Apple][Computer Technical Information
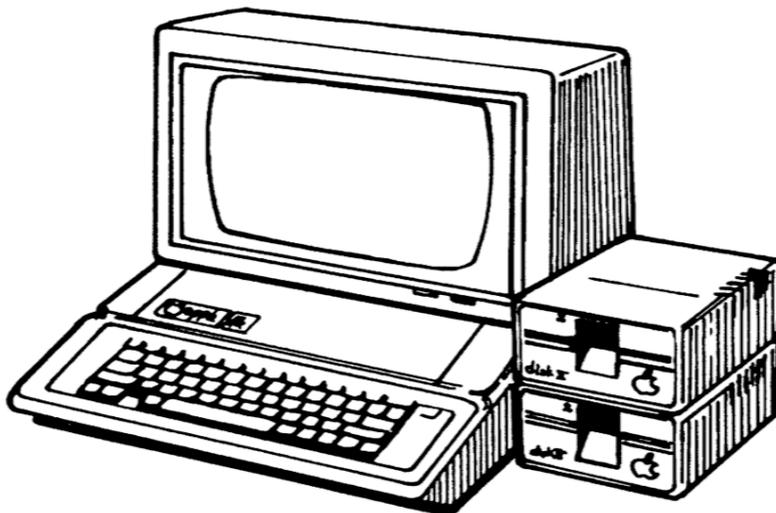
Apple][Family
Diagnostic Information

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XPS - DIAGNOSTICS IIe   (c1985)

(Main Menu Screen)

```
A)   MAIN MEMORY                    B)   KEYBOARD
C)   SYSTEM ROMS                    D)   GAME CONTROLS
E)   CPU (6502)                     F)   CHANGE SLOT/DRIVE
G)   DISK SYSTEM                    H)   ADJUST DRIVE SPEED
I)   PRINTER                        J)   ADD PERIPHERALS
K)   PERIPHERAL CARDS               L)   MEDIA VERIFY
M)   80 COLUMN CARD                 N)   ENABLE PRINTOUT
O)   AUXILIARY MEMORY               P)   COLOR BAR TEST
Q)   QUIT                           R)   FOCUS TEST
```


This disk is a successor to APPLE-CILLIN (c1982); it is a sophisticated
update of that earlier diagnostic. It has more tests, and the tests are
more advanced. The XPS opening menu screen declares that it diagnoses the
IIe, but it works also with the IIc; it correctly identified the ports of
my IIc, although it described them as "peripheral cards."

The vintage of this disk is "early IIe," because it presumes that the CPU
is a 6502 chip. Still, its CPU tests passed my IIc's 65c02 8 MHz ZIP CHIP.

The RAM TESTS are applied separately to main RAM (lower 64K) and to
auxiliary RAM (upper 64K). Within each bank, the eight RAM chips are
identified with the letter "G" to show that each has passed the continuous
RAM tests. Presumably, the RAM test could identify the specific RAM chip
that fails, enabling the replacement of that specific chip. This RAM
identification would apply especially to the auxiliary RAM bank. A failed
chip in main memory would prevent the program from loading and executing.
But because the RAM tests are continuously repeating through endless
"passes," the main memory RAM tests might be useful to identify marginally
working RAMs that work initially but which fail later when warm. To
identify "cold-failing" RAMs in main memory, the internal self-test is
recommended: The self-test identifies bad RAM in either bank which fail at
power-up.

SYSTEM ROMS TEST: This test is useless on any computer other than an
early-vintage (pre-1985) IIe. With my Unidisk 3.5 model of IIc, all tests
of the EO/CO ROMs yielded error messages.

PERIPHERAL CARD IDENTIFICATION AND TESTS: XPS will identify the peripheral
(interface controller) card in each IIe slot or IIc port. Unlike the
automatic card identifier on the MECC Computer Inspector, the XPS disk must
be "trained" to identify each card. Later, the card will be named
automatically when recognized in a slot. XPS applies a checksum algorithm
to the card-resident ROMs to identify each card. When the checksum matches
a value held on the disk, then the card is given the name associated with
that checksum value. If the card checksum does not match any value held on

the disk, then the user is prompted to name the unknown card. That name is
then held with the checksum on the disk to be used for future
identifications.

GAME CONTROLS TESTS: These include the joystick or the antique "game
paddles." For each direction of movement, values ranging from 0 to 255 are
displayed. On/off switch contacts for the left fire button (switch 0) and
right fire button (switch 1) are shown. But in addition to the
joystick/paddles test, the mouse also is tested! The mouse is tested in a
comparable way: with directional movement values (0 to 255) and also with
the mouse-button (switch 2). These tests are recognized even on the IIc.

