FORTÉ

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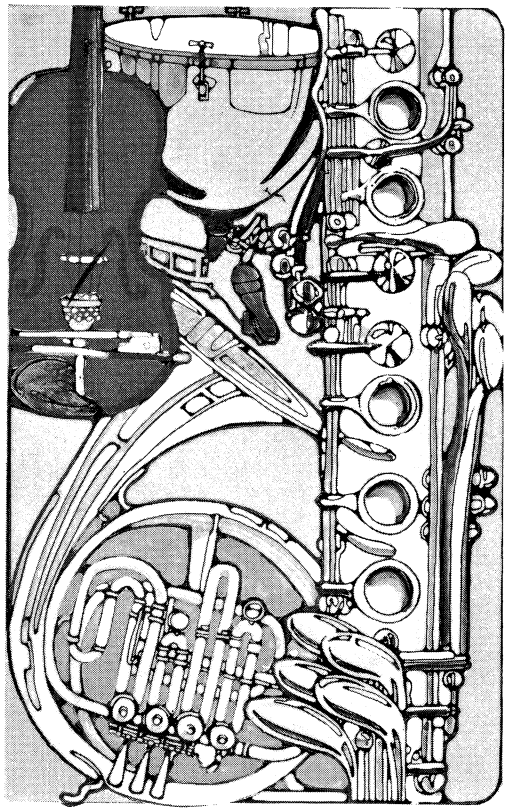

% % % FORTÉ % % %

Interpretive Music Language

For the APPLE II

OPERATOR'S MANUAL

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INTRODUCTION

FORTE' is an interpretive language devoted to the playing of music. This language allows the operator to use the music playing capabilities of the APPLE II computer in a way that, up until now, required hours of tedious calculations and coding to play only a few notes. With FORTE', all of the hard work has been done for you.

The programs written in FORTE' are as easy to enter, list and edit as are programs written in APPLE's INTEGER BASIC. Debugging a program is even easier. If the operator is familiar with the procedures used to write a BASIC program on the APPLE, using FORTE' will be all the easier.

FORTE' can play music from either one of two operator specified outputs. By using the appropriate command, the operator can play music from the speaker built into the computer, or from the cassette output for recording on to a high fidelity music system plugged into the output port.

Programs written in FORTE' are easily saved onto cassette or disk and can be listed to a printer for hardcopy documentation.

FORTE' was developed to be easy and fun for the beginner, yet capable of handling the most complex passages the veteran can devise. Read the following information carefully then load up FORTE' and enjoy making your own beautiful music!

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GETTING STARTED

LOADING FORTÉ

FORTE' was developed and written in machine language for maximum speed and versatility. In order to ease the burden on the operator, FORTE' has been configured to load in INTEGER BASIC. Do not try to LIST FORTE' as it will appear as garbage on the screen.

FORTE' is loaded into your computer using the Integer BASIC >LOAD command. The leader tone on the cassette should be positioned under the play head and the recorder set in the PLAY mode before the <RETURN> key is pressed.

ENABLING FORTÉ

After two beeps are heard and the ">" prompt and flashing cursor re-appear, type in RUN <RETURN> to start FORTE'. A header will be printed at the top of the screen and a "%" prompt with the flashing cursor will indicate that FORTE' is now ready to accept commands.

RECOVERY FROM ACCIDENTAL RESET

RESET's are easily recovered from by typing in *800G <RETURN> from the monitor. The "%" prompt and flashing cursor will re-appear. If these results are not obtained, FORTE' will have to be re-loaded and the FORTE' music re-entered.

FORTÉ DISK VERSION

FORTE' may also run on a Disk based APPLE II with only slight changes in operation. Setting up FORTE' to run with the Disk drive is easy and once set up, cassette tapes can be used as backup protection for your FORTE' programs.

Refering to the APPLE II Disk Subsystem Manual, BOOT the DOS from a diskette in your collection into your computer. When the ">" prompt appears with the flashing cursor, insert the diskette on which you wish to save FORTE' into the Disk II Drive. Now insert the cassette tape containing FORTE' into your cassette player and position the leader tone under the head. Type the >LOAD command into the APPLE. Start the tape in the PLAY mode and press <RETURN>. When the APPLE beeps twice and the ">" prompt and flashing cursor return, FORTE' is now loaded into memory. At this point, DO NOT RUN FORTE'. Place into your drive the diskette you wish to save FORTE' on and type:

```
>SAVE FORTE',Vv,Dd,Ss <RETURN>
```

Where v=volume number, d=drive number and s=slot number. These are optional as needed. Refer to the APPLE Disk Subsytem Manual for specifics.

