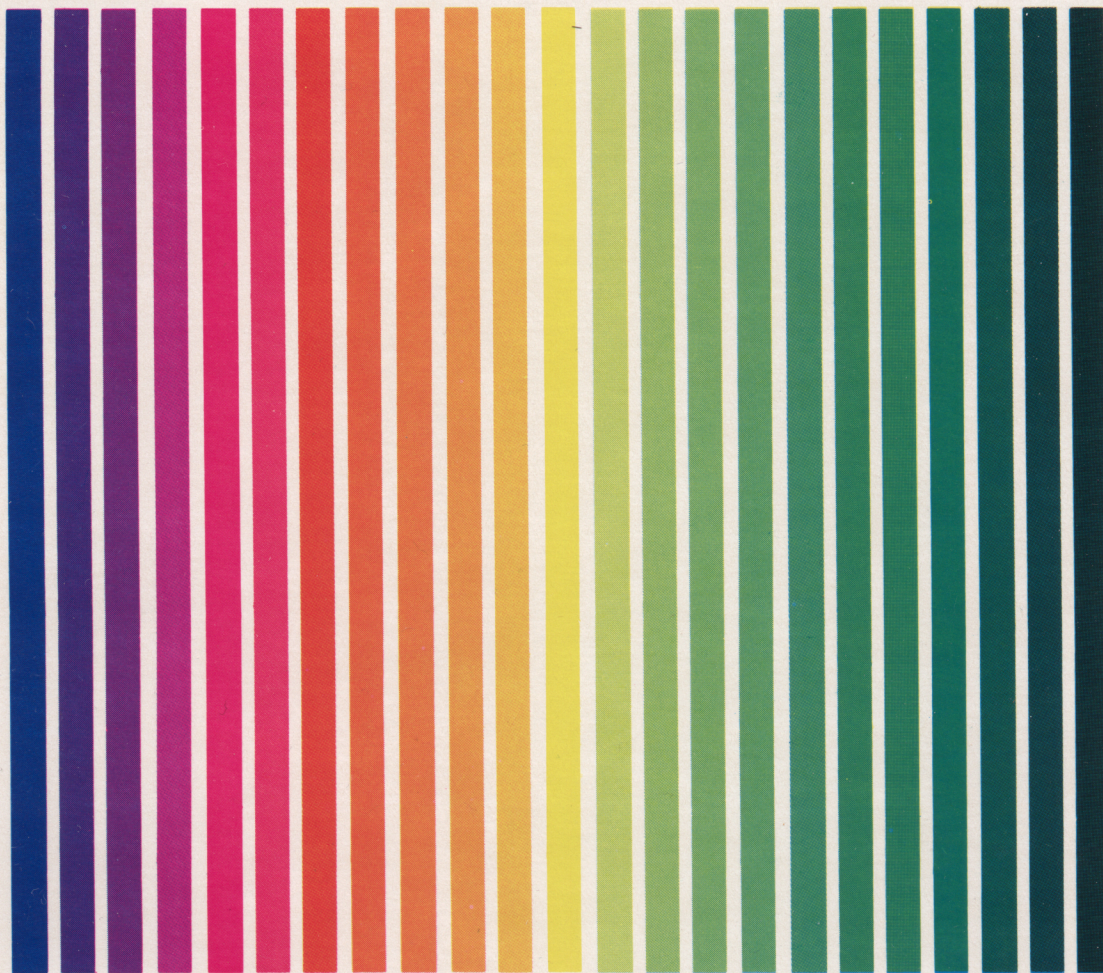


APX ATARI® PROGRAM EXCHANGE



Jerry White

PLAYER PIANO

A twenty-note minipiano with music storage feature

Cassette: 32K (APX-10062)
Version 2

Diskette: 32K (APX-20062)
Version 2

Edition B

User-Written Software for ATARI Home Computers

Jerry White

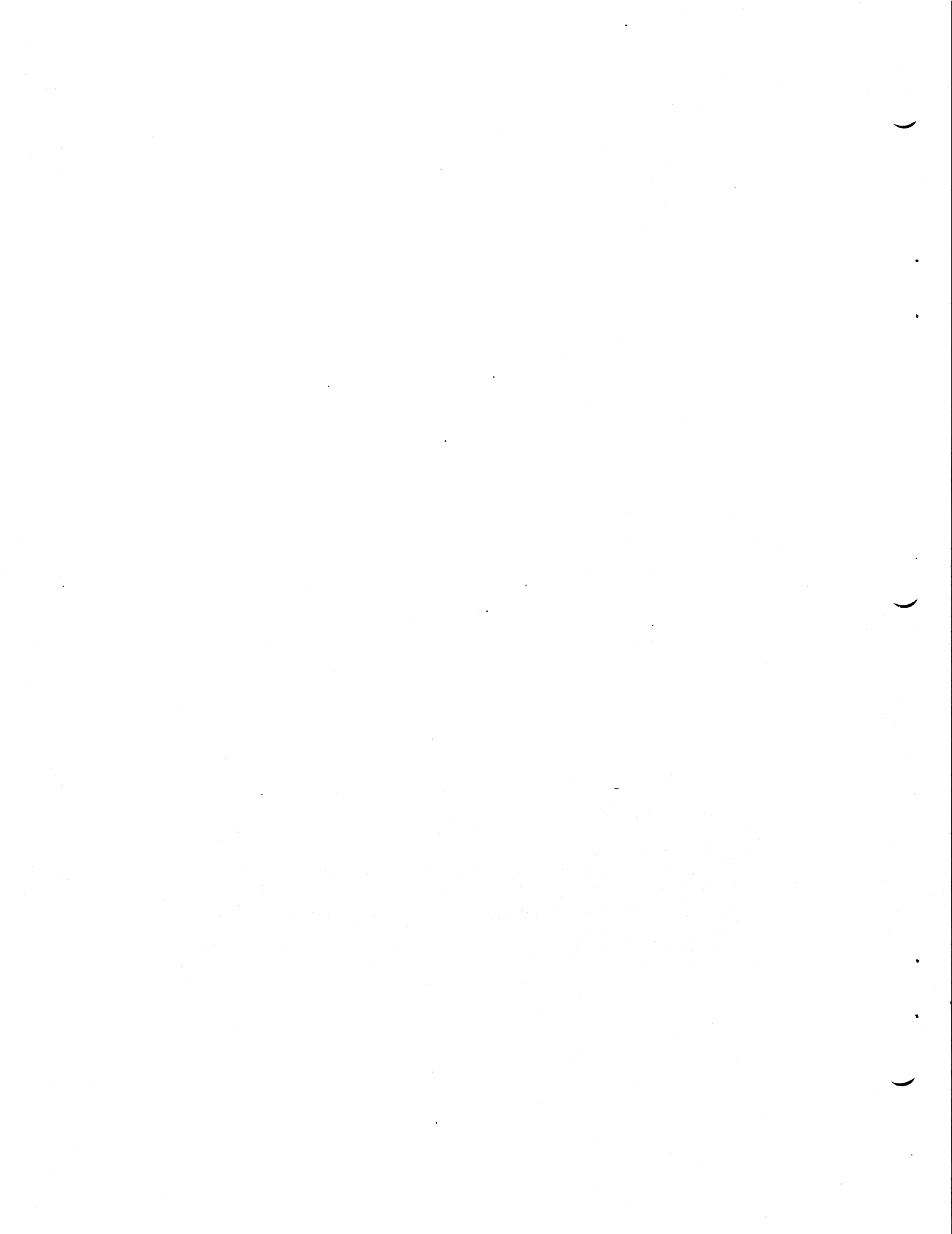
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PLAYER PIANO