DISK DRIVE TESTS: These apply only to 5.25" floppy drives. These
qualities are assessed: (a) disk speed, (b) write to disk, (c)
track-seeking, and (d) read from disk. The tests run continuously until
stopped. Errors are counted, but detailed information on the nature of the
error is not given. A separate drive-speed test gives a numerical
(no-graphical) indication of rotational speed RPM.

When using the disk drive tests, apply a tab over the write-protect notch
of the program disk to protect it against accidental erasure. The XPS disk
presumes that drive tests are to be done on slot 6, drive 1, unless the
slot has been changed previously on a different menu selector.

MEDIA VERIFY TEST: Visually, this is the most exciting test on XPS. It
resembles the fast copy display on Locksmith 6.0: an array of the 35 tracks
and 15 sectors presented on Apple 5.25" floppies. The test disk need not
be formatted in advance. A moving dot pattern sweeps upward and to the
right across the array, with a dot (.) to indicate good sectors. Bad
sectors are identified with a number which increments on successive
failures during later passes. The media test appears to be valid; it
identified bad sectors on several disks which could not be formatted.
Because this verification test can be applied even prior to formatting, it
is one of the best features of XPS and is recommended highly.

Should bad-sector disks be kept or discarded? Some users may choose to
throw away disks with even a few bad sectors. After all, 5.25" disks are
cheap these days! Still, bad-sector disks may have limited uses. As long
as the bad sectors are not located in the directory area (tracks 00-01),
then they make be useful for short programs or even for data storage of
small files. The remaining good storage space may be used by scanning the
disk with CERTIFIX. CERTIFIX formats the disk in either ProDOS or DOS 3.3.
While formatting, it automatically identifies any bad sectors and locks
them out by placing them in a special file so that the bad blocks do not
intrude on programs or data storage.

The XPS disk is copy-protected, but backups can be made with the Locksmith
v.4.1 bit copier.

==

YO YO DUCK DIAGNOSTICS v.2.5 (c1990)

(Main Menu Screen)

```
 1)  BURNIN                          2)  C.D. CONNECTION
 3)  MONITOR.TEST                    4)  DRIVE CLEANER
 5)  D.HI.RES.TEST                   6)  DISK.TEST2
 7)  ENSONIQ.SOUNDS                  8)  HIRES.TESTS
 9)  INSTRUCTIONS                   10)  IW2
11)  IWLQ                           12)  JOY.PAD.TEST
13)  KEYBOARD.TEST                  14)  MEMORY.TEST
15)  PRINTER.TEST                   16)  SPEAKER.TEST
17)  TEST.80.COL                    18)  ZANY.QUIT

     CATALOG = 0
```

YO YO DUCK DIAGNOSTICS is unique software. It is supplied as a two-sided
5.25" floppy, and is distributed as shareware by many public domain
software distributors. It offers many tests, which are less sophisticated
than those available elsewhere (such as Master Diagnostics, Aptest, or
Computer Inspector). It is inexpensive shareware (Michael Coffey, 1640
Cante, Florissant, MO 63033). I paid the shareware fee in 1992 and have
not yet ... received upgrades. Still, its author is very knowledgeable
about Apple II and writes long letters in response to technical inquiries.
He also has a IIgs-specific disk of shareware anti-virus programs.

The best routine on YO YO DUCK DIAGNOSTICS is the documentation itself,
selected as #9 on the opening menu, INSTRUCTIONS.   The docs occupy the
entire second side of the disk. They can be displayed on the screen (using
Karl Bunker's "dogpaw" text-display routine), or printed, at the user's
option. Docs explain plenty, going beyond the software itself.

The first routine, BURNIN, is a continuous loop of tests, intended
to test hardware for hours.

Overall, the individual tests on YO YO DUCK DIAGNOSTICS are unsophisticated
but there are so many of them that the shareware fee is well worth its
cost. Also, the documentation is excellent so users will learn how their
hardware works...

YO YO DUCK DIAGNOSTICS v.2.5 has a strange name, which the author should
explain. It is ProDOS based and is not copy-protected. Payment of the
shareware fee is based on the honor system.

Apple][Computer Technical Information

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                    ZIP CHIP IIE/IIC UTILITIES   V. 2.00   (C1988)

                          (Main Menu Screen)

                          CONFIGURE INSTALLED

                  A)   RUN ZIP SYSTEM CHECK

                  B)   RUN ZIP CONFIGURER

                  C)   RUN ZIP INSTRUCTIONS

                  X)   EXIT MENU

ZIP CHIP IIe/IIc combines utilities and diagnostics to test the integrity
of the 8-bit ZIP CHIP sold for the IIe/IIc. It includes utilities to slow
the accelerated speed below the maximum 8 MHz speed. In actual practice,
ZIP CHIP users either use the maximum acceleration or they turn it off. I
can think of no scenario for which partial acceleration would be preferred.