After the DOS has been booted in the standard manner, typing in >RUN FORTE' <RETURN> will enable FORTE' for your use.

FORTÉ IMMEDIATE EXECUTION COMMANDS

CAS	**LIST**	**RUN**	**TRACE**
CON	**LOAD**	**SAVE**	**TRACEN**
<CONTROL C>	**NEW**	**SPD**	
DEL	**NOTRACE**	**SPK**	
FREE	**RESTORE**	**STEP**	

These commands are **NOT** programable. They may be use only in the IMMEDIATE MODE of operation (ie. directly from the keyboard). The characters are interpreted differently by a running program. Use of these commands in a program will result in either a **%%%%SYNTAX ERROR** appearing and program execution being terminated, or unpredictable program execution.

COMMAND DEFINITIONS

CAS Directs the music to the "CASSETTE OUT" port of the APPLE for recording the song as music on tape or for playing the music to an attached Hi-Fi or PA system.

CON Continues execution of a program halted by either a Control C (Cc) entered at the keyboard or an "S" statement included in the FORTE' program. Execution resumes at the line number displayed when the halt occured.

Control C (Cc) Entered from the keyboard, halts execution of the FORTE' program currently being run. The line number in which the halt occured is displayed. Execution may be resumed at the displayed line number with the **CON** command.

DEL n Deletes from a FORTE' program the line specified by n.

DEL n1,n2 Deletes range of program lines starting at line n1 and ending at line n2. Lines deleted in this manner are not recoverable.

FREE Displays the number of free bytes remaining in memory. The number is displayed in decimal and includes the area occupied by DOS if you are using a disk version of FORTE'.

LIST Lists the program on the screen starting at the lowest line number and continuing until the last line has been displayed. Pressing any key during the listing will freeze the scrolling to allow the operator to inspect part of the program. Pressing any key will restart the scrolling. Pressing any two keys on the keyboard simultaneously will step the listing one line at a time. At any time during a **LIST**ing, hitting a **Control C (Cc)** will exit the **LIST** mode and return you to the Command Mode.

LIST n — Lists only the line number n.

LIST n1,n2 — Lists a portion of the FORTE' program starting at line number n1 and ending at line number n2.

LOAD — Loads a FORTE' program from cassette tape into memory. The leader tone on the tape should be positioned under the play-back head of the player. Put the cassette player in the PLAY mode before hitting the RETURN key on the computer.

NEW — Clears current program pointers to zero. (eg. FORTE' is no longer looking at that portion of memory containing the music program). FORTE' is then ready to accept a new program. If the NEW command is used accidently, and no other lines of FORTE' program have been entered,a RESTORE command may be used to recover the the program.

NOTRACE — Cancels both TRACE and TRACEN modes of operation.

PR# n — Transfers output of screen to I/O slot specified by expression n. PR#Ø is the video output and not an I/O slot. It is used to cancel output to any other slot. The port specified would be used by FORTE' for text output, either " " statements or listings, to a printer or other communications device attached to slot n.

RESTORE — Restores program pointers after an accidental **NEW** command. If this command is used at any other time, a **%%%%CAN'T RESTORE** error will result. Additionally, this command will not work if the operator has already begun to enter new lines for a new FORTE' program.

RUN — Runs the FORTE' program starting at the first line number of the program.

RUN n — Runs the FORTE' program starting at line number n.

SAVE — Allows the operator to save a FORTE' program from memory onto a cassette tape. The cassette recorder should be in the RECORD mode and running before <RETURN> is pressed.

SPD n — Sets speed at which lines of FORTE' program are displayed during a **LIST.** A value of 1 for n gives the slowest **LIST** speed while a value of 255 gives you the fastest. Note: The **SPD** has nothing to do with the speed at which a FORTE' program is **RUN.**

SPK — Directs the music to the speaker port of the APPLE. This is the default mode of operation.