by

Jerry White

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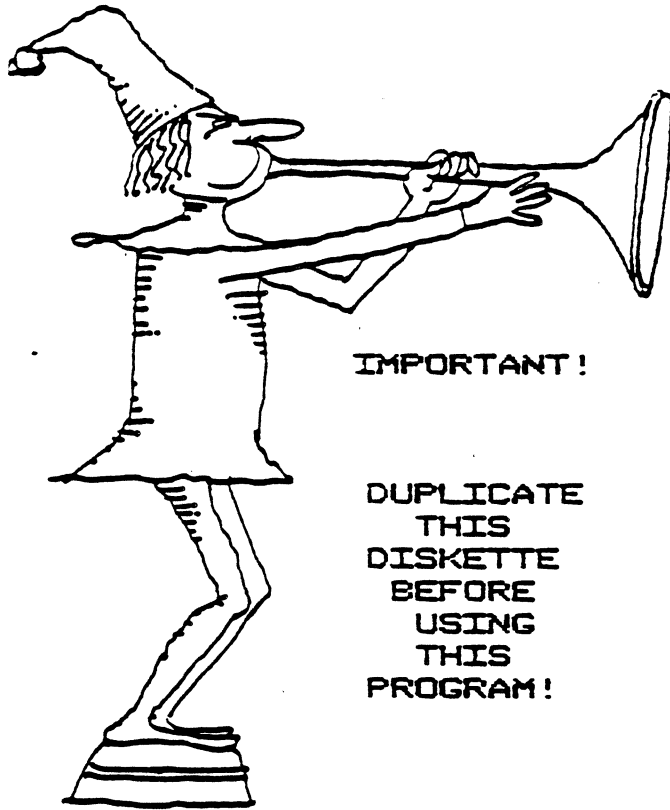
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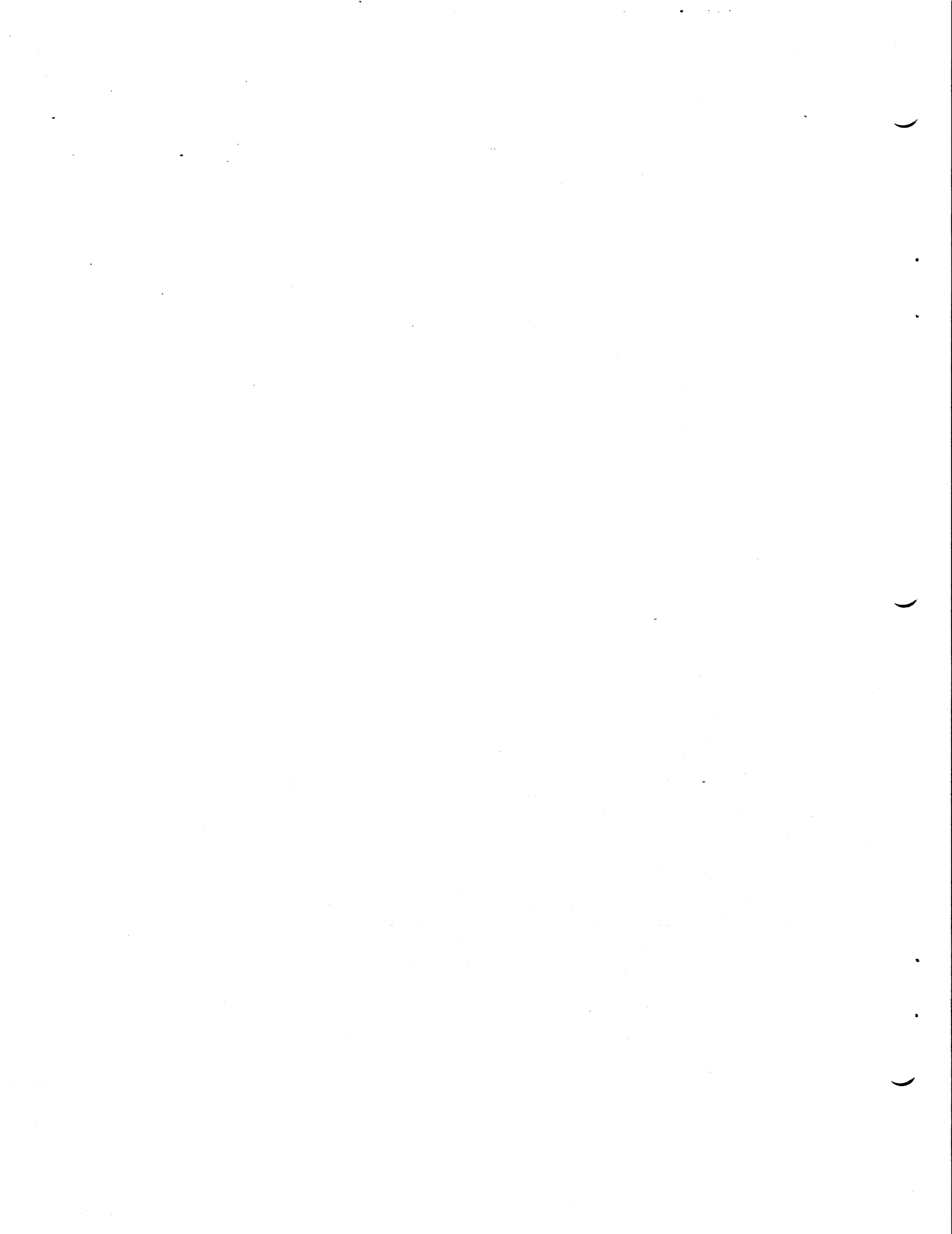
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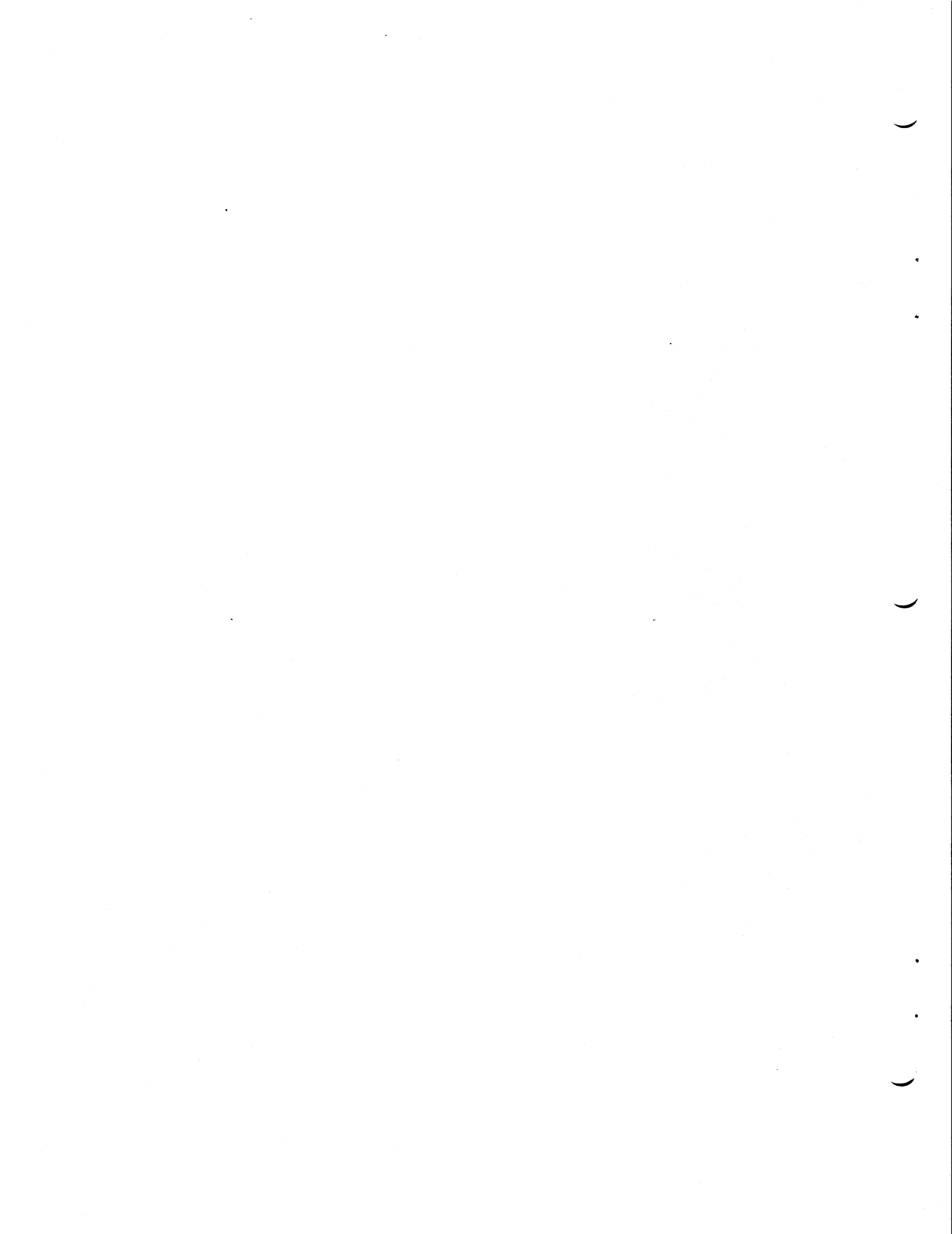
This APX diskette is unnotched to protect the software against accidental erasure. However, this protection also prevents a program from storing information on the diskette. The program you've purchased involves storing information. Therefore, before you can use the program, you must duplicate the contents of the diskette onto a notched diskette that doesn't have a write-protect tab covering the notch.