The diagnostics portion of this disk proceeds through an impressively long
list of function tests; yet, their validity is doubtful. When the disk was
read by an Apple that lacked a ZIP CHIP, many "tests" were passed despite
the prominent fact that the computer lacked a ZIP! The ZIP CHIP manual is
very brief and the routines are not explained. The manual have identified
the outcomes for which the ZIP chip could be judged conclusively to be
defective. Early ZIP chips (c1988-1991) had a high failure rate so it
would be desirable to identify failed ZIPs. In practice, software
confirmation of ZIP CHIP failure is unnecessary. Dysfunctional ZIP CHIPs
fail catastrophically, and software is thereby rendered unbootable.

==

ZIP-GS DIAGNOSTICS (C1991)

This is a disk that accompanies the ZIP-GS accelerator card. It is a
flashy graphical product with hyperscreen features. It is not a true
diagnostic in the sense that it judges the performance of hardware.
Instead, it is a manual on a disk. It teaches the installation and
operation of ZIP-GS at an elementary level --- too elementary, in my view.
The disk should teach how ZIP-GS accelerates, but explanation is minimal.
Utilities are included to install the ZIP-GS NDA on the Finder. As a
diagnostic, this software is flashy, yet disappointing. The ZIP=GS NDA by
"Brutal Deluxe" from France is more impressive than this. Unprotected
software.

===

REFERENCE

DiversiCopy.   (review) InCider, January 1987.

THE BEST DIAGNOSTIC ROUTINES

Identifying the best diagnostics in any category is very subjective and
these reflect my personal views. Reasoning behind each selection is
stated.

        BEST RAM MEMORY TESTERS:

Internal Self-Test IIe/IIc. This was judged the best because it will
identify bad RAM chip specifically, even when RAM failure in the main
(lower 64K range) prevents other software from loading and running. Its
shortcoming is that it is cryptic and the user may have trouble deducing
which RAM has gone bad.   (RAM-identification instruction details are given
in the review of the self-test, above).

        BEST DISK-DRIVE SPEED TESTERS:

My favorites are drive-speed testers in MASTER DIAGNOSTICS IIE/IIC, and
also in APTEST. These testers are graphical and accurate. Some might
prefer LOCKSMITH 6.0 speed tester with its "continuous over time" graphical
display, and its feature that drive speed can be evaluated optionally with
course/ medium/ fine precision.

        BEST DISK-DRIVE TESTS:

MASTER DIAGNOSTICS IIE/IIC gives the disk drive an elaborate series of
tests which are reported and explained continuously on the screen.
(=========================) has an excellent series of random read/ write
tests which measure the head mechanism's ability to move quickly and
accurately across the disk surface.

        BEST ROM TESTS:

MASTER DIAGNOSTICS IIc/IIe checks each ROM, and it knows that different
models have different ROMs. It even knows the different ROM sets that
identify the three IIc models.

        BEST CPU (MICROPROCESSOR) TESTS:

Choosing the best CPU test is difficult because it is unclear which aspects
of CPU functions are tested. It is also unclear which functions are most

_____

vital to CPU operation. XPS Diagnostics completes about 100 passes per
second during its CPS tests. Bearing this uncertainty in mind,
APPLECILLIN's CPU test is judged the best. This test is buried within
APPLECILLIN's "Other Tests" submenu, but it offers a repeating cycle of
clearly identified CPU tests: overflow tag, carry tag, decimal mode flag,
index register Y, index register X, negative flag, stack pointer,
accumulator, and status register. This test is identified by software as
for the older 8-bit processor, 6502, but it appears to work well with the
newer 65c02 or with the 8-bit ZIP chip.

        BEST 80 COLUMN CARD TESTS:

MASTER DIAGNOSTICS IIC/IIE has a series of visually attractive tests of the
80 column card functions; most other disks just give 1-2 screens of 80
column demos or tests.

        BEST PERIPHERAL (INTERFACE) CARD IDENTIFIER:

APEX DIAGNOSTICS identifies interface cards recognized "under the hood,"
from a standard set. It also can add new or unrecognized cards to its card
archive. Recognition is apparently achieved by applying a checksum routine
to the ROMs on the card. Once identified, the software consistently names
the card every time in the future. The potential size of its interface
card recognition file is unknown ---- my file has about 90 interface cards
so far.