STEP Used instead of **RUN**, this command allows the operator to step through the FORTE' program note by note when any key on the key board is pressed (again with the exception of the <RESET> key!). When used with the **TRACEN** command, the note name and octave number is displayed along with all the operating statements. The <RETURN> key continues running the program without the **STEP**. Hitting the <ESC> key returns the system to the FORTE' command mode as identified by the return of the "%" prompt and the flashing cursor.

STEP n Runs the program in the **STEP** mode starting at line number n.

TRACE Displays the line number of the current program line being executed by FORTE'. May be used with **TRACEN.**

TRACEN Displays the current note and octave number being played. The octave number is displayed even if a default value was used. You may exit this mode by hitting a **Control C (Cc).** This will return you to the Command Mode.

FORTÉ DISK COMMANDS

CATALOG **LOAD name** **SAVE name** **DELETE name**

These commands are the only ones used by FORTE'. The rest of the APPLE Disk II commands may not be used by FORTE'.

DISK COMMAND DEFINITIONS

CATALOG Displays the disk volume number and a list of files on the disk.

LOAD name Loads the program indicated into memory.

SAVE name Saves a program onto the disk. The name is used by the DOS to identify that program for all future disk commands. The name may be up to 32 characters in length. The only restriction in naming a FORTE' program is that the first character of the name must be alphabetic.

DELETE name Removes the named file from the diskette.

For clarity, the mention of volume numbers and any drive or slot numbers has been omitted from the above examples. Clarification on their use, if needed, can be found in the Disk Subsystem Manual.

FORTÉ DEFERRED – EXECUTION STATEMENTS

H	**U**	**(n:)**	**T**
"	**X**	**N**	
*****	**S**	**V**	
J	**Q**	**P**	

These statements, with the exception of the U and **X** statements, may be used in the immediate (command) mode. Multiple statements per line are permissible.

Some definitions:

a - This symbol will be used to indicate a note to be played.

n - This symbol will be used to indicate an integer number between 1 and 255 (unless otherwise indicated).

DEFERRED – EXECUTION STATEMENT DEFINITIONS

H Clears the screen and homes the cursor to the left side of the screen and vertically to line 12. The next print statement will operate at this line.

EXAMPLE:

```
% 10 H
```

" " or **"** Print statement. Prints all characters from the first " to the second " or to the end of the program line. A Carriage return/Line feed is issued at the second " or at the end of the program line.

EXAMPLE:

```
% 10 H
% 20 " SONG TITLE "
```


***** Remark. Allows the programmer to insert remarks into the program text. Remarks are considered as all characters from the * to the end of the program line. Remarks are not printed during program execution.

EXAMPLE:

```
% 20 " SONG TITLE "
% 30 * SONG STARTS HERE
```

J Jump statement. Similar to a GOTO statement in INTEGER BASIC. Causes program to perform an unconditional jump to a line number specified after the J statement.

EXAMPLE:

```
% 30 * SONG STARTS HERE
% 40 J120
```

U Use subroutine. Similar to a GOSUB statement in INTEGER BASIC. Causes the FORTE' program to utilize a subroutine starting at the line number specified after the **U** statement and ending with the **X** statement. When the **X** is encountered by the program, a return to the statement after the **U** statement is performed. Subroutines may be nested up to 16 deep.

EXAMPLE:

```
% 40 J120
% 50 U1000
```

X

Exit subroutine. Similar to RETURN in INTEGER BASIC. Marks the end of a subroutine and returns program execution to the statement after the U statement that called the subroutine.

EXAMPLE:

```
% 50 U1000
% 1000 X
```

S

Stop. Causes a halt in the program. Action is similar to the Control C. Resumption of the program at the displayed line number may be accomplished by using the **CON** command.

EXAMPLE:

```
% 1000 X
% 1010 S
```

Q

Quit. Causes termination of the program and returns the "%" prompt and the flashing cursor. Program execution is NOT resumed by the **CON** statement. Generally used to mark the end of the program if the end is above the subroutines.

EXAMPLE:

```
% 1010 S
% 1020 Q
```


(n:)

Indicates to FORTE' to repeat the passage inside the parenthesis n number of times. Repeats may be nested up to 16 deep. An open parenthesis must proceed each number and a close parentheses must close each passage. The number n must be followed by a ":" character.

EXAMPLE:

```
% 1030 (3: a a a a)
% 1040 (2:(3: a a a a) a a)
```

N

Used inside the repeat function. Indicates that the notes or statements after the **N** statement are operated on after the nth repeat of the passage. The **N** applies to the entire remainder of the line on which it appears.