To duplicate the diskette, call the Disk Operating System (DOS) menu and select option J, Duplicate Disk. You can use this option with a single disk drive by manually swapping source (the APX diskette) and destination (a notched diskette) until the duplication process is complete. You can also use this option with multiple disk drive systems by inserting source and destination diskettes in two separate drives and letting the duplication process proceed automatically. (Note. This option copies sector by sector. Therefore, when the duplication is complete, any files previously stored on the destination diskette will have been destroyed.)



CONTENTS

INTRODUCTION	___ 1
Overview	___ 1
Required accessories	___ 1
Optional accessories	___ 1
Contacting the author	___ 1
Special function keys	___ 2
The ESC key	___ 2
The DELETE/BACK S key	___ 2
Inverse video and lower case	___ 2
The RETURN key	___ 2
GETTING STARTED	___ 3
Loading PLAYER PIANO into computer memory	___ 3
The first display screen	___ 3
USING PLAYER PIANO	___ 4
The PLAYER PIANO menu	___ 4
Option 1—Play Piano	___ 4
PIANO Display	___ 4
Entering a tune into computer memory	___ 5
Suboption 1 display	___ 5
Suboption 2 display	___ 6
Entering our song data	___ 6
Fixing mistakes	___ 6
A suggestion	___ 7
Playing back the notes stored in computer memory	___ 7
Saving data on cassette or diskette	___ 7
Reading song files into computer memory	___ 8
ADVANCED INFORMATION	___ 8
Selecting duration	___ 8
File layout and the FILEDUMP program	___ 8



INTRODUCTION

OVERVIEW

Here's a program that turns your ATARI Home Computer into a twenty-note minipiano. Everyone can enjoy this versatile program, regardless of musical ability or training. **PLAYER PIANO** can also introduce young children to computer applications beyond game playing.

This automatically loaded program displays the twenty black and white piano keys, and a musical note symbol jumps across the keys as you play your tune. The computer keyboard keys corresponding to the piano keys display in the lower part of the screen. With **PLAYER PIANO**, you create tunes by pressing a key, causing the note to play until you press either another key or the space bar to rest the note. A series of menu options let you save your tune as you create it, modify it as desired (now or later), play all or part of it back at any time, and store it on cassette or diskette for recall at a later time. You can build tunes having as many as 400 notes, composed of whole, half, quarter, and eighth notes, and having a variety of tempos.

An auxiliary program lets you display on your TV screen or print a data listing of your longer, more complex songs for analysis and modification.

REQUIRED ACCESSORIES

Cassette version

32K RAM
ATARI BASIC Language Cartridge

Diskette version

32K RAM
ATARI 810 Disk Drive

ATARI BASIC Language Cartridge

OPTIONAL ACCESSORIES

ATARI printer or equivalent printer

CONTACTING THE AUTHOR

Users wishing to contact the author about **PLAYER PIANO** may write to him at:

18 Hickory Lane
Levittown, NY 11756

SPECIAL FUNCTION KEYS

The only function keys that PIANO PLAYER uses are ESC, DELETE/BACK S, and RETURN. The program has disabled all other function keys (except SYSTEM RESET) to guard against user errors.

The ESC key

Use the ESC key to leave your current option or menu selection. As a rule of thumb, if you don't see what you want, press the ESC key.

The DELETE/BACK S key

Use the DELETE/BACK S key to backspace and erase the previous key displayed in the text window at the bottom of the PIANO screen display. Note that you don't need to use the CTRL key to use the DELETE/BACK S key.

INVERSE VIDEO AND LOWER CASE

Enter all your information in uppercase and in normal video. If you accidentally press the ATARI inverse video key or the CAPS/LOWER key, the program automatically resets your input to uppercase, normal video mode when you press another valid key.

The RETURN key

Throughout PLAYER PIANO, you don't need to press the RETURN key when you enter a single-character response anticipated by the program. (However, no harm is done if you do press the RETURN key in these instances.) If your response can vary in the number of keystrokes, then you must press the RETURN key after typing in your response.

GETTING STARTED

LOADING PLAYER PIANO INTO COMPUTER MEMORY

1. Insert the ATARI BASIC Language Cartridge in the slot of your computer.
2. If you plan to use your printer, turn it and your interface module (if applicable) on. Make sure your printer is in ONLINE mode.
3. If you have the cassette version of PLAYER PIANO:
 - a. Turn on your computer and connect your program recorder to the computer and to a wall outlet.
 - b. Turn on your computer and TV set.
 - c. Slide the PLAYER PIANO cassette into the program recorder's cassette holder and press REWIND on the recorder until the tape rewinds completely. Then press PLAY.
 - d. Type CLOAD on your computer and then press the RETURN key two times. The tape will load into computer memory.
 - e. After the tape finishes loading, the word READY will display on your TV screen. Type RUN and press the RETURN key. The first display screen will appear on your TV screen.

If you have the diskette version of PLAYER PIANO:

- a. Have your computer turned OFF.
- b. Turn on your disk drive.
- c. When the BUSY light goes out, open the disk drive door and insert the PLAYER PIANO diskette with the label in the lower right-hand corner nearest to you. (Use disk drive one if you have more than one drive.)
- d. Turn on your computer and your TV set. The program will load into computer memory and start automatically.

THE FIRST DISPLAY SCREEN

The title, author, and copyright information display briefly. Then, the program displays the program's menu, described in the next section.