MECC COMPUTER INSPECTOR was impressive at identifying the interface cards
in my IIe, even without pretraining. Two other diagnostics (MASTER
DIAGNOSTICS IIE and also XPS DIAGNOSTICS IIE) identified cards but only
when pretrained (i.e., card initially identified by user). MASTER
DIAGNOSTICS IIE notices whether any ROMs have changed on successive days,
and this change could indicate faults in interface cards.

        BEST DISK MEDIA VERIFIER:

XPS DIAGNOSTICS IIE (also known as POWER UP COMPUTER CHECKUP) gives an
excellent screen display, identifying specific bad sectors in a repeating
series of tests. CERTIFIX is less interesting to watch but CERTIFIX will
actually lock out bad sectors, enabling bad-sector disks to be used for
data or programs.

        BEST JOYSTICK/MOUSE TESTS:

MASTER DIAGNOSTICS IIE/IIC has an excellent graphics-based mouse-test, but
it does not test the joystick. (====================) uses a graphical
grid-array to facilitate centering-adjustment of the joystick. XPS
DIAGNOSTICS IIE tests either joystick or mouse fully on a single combined
text-based screen.

BEST PRINTED MANUAL:

This is tough to judge because the manuals are unavailable for most
software reviewed here. MASTER DIAGNOSTICS IIE/IIC has an excellent manual
that explains the various tests and gives advice for corrective or
preventative maintenance.

BEST DOCS-ON-DISK:

YO-YO-DUCK DIAGNOSTICS presents a large set of mediocre tests, but it
includes a whole disk-side of excellent docs. The docs are self-booting
and are accessed through the opening screen menu.

MOST FLEXIBLE SET OF SELF-REPEATING TESTS:

APPLE DIAGNOSTICS allows the user to choose any combination of tests,
correctly suited for any model (IIe/IIc, IIc+, IIgs), which can repeat
endlessly. YO-YO DUCK DIAGNOSTICS has a repeating series of tests (The
"Burnin'" series) but the user cannot delete selectively any of the tests.

BEST OVERALL DIAGNOSTICS PACKAGE:

Master Diagnostics IIc and IIe. These were chosen because of their tests'
number, variety, sophistication, and ease of use. The manual also was
excellent, giving further information to identify and correct faults.

APEX DIAGNOSTICS is a close ranked second. Its abilities to identify
interface cards held "under the hood" and to learn the identities of new
interface cards are impressive.

WORST DIAGNOSTICS:

VITESSE DISK DRIVE DIAGNOSTICS are the worst. They are inaccurate and give
a simplified yes-no evaluation of drive speed without specifying the
criterion applied for passing. My test copies, an original and a backup
obtained from a separate source, each failed to terminate its own
drive-speed test. Its visual display is primitive, considering its recent
date (1993). Company support was deficient; I described by phone the
problem to Vitesse, and was told I would have to pay a service fee even to
have the disk checked for faults. I declined, reasoning that even if it
worked the software was not worth the disk replacement fee demanded by
Vitesse.

AUTHOR'S NOTES AND ACKNOWLEDGEMENTS

1. This is the first version (v.1.0) of this review. Readers' comments,
corrections, and additions are welcome and they will be added to the next
revision.

2. This paper will be updated, especially when further Apple II diagnostics are located. Assistance from readers in locating further Apple II diagnostics will be appreciated and will be added in the next version. Specialized diagnostics for the IIgs are sought in particular.

3. Advice, comments, or software were provided by John Countryman, John Daniels, Tim Gaines, Doug Durkee, Wayne Jones, Jim Poore, Charles "Dr. Tom" Turley, and Joe Walters. Their contributions are gratefully acknowledged.

4. Nearly all diagnostic software reviewed here are out of print today (1996) but they are widely available through informal sources. I will appreciate being notified (and will be amazed) if any of these software packages are supported presently with updates.

5. Readers are welcome to contact me:

Stephen Buggie
Psychology Dept.
University of New Mexico-Gallup
200 College Rd.
Gallup NM 87301

Office phone: (505) 863-7504.
Fax: (505) 863-7532.
E-mail: buggie@unm.edu

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BIT BANGER   (IIGS Ram Tester, 1993)

by Harold Hislop

This is a sophisticated RAM tester for the IIgs. It performs an extensive
series of tests on RAM, repeating endlessly if instructed to do so. It
appears to be very similar to the RAM tester from Appleworks-GS (1989,
Claris).

Docs are included; they state that the IIgs must first pass the internal
self-test before BIT BANGER can be used. If an accelerator with more than
128K of cache memory, it must first be disabled. As with all RAM testers,
any information held on a RAM disk will be lost.