EXAMPLE:

```
% 1040 (2:(3: a a a a) a a)
% 1050 (4:(2: a a a a N2 a
% 1055 ) a N3 a)
```

V

Voice. Indicates the voice number the following notes are to be. The voice number must be between 1 and 6. Any other number will result in an error.

EXAMPLE:

```
% 1050 (4:(2: a a a a N2 a)
% 1060 V6
% 1070 ) a N3 a)
```

P

Pause. Indicates a pause to take place before the execution of the next statement. Pauses are indicated by an integer number entered after the P statement. The shortest pause is 1 second and the longest is 255 seconds. Pauses for fractions of a second may be set using the rest statement.

EXAMPLE:

```
% 1060 V6
% 1075 P3
```

T

Tempo. Indicates exactly how many quarter notes are to be played each minute. Tempo number is indicated by an integer number entered after the **T** statement. 1 is the slowest tempo and 255 is the fastest.

EXAMPLE:

```
% 1070 P3
% 1080 T180
```


FORTÉ NOTE VALUES AND OCTAVE NUMBERS

With FORTE', octaves begin with the note A and end with the note G#. The note names within each octave are as follows:

```
A  A#  B  C  C#  D  D#  E  F  F#  G  G#
```

There are seven octaves available in FORTE'. They are simply numbered 1 through 7 with 7 being the highest octave. When entering a note to be played, entering the octave number after the note name indicates in which octave that note is to be played in. The entry C3 indicates to FORTE' to play a middle C note.

FORTE' instructs the APPLE II to play the desired notes according to the equal tempered scale, which is standard for the piano. The note A3 is the standard 440 cycles per second.

A one octave scale is played by the following short program:

```
% 10 V2 T125
% 20 A4/4 B4 C4 D4 E4 F4 G4 A5
% 30 Q
% RUN
%
```

FORTÉ TIME VALUES

FORTE' allows the use of time values for each note or group of notes. These time values are used to determine how long a note is played. Time values are entered after the note name and octave number, preceeded by a "/" character. Thus, a middle C quarter note would be entered as C3/4.

ENTRY	VALUE	NOTE SYMBOL
/1	WHOLE NOTE	
/2	HALF NOTE	
/4	QUARTER NOTE	
/8	EIGHTH NOTE	
/16	SIXTEENTH NOTE	
/32	THIRTY SECOND NOTE	
/64	SIXTY FOURTH NOTE	

Time values may be altered according to standard practice. The alterations available are the dotted note and the triplet note.

A dotted note is played half again as long as the indicated time value. Example, a whole note of a half second duration is played for three quarters of a second if dotted.

A triplet note is played for only one third of its indicated value. Example, if a whole note of a half second duration is entered as a triplet, it only plays for on sixth of a second. Three triplet half notes would occupy the same time span as a single note.

Dotted or Triplet notes are indicated by a "." character or a "!" character entered after the time value for the note. EXAMPLE:

C4/4. Indicates a dotted quarter note.

C4/4! Indicates a triplet quarter note.

FORTÉ RESTS

Rests are indicated by entering an R character and the time value desired (preceeded, of course, by a "/" character). EXAMPLE:

```
R/8 R/16 R/32
```

FORTE' allows the musician/programmer an advantage where rests are involved. Dotted and Triplet rests are legal and at times, highly useful.

FORTÉ DEFAULT VALUES

For the programmer's convenience, and to conserve memory space, FORTE' allows the use of default values to be used for the program notes. All values, with the exception of the note name, can be indicated once and need not be specified again until a change is desired.

EXAMPLE:

```
% 1Ø C4/4 B4 A4 C3/2. R
% 1Ø C4/4 B4/4 A4/4 C3/2.  R/2.
% 1Ø C4/4 B A C3/2. R/2.
```

All three of these lines of program would play the same. Default Values may only be specified for programmed notes.