USING PLAYER PIANO

THE PLAYER PIANO MENU

The program's menu looks as follows:

```
TYPE OPTION NUMBER  
  
1=PLAY PIANO  
  
2=READ DATA  
  
3=CREATE DATA  
  
4=END PROGRAM
```

Figure 1 Main Menu

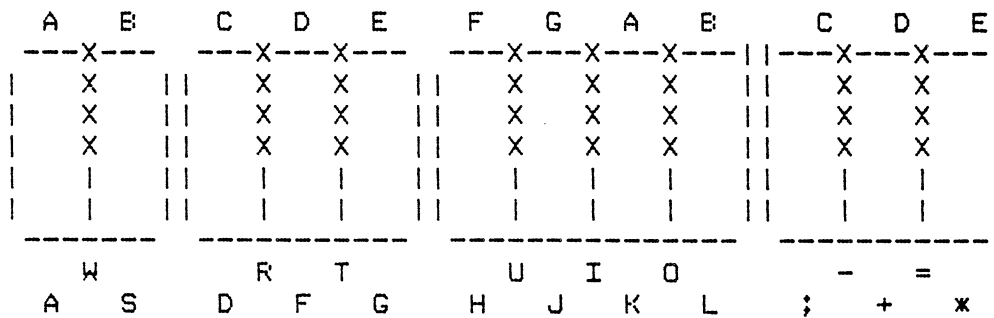
Within each option are suboptions letting you create songs, save or load song data files using cassette or diskette, fix or change as many as 400 notes in computer memory, and play all or part of a song. The same suboptions are available in options 1, 2, or 3. Choose your option according to the first activity you want to do. That is, use option 1 to experiment with tunes first. Use option 2 to load in a song data file from cassette or diskette first. Use option 3 to store a series of notes in computer memory immediately. Aside from the different initial activity, the discussion under option 1 below applies to these other two options as well. Option 4 returns you to the READY prompt in ATARI BASIC. Choose an option by typing its corresponding number.

OPTION 1—PLAY PIANO

Within option 1, PLAY PIANO, you use suboptions to create and revise a song, save your song in memory while you create other notes, play back your saved song, add more notes to your saved song, save your song on cassette or diskette, read in a song data file from cassette or diskette, and erase the song saved in memory and save a new one.

PIANO Display

When you type a "1" in response to the OPTION prompt, the program draws a piano on the screen and a display in the text window of the keyboard keys corresponding to the piano notes. The display looks roughly like this (the "X's" represent black keys):



PRESS SPACE BAR FOR REST
 PRESS ESC FOR OPTIONS

Figure 2 Piano Display Screen

The center two rows on your keyboard activate musical notes. The middle row of letter keys, from A through *, play the natural (white) notes. Some of the top row of letter keys, as indicated in the text window, play the sharps and flats (black keys). Use the SPACE BAR at the bottom of the keyboard to create a REST—to shut off a note. For example, press the letter "A" to play the lowest note on the PIANO display. You can get a very short note by typing A and then pressing the SPACE BAR immediately.

After a little musical note jumps across the keys as it plays, it's your turn. Experiment for a while to get used to using the keyboard and the SPACE BAR.

If you just want to play tunes, you needn't use any of the suboptions for PLAY PIANO. However, if you want to do some of the activities mentioned earlier, such as retaining a tune in computer memory as you work it out, then you're ready to explore the suboptions.

Entering a tune into computer memory

Let's enter a song into computer memory as we create it. To do so, we'll refer to the chart in the appendix for the BALLGAME song as our source for data. (The BASIC utility program, FILEDUMP, described in a later section, created this chart.)

Suboption 1 Display

To enter a song into computer memory, we need to go to the first of two suboption menus, which display in the text window when we press the ESC key. The first suboption menu looks like this:

- TYPE 1 TO ADD DATA TO MEMORY
- TYPE 2 TO SAVE MEMORY DATA
- TYPE 3 TO PLAY MEMORY DATA
- TYPE 4 TO FIX MEMORY DATA

Figure 3 Suboption Display 2

Suboption 2 Display

Pressing the ESC key again displays the second suboption menu:

```
TYPE 1 TO PLAY KEYBOARD PIANO
TYPE 2 TO READ A DATA FILE
TYPE 3 TO CREATE A NEW DATA FILE
TYPE 4 TO END THIS PROGRAM
```

Figure 4 Suboption Display 2

We can use either of two suboptions, ADD DATA TO MEMORY (in the Suboption 1 display) or CREATE A NEW DATA FILE (in the Suboption 2 display), to enter a song into computer memory. The two differ in that we would use the ADD DATA TO MEMORY suboption if we wanted to append notes to song data currently stored in computer memory, whereas we would use the CREATE A NEW DATA FILE to erase any song data currently stored in computer memory and start over again from NOTE #1. Assuming you haven't yet entered anything into computer memory, we can in this case use either option. We'll type a 3 to CREATE A NEW DATA FILE.

Entering our song data

The text window asks you to:

```
TYPE DURATION (1-120) RETURN
```

Look at NOTE #1 on the BALLGAME chart in the appendix. You'll see four columns, the third labeled "DURATION". The value for NOTE #1 is 20, representing 20/60 (or 1/3) second. Duration always represents sixtieths of a second. (See the section on "Advanced Information" for a more detailed discussion about selecting duration.) Thus, by typing 30 in response to the prompt, we're telling the program to hold the first note for a half second. Notice you need to press the RETURN key after entering your data, because the program can't tell whether you'll be typing one or two digits.

Next the prompt for entering a note displays in the text window, along with the keyboard display:

```
NOTE #1?
```

Type the note indicated under the column labeled KEY on the chart—D—in the same way as in PLAY PIANO mode. If all went well, that's one note down and 27 to go. The prompt for the duration of the next key then displays and we enter duration and key for each note.

Fixing mistakes

If you make a mistake, don't worry, because you can use the FIX MEMORY DATA suboption to repair the damage. Use the ESC key to redisplay the Suboption 1 display and type a 4 to select the FIX MEMORY DATA suboption. The prompt ("#" represents a number):

```
THERE ARE # NOTES IN MEMORY
```

TYPE NOTE NUMBER TO BE FIXED

asks you which note number you want to fix. Type the appropriate number and press the RETURN key.