These RAM tests are executed: a preliminary overall test, and tests for
stuck bit, nibble, byte, page, bank, and crosstalk errors. A refresh test
is done with a 5 minute delay, to assess whether information is held
accurately for that brief duration. The tests are done sequentially within
each bank, and then sequentially across the banks. Addresses of RAM error
locations are displayed.

Tests are lengthy: testing one meg of RAM will take about 10 minutes even
at accelerated speeds. Overnight burn-in testing is recommended. At the
end of the tests, a colorful scrolling rainbow pattern is displayed. Before
rebooting, the computer must be turned off.

I have not seen BIT BANGER yet confront a bad ram chip, but it
certainly looks impressive with its sequence of clearly identified
subtests.

```
==============================================================================
                    CERTIFIX DISK DIAGNOSTICS  V. 2.0
                    =================================

                        [Opening Menu, CERTIFIX]

        RUN CERTIFIX (PRODOS)           RUN DRIVE SPEED TEST
        RUN CERTIFIX (DOS 3.3)          CREATE 40 TRACK 'CERTIFIX'
        RUN " RESCUE"                   CERTIFIX DOCUMENTATION
        RUN DRIVE SPEED TEST            QUIT TO BASIC
```

This diagnostic is focused on identifying and locking out any defective
blocks on 5.25" floppies. It also formats disks in either DOS 3.3 or
ProDOS, and includes a simple speed tester. The software can also allow
formatting of 40-track Apple II 5.25" floppies. Some disk drives are
capable of 40-track formatting --- most older full-height drives cannot do
this.

With a five minute intensive spin, the drive mechanism assesses the
presence of any bad blocks on the disk surface. Users should keep in mind
that identifying the source of faults is difficult and that persistence is
needed.

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                    INTERNAL SELF-TEST (IIE, IIC, IIGS)

The internal self-test is available on the enhanced IIe and enhanced IIc,
as well as on all models of the IIgs. It can be retrofitted to older
versions of the IIe or IIc by changing a single ROM chip. This enhancement
is very worthwhile, especially because the test can identify the locations
of faulty RAMs. Replacing faulty RAM chips is especially important for the
IIC, which loses RAMs occasionally due to heat buildup resulting from
faulty ventilation within the CPU.

The self-test is activated by holding down the open-apple and closed-apple
keys at power-up. In the enhanced IIe and enhanced IIc, a checkerboard
pattern appears on the screen for about a minute, changing slightly every
five seconds. If all is well, the checkerboard display is replaced by the
words, "SYSTEM OK" on the screen. When faults are detected, a cryptic
message appears on the screen to identify the fault. Tests are done on the
CPU, MMU, IIc ports, RAM, and others. No message is displayed when
subtests are passed. When a circuit fails, that failure alone is
identified on the screen. Other failures are not identified until the
first-identified failures are corrected.

RAM chips are identified by location, within each 64K bank: the main 64K,
and auxiliary 64K. The 8 chips in the main 64K bank are identified on the
screen by the word, RAM followed by eight zeros:

                    RAM   0 0 0 0 0 0 0 0

Any bad RAM chip is shown by a 1 rather than an 0. If the faulty
RAM is in the auxiliary 64K bank, the display is preceded by an asterisk:

                    * RAM   0 0 0 0 0 0 0 0

In the IIC, the 16 RAM chips are arranged in a column along the right edge
of the motherboard. The eight RAMs closes to the front (keyboard end) are
main RAM, while the eight RAMs closest to the rear (back panel) are
auxiliary RAM. Positions in the display, counted from the right, represent
motherboard positions counted from the front. For example, consider this
RAM error display:

                    RAM   0 0 0 0 0 1 0 0

This RAM error message indicates that the THIRD ram in main memory is
faulty ---- the third RAM as counted from the front (keyboard) end of the
RAM column.

The IIGS internal self-test is activated at powerup by holding down the
open-apple and option keys. This self-test takes about two minutes. It
generates a colorful, dynamic display of geometric designs and shapes,
ending with the reassuring message, SYSTEM GOOD. These subtests are
included: RAM, ROM, system speed, serial ports, internal clock, battery

RAM, the desktop bus, interrupts, and possibly other tests.

The internal self-tests are impressive for several reasons.

First, I resurrected two junked IICs which merely had bad RAMs. Locations
of the dead RAMs were identified accurately by the self-test. Second,
because the self-tests reside in ROM rather than on disk, they are
convenient to apply, even if no disk drives are presently connected.
Third, they appear to test many motherboard functions. When inspecting
hardware, these tests could be valuable to apply before making a decision
to buy.