FORTÉ SAMPLE PROGRAM

A sample program written in FORTE' for playback out of the APPLE II's speaker would look like the following:

```
% LIST

  10 H" FORTE' SAMPLE SONG PROGRAM" "
  20 " WRITTEN ON THE APPLE COMPUTER"
  30 T175 V1 P2
  40 E4/8 G/4 A5/8 B C/16 B/8
  50 A F#4 D E/16 F#/8
  60 G/8 E E D#/16 E/8 F#/4 D#/8 B/4 R/8
  70 E G/4 A5/8 B C/16 B/8
  80 A/4 F#4/8 D/4 E/16 F#/8
  90 G F# E D# C# D# E/4 E/8 E
 100 D5/4 D/8 C# B A/4 F#4/16 D/8 E/16
 110 F#/8 G E E D#/16 E/8 F#/4 D#/8 B/4 R/8
 120 D5/4 D/8 C# B A/4 F#4/16. D/8 E/16
 130 F#/8 G F# E D# C# D# E/4 E/8 E
 140 P2 " DID YOU GUESS THE NAME OF THIS SONG?"
 150 Q
%
```


IMMEDIATE EXECUTION COMMANDS

CAS	Specifies cassette port as current music output.
CON	Continue after a **Cc** or S (STOP)
Cc	Keyboard entry. Halts program execution.
DEL	Deletes specified program lines from memory.
FREE	Displays number of bytes free for program
LIST	Lists FORTE' program.
LOAD	Loads FORTE' program from cassette.
NEW	Deletes current program from memory.
NOTRACE	Cancels both TRACE and TRACEN modes.
RESTORE	Restores program if used immediately after **NEW**
RUN	Runs program currently in memory.
SAVE	Save a FORTE' program onto a cassette.
SPD	Sets speed of listing display.
SPK	Specifies speaker port as current music output.
STEP	Steps through program each time a key is pressed.
TRACE	Displays current line number being played.
TRACEN	Displays current note and octave number being played.

DEFERRED EXECUTION COMMANDS

H	Clears the screen and homes the cursor.
" "	Prints on screen all characters between quotes.
*****	Remark. All characters to end of line.
J	Jump. Similar to GOTO.
U	User subroutine. Similar to GOSUB.
X	Exit subroutine. Returns to statement after the **U**.
S	Stop. Displays line number where Stop occured.
Q	Quit. Ends execution of FORTE' program.
(n:)	Repeat passage inside parens n number of times.
N	Repeat modifier.
V	Voice number. Between 1 and 6.
P	Pause. Between 1 and 255 seconds.
T	Tempo. Number of Quarter Notes to be played each minute.

VALID FORTÉ NOTES

A A# B C C# D D# E F F# G G# **R** = rest

OCTAVE NUMBERS

1 <---> **7**

TIME VALUES

/1	whole note
/2	half note
/4	quarter note
/8	eighth note
/16	sixteenth note
/32	thirty-second note
/64	sixty-fourth note
.	Dotted note played half again as long as time value.
!	Triplet note played one third as long as time value.

FORTÉ ERROR MESSAGES	POSSIBLE CAUSES
%%%%SYNTAX ERROR	Misspelled or incorrect command. Incorrect or incomplete statement in the program.
%%%%CAN'T CONTINUE	A **CON** command was entered when program execution was NOT halted by either a Control C (Cc) entered at they keyboard or an **S** statement in the program.
%%%%CAN'T RESTORE	A **RESTORE** command was entered at sometime other than immediately after a **NEW** command was issued.
%%%%>65535 ERROR	A line number greater than 65535 was entered.
%%%%>255 ERROR	A Tempo, Spd, or Pause was entered with a value greater than 255.
%%%%>16 NESTED REPEATS	More than 16 repeats were nested together in the program. (2:(3:(3:))) is considered as three nested repeats.
%%%%UNMATCHED REPEAT ")"	Program execution encountered a ")" symbol without a leading "(n:" symbol indicating a repeat.
%%%%CONDITION OUTSIDE OF REPEAT	An **Nn** statement was encountered outside of a repeat.
%%%%>16 UTILITY SUBS	More than 16 utility subroutines were nested together.
%%%%NO SUCH LINE	A **Un** or **Jn** statement was included in the program where line number n does not exist.
%%%%INVALID EXIT	An **X** statement was included in the program either outside a utility subroutine or the program was **RUN** inside a utility subroutine.
%%%%INVALID VOICE NUMBER	A Voice number was entered that was not in the range between 1 and 6.
%%%%MEM FULL ERROR	During the tape or disk loading of a FORTE' program using LOAD, if the amount of memory available is less than the amount required for the program, this error will result.
ERR	A tape read error was encountered. Possible causes and cure are listed in the APPLE II Reference Manual.

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