A suggestion

Before you enter too many notes, it's helpful to replay the notes often as you add data. If you do make a mistake, finding and correcting the data is much easier while it's still fresh in your memory. Referring to the BALLGAME chart, enter the first seven notes and then press the ESC key to return to the Suboption 1 display. (Note. On the BALLGAME chart, NOTE #2 is SP, meaning SPACE BAR. Between the first and third notes is a one-third second rest. So, type the duration of 20 and press the SPACE BAR for NOTE #2.) Continue entering notes until you've entered seven notes.

Playing back the notes stored in computer memory

Let's play what we have so far. Type 3 on the Suboption 1 display for PLAY MEMORY DATA. The display tells us that we have 7 notes in memory and it asks us which ones we'd like to start and end with. We'll replay all seven notes by typing the starting number of 1 and the ending number of 7. Again, we need to press the RETURN key after typing each number, because these numbers can be between one and three digits (up to note #400, the limit for notes saved in computer memory). The program now plays the seven notes. If they sound like "Take Me Out to the Ball Game" to you, continue adding data using the ADD DATA TO MEMORY suboption (press the ESC key to obtain the suboption displays). If some notes sound strange, locate the wrong one(s) and use the FIX MEMORY DATA suboption to correct them. (You may abort a song in progress by pressing any key.)

Saving data on cassette or diskette

Use the SAVE MEMORY DATA suboption to store your data currently in computer memory out on cassette or diskette. After selecting this suboption, type a "C" for "cassette" or a "D" for "diskette" (or press the ESC key if you change your mind).

If you're using a cassette, use a blank tape and note the position number on the program recorder. Then press the PLAY and RECORD buttons on the recorder before you press the RETURN key on the keyboard to begin saving your data.

If you're using a diskette, you need to specify the file name in response to the prompt and then press the RETURN key. Be sure the notch is uncovered on the diskette you're using. Also make sure the diskette has enough free sectors to hold your data file. Disk drive 1 is assumed, so you need specify only the file name and perhaps an extension such as .DAT for Data File or .PPM for Player Piano Music file. Thus, you could save the BALLGAME song file on diskette by typing D in response to the prompt for cassette or diskette storage and then typing the file name BALLGAME and pressing RETURN in response to the file name prompt. You may use any valid file name, but remember that you'll erase a file already on the diskette if you specify the same file name for the file you want to save. Important. Do not try to save your files on the original PLAYER PIANO diskette, which is write-protected for safety.

Reading song files into computer memory

Use the READ A DATA FILE suboption to read a song file into computer memory from cassette or diskette. Loading a file into memory erases any data currently in memory. If you want to keep such a file, save it on cassette or diskette before loading in another file.

ADVANCED INFORMATION

SELECTING DURATION

Look again in the appendix at the BALLGAME chart produced by the FILEDUMP program. Notice the duration of each note is either 30 or 60. Notes with a duration of 60 are held for a full second; those with a duration of 30 are held for half a second. A note held for more than a full second is rare. Most songs you create will probably use a faster tempo.

Tempo is based on what is called a "whole" note. In the BALLGAME song, the whole notes are those with a duration of 60. Those with a duration of 30 are "half" notes. Most songs use whole notes, half notes, quarter notes, and eighth notes. If the BALLGAME song required quarter notes, the duration would be 15 (1/4 of 60). Now, the problem is to divide 15 in half for the eighth notes. To do so, we drop any fractions. Thus, to produce an eighth note, we enter a duration of 7.

You'll find that this program can replay notes as short as a duration of around 6, but not less than that. The program takes about a tenth of a second to interpret the data into a sound, position the little note on the proper key, and display the note number in the text window. If you specify a duration of 6 for one note, then specify a duration of 1 for the following note—you'll see and hear the same duration.

Before entering a song of your own, think about its tempo. If it's slow, like the BALLGAME song, use 60 as your whole note and calculate the shorter notes based on fractions of the whole. If the tempo is faster, try 40 as the whole note duration, 20 for the half note, and so on.

FILE LAYOUT AND THE FILEDUMP PROGRAM

The FILEDUMP program comes in handy when you write longer, more complex songs. (The diskette version already contains the FILEDUMP program; owners of the cassette version will need to follow these instructions for adding the program.) Making sure no program is already in computer memory (verify by typing the direct mode BASIC command NEW), enter the program exactly as it appears in the listing following this discussion.

You don't need a printer. FILEDUMP lets you either print or display files on your TV screen. The program also accepts song files from both cassette and diskette.