The limitation presented by these tests is that documentation is difficult
or impossible to find. Owners' manuals mention little about them, and even
technical reference manuals on IIgs/IIe/IIc given very scanty information.
The most detailed listing of error codes on the IIgs self-test is found on
an NDA: SUPER INFO III, V.3.0 (1992). The error codes are listed under
the ERR/SELF-TEST pull-down menu. (SUPER INFO III is a $15 shareware item
available from its author: Jim Luzar, Apt. 241, 5324 N. Lovers Lane,
Milwaukee WI 53225).

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================================================================================
                    MASTER DIAGNOSTICS IIE/IIC, V. 7.0, 1990)
                    ============================================

                         (Main Menu Screen: IIc)


                       MENU OF OPTIONS      IIC

      1 - ROM TEST                        5 - DISK DRIVE ANALYZER
      2 - 80 COLUMN TESTS                 6 - PORT ANALYSIS
      3 - MOUSE SCALE                     7 - MONITOR ROUTINES
      4 - RAM TESTS                       H - HELP    % - EXIT



(Sub-menu: IIc Ram Test)              (Sub-menu: Disk-Drive Analyzer)

        * TEST OPTIONS *              1 - DISK READ/WRITE TEST
1 - MOTHERBOARD RAM (AUTO)           2 - DISK SPEED UTILITY
2 - MOTHERBOARD RAM (MANUAL)         3 - WRITE-PROTECT SWITCH TEST
3 - MOTHERBOARD RAM (CONTINUOUS)     4 - HEAD CLEANING UTILITY
                                     5 - RETURN TO MENU
4 - AUXILIARY RAM   (AUTO)           6 - REBOOT
5 - AUXILIARY RAM   (MANUAL)
6 - AUXILIARY RAM   (CONTINUOUS)
7 - RETURN TO MENU
```

MASTER DIAGNOSTICS IIE/IIC gets my vote for the best all-around Apple II diagnostics software. There are two separate one-sided 5.25" disks, each for the IIe and IIc respectively. If the wrong disk is inserted, a prompt screen will appear. The disks are easy to use, the tests are extensive and accurate, and they are accompanied by an excellent manual. The disks are formatted in DOS 3.3, and copy protection was removed from later versions (Mine are v.7.0, dated 1990). Transitions to the main menu are smooth and users need not reboot when navigating among menu screens. The IIe and IIc software must be bought separately: I paid $85 for the IIe package (1991) and $35 extra to get the IIc version.

Many routines are the best available. Favorites are: Disk Drive Analyzer, RAM tests, 80 column tests, Port Analysis Tests (IIc only), and the interface card tests (IIe version only). An older version is available for the II+, but no IIgs version was ever produced.

DISK DRIVE ANALYZER: Routines are listed above. All are excellent. These routines would be great for demonstrating a disk drive at the time of sale. The Write Protect Switch Test is sometimes erratic; that test sometimes reported false write-switch errors. A HEAD CLEANING UTILITY is included. This utility sweeps the cleaning disk through all head positions. A partial run through the head positions will suffice. The IIe version (but not the IIc version) can initialize scratch disks for the read/write test and for the disk speed utility.

ROM TEST: This test is excellent. The software knows that ROMs were
expanded in later IIc models, and those roms (D8, D0, E0, E8, F0, F8) are
recognized and tested. Each ROM is identified clearly on the screen as the
test proceeds.

This is the best of all Apple II diagnostics, but it could be improved.
The $85.00 I paid in 1991 was hiked $10.00 above its $75 advertised price;
certainly a price-hike should indicate that upgrade versions are on their
way down the pipeline. No update was ever sent or announced. Customers
should be told at time of purchase that updates will not be available in
the future. The lack of disk updates should be publicized to uses. MASTER
DIAGNOSTICS IIE/IIC should have been updated to allow these tests: 3.5"
800k drives, SCSI hard drives, big RAM cards, ZIP CHIPS, and other modern
interface cards, etc.

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MECC   COMPUTER INSPECTOR   V.1.0   (1988)
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(Main Menu Screen)

COMPUTER INSPECTOR

    1. MACHINE IDENTIFICATION   5. RAM MEMORY TEST
    2. MONITOR ADJUSTMENT   6. JOYSTICK/PADDLE TEST
    3. PRINTER TEST   7. INFORMATION
    4. DISK DRIVE TEST   8. QUIT

This diagnostic disk was produced by MECC, a major supplier of educational
software, which is now phasing down its support for the Apple II. The menu
screens resemble those of Master Diagnostics IIe/IIc; they are well labeled
and easily used; no manual is needed. All routines allow smooth return to
the main menu screen; rebooting is unnecessary.

One's first impression on seeing the opening screen is that few tests are
presented. In fact, some of its diagnostics are excellent. This disk is
worth adding to your collection. It is applicable to all late model Apple
IIs: IIgs, IIc, IIc Plus, or IIe.

The best routine on MECC COMPUTER INSPECTOR is MACHINE IDENTIFICATION. By
