A zero is shifted into the rightmost bit. The LSR instruction does the same thing in the opposite direction.

Note that ASL also doubles the value of the byte, while LSR halves it. Two ASL's multiply by four; three multiply by eight. This makes it easy to do simple multiplication, but be careful with

round-off error here. What happens if you try to multiply by 256? What do you get if you halve 3?

A variation on the shift instructions are the rotate instructions. There are two: rotate left (ROL) and rotate right (ROR). These function just like the shift instructions, except that the bit that gets shoved into the bottom is not necessarily a zero; it is the contents of the Carry bit. The bit that gets pushed off the edge of the byte goes into the Carry bit, so it is not lost. Thus, if you rotate either way nine times, you'll be right back where you started.

Rotate instructions are a handy way to get a particular bit into the carry bit where you can work on it. Conversely, once you get your desired bit into the carry bit the way you want it, you can put it back into a byte with some rotate instructions.

Increment and Decrement Instructions

The last instructions I will cover are the increment and decrement instructions. These allow you to add one (increment) or subtract one (decrement) from a memory location. These are not considered to be arithmetic operations so they do not affect the Carry flag, nor are they affected by it. You cannot increment or decrement the accumulator, only RAM locations.

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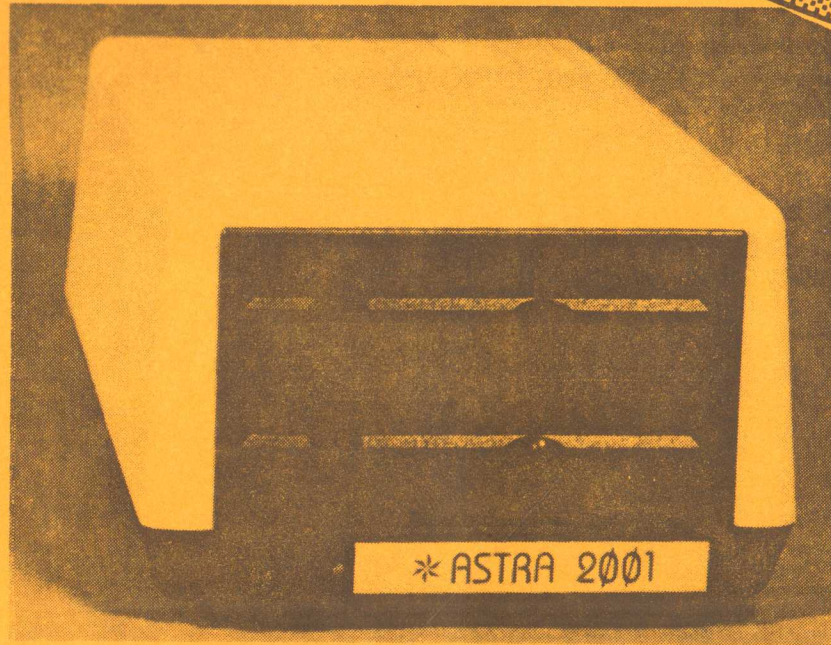
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