PLAYER PIANO song files are data files of numbers. Each note in the file has two numbers—KEYCODE and DURATION. Note that the first two numbers in the file aren't for

```

10 REM #####
20 REM ### PLAYER PIANO FILEDUMP ###
30 REM ### by Jerry White ###
40 REM #####
50 CLOSE #1:OPEN #1,4,0,"K:":DIM D$(14),F$(12),LINE$(26):GOSUB 110
60 ? :? :? " TYPE D TO DISPLAY FILE":? :? " TYPE P TO PRINT FILE"
70 GET #1,GC:IF GC=68 THEN P=0:GOTO 100
80 IF GC=60 THEN P=1:TRAP 510:LPRINT :TRAP 40000:GOTO 100
90 RUN
100 GOSUB 110:GOTO 150
110 GRAPHICS 0:SETCOLOR 2,0,0:POKE 752,1:POKE 82,7
120 ? :? :? " PLAYER PIANO FILE DUMP":? :RETURN
130 ? :? "NOTE# KEYCODE DURATION KEY"
140 LINE$(1)=",":LINE$(25)=",":LINE$(2)=LINE$(1):LINE$(26)=" ":RETURN
150 IF P=0 THEN 190
160 LPRINT " PLAYER PIANO FILEDUMP":LPRINT
170 ? :? "ENTER SONG NAME FOR HEADING":INPUT D$:LPRINT ,D$:LPRINT
180 LPRINT "NOTE# KEYCODE DURATION KEY":LPRINT
190 ? :? :? " TYPE C FOR CASSETTE FILE":? :? " TYPE D FOR DISKETTE FILE"
200 POKE 764,255:GET #1,GC
210 IF GC=67 THEN 430
220 IF GC<>68 THEN GOSUB 110:GOTO 190
230 POKE 752,0: ? :? "TYPE DISK FILE NAME":INPUT F$:TRAP 480
240 D$="D:":D$(LEN(D$)+1)=F$:OPEN #3,4,0,D$
250 GOSUB 110:GOSUB 130
260 GET #3,NUM:GET #3,DUR
270 FOR BYTE=1 TO NUM:GET #3,KEY:GET #3,DUR:GOSUB 140
280 IF P=0 THEN LINE=LINE+1
290 IF BYTE<10 THEN LINE$(3,3)=STR$(BYTE):LINE$(1,2)=" ":GOTO 320
300 IF BYTE<100 THEN LINE$(2,3)=STR$(BYTE):LINE$(1,1)=" ":GOTO 320
310 LINE$(1,3)=STR$(BYTE)
320 IF KEY<10 THEN LINE$(11,11)=STR$(KEY)
330 IF KEY>9 THEN LINE$(10,11)=STR$(KEY)
340 IF DUR<10 THEN LINE$(19,19)=STR$(DUR):GOTO 370
350 IF DUR<100 THEN LINE$(18,19)=STR$(DUR):GOTO 370
360 LINE$(17,19)=STR$(DUR)
370 LINE$(25,25)=CHR$(KEY+42)
380 IF KEY=2 THEN LINE$(25,26)="SP"
390 IF P THEN LPRINT LINE$
400 ? LINE$
410 IF LINE=15 THEN LINE=0:GOSUB 450
420 NEXT BYTE: ? " END OF FILEDUMP":POKE 764,255:POKE 752,0:POKE 82,2:END
430 ? :? "PRESS PLAY ON CASSETTE":? :? "PRESS RETURN WHEN READY"
440 INPUT D$:TRAP 480:CLOSE #3:OPEN #3,4,0,"C:":GOTO 250
450 ? :? "PRESS ANY KEY TO CONTINUE":POKE 764,255
460 IF PEEK(764)<>255 OR PEEK(53279)<>7 THEN GOSUB 110:GOSUB 130:RETURN
470 GOTO 460
480 IF PEEK(195)=136 THEN ? " END OF FILEDUMP":GOTO 500
490 ? " ERROR ";PEEK(195);" AT LINE ";PEEK(186)+PEEK(187)*256
500 POKE 82,2:POKE 764,255:POKE 752,0:END
510 ? CHR$(253):? :? " PRESS START WHEN YOUR":? :? " PRINTER IS READY.
520 IF PEEK(53279)<>6 THEN 520
530 GOTO 80

```

NOTE #1. The first number specifies the total number of notes in the file, and the second number is a dummy zero. After reading this first set of numbers, PLAYER PIANO and FILEDUMP know how many more sets of numbers to read.

With one exception, the keycode is the ATASCII value of the key pressed, minus 42. Don't confuse this value with the computer's internal keycodes. The keycodes used by PLAYER PIANO and FILEDUMP are generated specifically for these programs. The exception to this rule is 2 for the SPACE BAR keycode (which saves a little memory in the PLAYER PIANO program by keeping smaller the array of keycodes and their corresponding sounds and screen positions.)

If you do some programming, you may wish to write a small program to increase or decrease the duration of each note by a given percentage to permit the changing of tempo in a song. Use the FILEDUMP program as a model.

PLAYER PIANO has twenty notes, plus the SPACE BAR (keycode of 2). The keycodes for the notes, from lowest (far left A) to highest (far right E) are as follows:

A	A#	B	C	C#	D#	D	D#	E	F
23	45	41	26	40	28	42	29	30	43
G	G#	A	A#	B	C	C#	D	D#	E
32	31	33	37	34	17	3	1	19	0

PLAYER PIANO FILEDUMP

BALLGAME

NOTE# KEYCODE DURATION KEY

1.....26.....20.....D
 2.....2.....20.....SF
 3.....17.....20.....;
 4.....33.....20.....K
 5.....32.....20.....J
 6.....29.....20.....G
 7.....32.....60.....J
 8.....28.....60.....F
 9.....26.....20.....D
 10.....2.....20.....SF
 11.....17.....20.....;
 12.....33.....20.....K
 13.....32.....20.....J
 14.....29.....20.....G
 15.....32.....120.....J
 16.....33.....20.....K
 17.....31.....20.....I
 18.....33.....20.....K
 19.....29.....20.....G
 20.....30.....20.....H
 21.....32.....20.....J
 22.....33.....20.....K
 23.....2.....20.....SF
 24.....30.....20.....H
 25.....28.....20.....F
 26.....2.....40.....SF
 27.....33.....40.....K
 28.....33.....20.....K
 29.....33.....20.....K
 30.....34.....20.....L
 31.....17.....20.....;
 32.....1.....20.....+
 33.....34.....20.....L
 34.....33.....20.....K
 35.....32.....20.....J
 36.....29.....20.....G
 37.....28.....20.....F
 38.....26.....20.....D
 39.....2.....20.....SF
 40.....17.....20.....;
 41.....33.....20.....K
 42.....32.....20.....J
 43.....29.....20.....G
 44.....32.....60.....J
 45.....28.....40.....F
 46.....28.....20.....F
 47.....26.....40.....D
 48.....28.....20.....F
 49.....29.....20.....G
 50.....30.....20.....H
 51.....32.....20.....J
 52.....33.....80.....K
 53.....33.....20.....K
 54.....34.....20.....L
 55.....17.....20.....;