inspecting the computer's ROMs, this routine deduces the following
information: model number, identity or function of all interface cards,
and identity of all memory (main RAM, auxiliary RAM, and expansion RAM).
IIc ports (corresponding to expansion slots) are identified correctly.
This routine resembles an updated version of the peripheral card routine on
APPLE-CILLIN II, although this routine is more efficient. It identifies
cards and ports accurately, even without manual pre-identification as
required by Apple-Cillin. I was impressed that even the make and model
number of the SCSI hard drive in my flagship IIe was identified correctly.
The only mistake it made in identification is that it falsely identified my
IIc (Unidisk 3.5" model) as a IIc Plus. This error likely happened because
it mistook my Zip Chip 8 MHz accelerator for the accelerator in the IIc
Plus.

        The MONITOR ADJUSTMENT option has three subprograms:
        (a) normal text and graphics [a mixed test pattern with color
            patches, line grids, large type, and a simple graphic].
        (b) a super-high resolution graphic [suitable for IIgs only], and
        (c) a single-page 80 column text sample screen.

The PRINTER TEST is simple, but good. This test instructs the
printer to reproduce the entire alphabet and supporting symbols.

The DISK DRIVE TEST has an excellent test of the write-protect switch. Its
test of "general operations (write/read to disk) is hard to evaluate
because it gave very little information on my successful tests. Hopefully,

if any drive tests were failed, the faults would have identified. A drive speed test is included, but its performance was poor relative to drive speed tests on other diskettes. This drive-speed test is text-based only, without graphics. It identified the drive speed of all my tested drives as 300 rpm. These drives are well adjusted for speed, but drive speed tests on other software identify even slight variations from true speed, unlike this program.

The RAM MEMORY TEST has a text-based screen. In the IIe/IIe, it automatically tests main memory (lower 64K), auxiliary memory (upper 64K), plus any extended memory available. It recognizes and tests all IIgs memory, taking about ten minutes to test a 4 meg IIgs RAM card. All RAM tests were passed, so its reporting of RAM failures cannot yet be judged.

An excellent JOYSTICK TEST is included. The user does X-axis and Y-axis centering on a grid pattern. This adjustment is efficient and clearly understandable.

Docs, unfortunately, are minimal, consisting of three brief screens. They cannot be printed. The operating system is proprietary, neither ProDOS nor DOS 3.3. Thus the routines cannot be split from the package. The MACHINE IDENTIFICATION routine would be handy to use elsewhere, but it must remain with the package.

The MECC COMPUTER INSPECTOR program code was reviewed in COMPUTIST magazine, v 71, p. 17 (1989). The disk can be backed up with the bit copier on Locksmith v.4.1.

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            MULTIRAM IIE OR MULTIRAM IIC DIAGNOSTICS V.2.0   (1985)

                        CHECKMATE TECHNOLOGY INC.

                          by Steve Stephenson


                          (main Menu Screen)


                              Status


          Bank 1  ???K
          Bank 2  ???K                        Bank A
          Bank 3  ???K                        Group:      ???K
          Bank 4  ???K
          --------------------------------------------------------
          Bank 5  ???K
          Bank 6  ???K                        Bank B
          Bank 7  ???K                        Group:      ???K
          Bank 8  ???K
          ======================================================
                                              TOTAL       ???K


          [1] View status page              [2] Quit to Basic
          Test:    [3]  Quick       [4] Full     [5] Continuous

          RETURN           ARROWS         SPACE   BAR         ESCAPE
          starts           select         pause/resume        cancel
```

These diagnostics specifically test the two Checkmate RAM cards
MultiRam IIe and MultiRam CX (512K for the IIc)

I have the disk, but not the docs. The IIe and IIc tests are on separate
files. The question marks on the opening screen later identify the RAM
capacity when the user returns to the status screen after the tests. (For
the 512K MultiRam CX card in the IIc, each of the eight banks has 64K, and
each Bank Group has 256K.) Of the three test options [3], [4], [5], option
[5] is recommended so that the behavior of the RAMs can be judged over
time.

When the test is selected, an attractive screen appears, outlining the
interface card, and identifying which sockets are filled with RAMs. The
RAMs are each identified as (a) good, (b) good but unusable, or (c)
bad/empty. The test proceeds sequentially across the eight RAM banks. Any
bad/unusable RAMs are easily identified with this graphic display, which
resembles the similar graphic display of AE RAMFACTOR or AE RAMWORKS.