56.....2.....40.....SP
57.....17.....20.....;
58.....2.....40.....SP
59.....17.....20.....;
60.....34.....20.....L
61.....33.....20.....K
62.....32.....20.....J
63.....43.....20.....U
64.....32.....20.....J
65.....33.....60.....K
66.....34.....60.....L
67.....17.....20.....;

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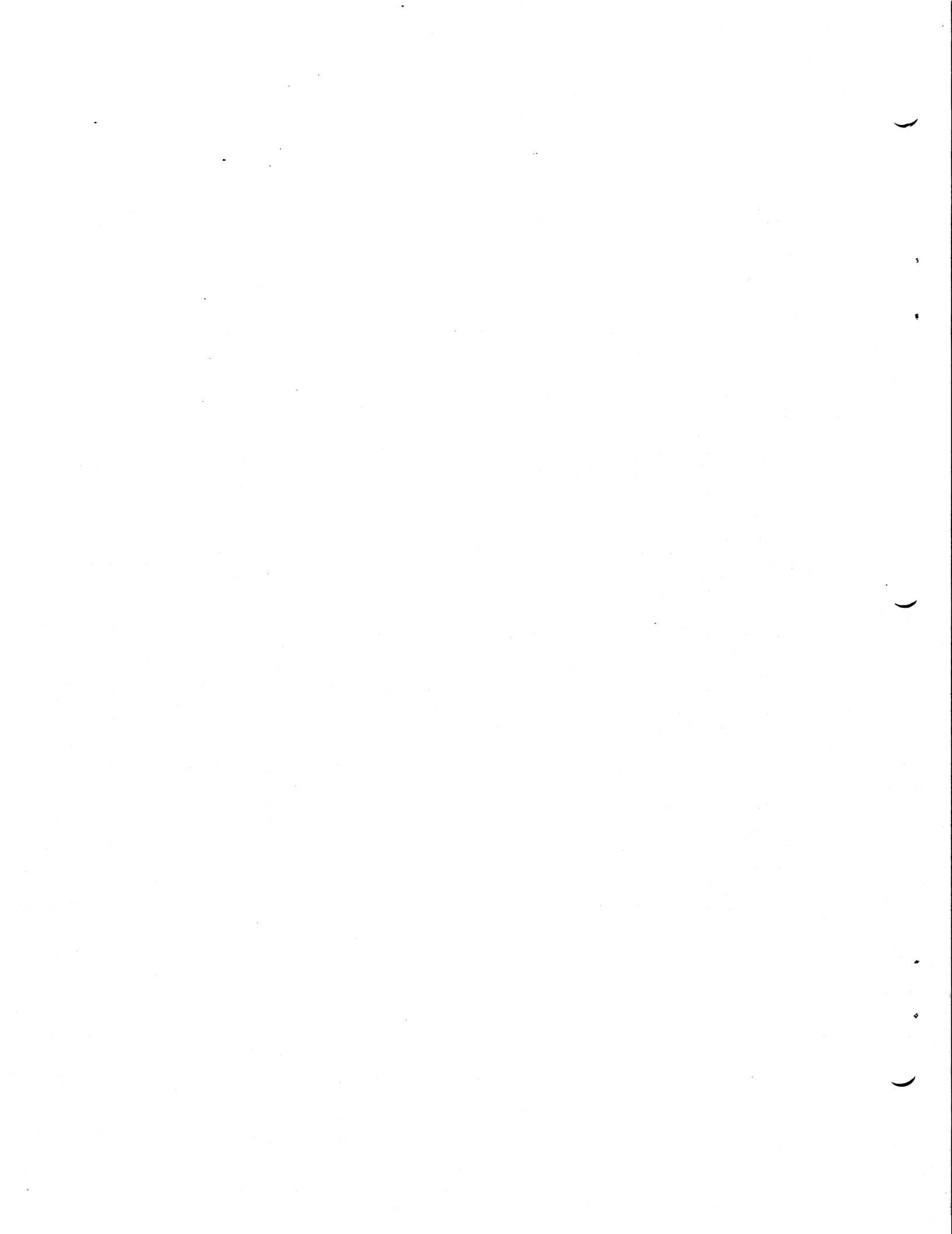
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Review Form

We're interested in your experiences with APX programs and documentation, both favorable and unfavorable. Many of our authors are eager to improve their programs if they know what you want. And, of course, we want to know about any bugs that slipped by us, so that the author can fix them. We also want to know whether our

instructions are meeting your needs. You are our best source for suggesting improvements! Please help us by taking a moment to fill in this review sheet. Fold the sheet in thirds and seal it so that the address on the bottom of the back becomes the envelope front. Thank you for helping us!

1. Name and APX number of program.

2. If you have problems using the program, please describe them here.

3. What do you especially like about this program?

4. What do you think the program's weaknesses are?

5. How can the catalog description be more accurate or comprehensive?

6. On a scale of 1 to 10, 1 being "poor" and 10 being "excellent", please rate the following aspects of this program:

- _____ Easy to use
- _____ User-oriented (e.g., menus, prompts, clear language)
- _____ Enjoyable
- _____ Self-instructive
- _____ Useful (non-game programs)
- _____ Imaginative graphics and sound

7. Describe any technical errors you found in the user instructions (please give page numbers).

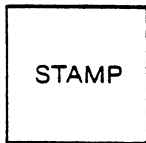
8. What did you especially like about the user instructions?

9. What revisions or additions would improve these instructions?

10. On a scale of 1 to 10, 1 representing "poor" and 10 representing "excellent", how would you rate the user instructions and why?

11. Other comments about the program or user instructions:

From



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