The IIe version, MultiRam Diagnostics IIe, has a further set of options

preceding its opening screen. These options are:

1. MultiRam IIe card (alone)
2. MultiRam IIe (on the RGB)
3. MultiRam RGB card
4. Exit.

I have only the IIc version: MultiRam CX. The IIe version shows a map of
the 32 256K RAM chips in each of the configurations listed above. Tests on
the IIe software will also examine other cards, although identifying the
bad RAM chip ---- the main goal of these programs ---- will be ambiguous
because the RAM maps are specific to these Checkmate cards. Onboard docs
report that the MultiRam IIe and MultiRam RGB cards can be installed
together, yielding a total of 1.75 megabytes of RAM. These tests could be
useful to others in the sense that they will signal whether _any_ RAM is
bad; then other tests could be used as follow-up to identify the location
of the bad RAM.

I got the software separately from my used MultiRam CX 512K IIc board. The
disk has these extra programs other than the diagnostics: MRAM.SYSTEM,
MD.PRO.CUSTOM, MULTIDRIVE.PRO, LOGO.SYSTEM, PRINT.DOC, RAM, and
RAM.FILER. The three pages of on-disk v. 4.3 docs can be selectively
viewed on the screen or routed to a slot #1 printer. Mainly, the docs
outline the changes made in the successive versions of the software.

I received the Checkmate MultiRam diagnostics and related programs on a
nonbootable disk that lacks menus. To simplify their use, I have recopied
these files to a self-booting disk controlled with an excellent program
launcher (Super Selector v.3.22). This disk will be sent to users on
request.

Overall, this software is well arranged and is excellent for those who have
the specific RAM cards for which the software is intended. For
non-MultiRam cards, the software merely tells the user that a chip is bad
without identifying its location clearly.

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POWER UP! COMPUTER CHECKUP (1984)

William G. Peters, Software Publishing Corp.

This disk is an identical clone of XPS Diagnostics IIe; see the review of
XPS. The disk is copy-protected, and the krack recipe published in
COMPUTIST magazine failed to deprotect it. See the review on XPS.

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RAM 4000   (RAM-GS TEST v.1.4, c1993)

This is a RAM testing disk supplied with the Chinook RAM 4000 memory
expansion board for the IIgs. It shows an outline drawing the of RAM card,
with its 32 chips clearly identified. These RAM tests are selectable:
standard memory test (regular or extended), memory refresh test, and unique
address test. I have yet to see it identify a failed RAM chip.

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REAL SOFTWARE DIAGNOSTICS (1986)

(Main Menu Screen)

A) DISK DRIVE TEST   D) FLOPPY DISK TEST
B) MEMORY TEST   E) COLOR TEST
C) PRINTER TEST   F) AUDIO TEST

This is a very minimal diagnostic set. It is ProDOS-based, and the disk is
freely copyable. Its ProDOS operating system identifies it as a diagnostic
of the recent Apple II era. Display screens are text, not graphics. Easy
return to the main menu screen is available following all tests other than
the MEMORY TEST, for which a warm reboot is needed.There is so much empty
space left on the disk that one cannot avoid wondering why more tests were
not added.

The DISK DRIVE TEST has special features. It expects the disk to be
formatted in ProDOS; it tests either 5.25" or 3.5" disks, it identifies the
disk's capacity, and it verifies the drive's read/write capabilities.

The MEMORY TEST portrays a unique upward-scrolling low-res pattern for
fifteen seconds, followed by the words, TEST PASSED.

The FLOPPY DISK TEST requires a ProDOS-formatted disk, and it checks the
disk, block-by-block, reporting specific numbers of any failed blocks. The
display is strictly text, so it is less interesting to watch than XPS
Diagnostics. But this routine is useful because it has the unique
capability to test the 1600 blocks (800K) of 3.5" disks.

The COLOR TEST is done full-screen, one hue at a time. When adjusting
color monitors my preference is to have all colors displayed simultaneously
because adjustment of color controls affects all colors, not just one.
Thus, this COLOR TEST is judged inferior to others which commonly display a
simultaneous spectrum of colors.

The AUDIO TEST presents a simple melody, the theme from Star Wars.

Overall this is a very simple diagnostic set. Its main advantages are: (a)

It is ProDOS-based and unprotected, so its routines could be compiled
elsewhere, and (b) Its floppy disk test and disk drive test will verify
3.5" disks and drives in addition to the common older 5.25" size.

Apple][Computer Technical Information

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SEQUENTIAL MEG-80Z MEMORY TESTER V.2.1 (1993)

This is a disk that accompanied the 1024K RAM board for the IIe, marketed
by Sequential. It resembles the AE RAM testers, because it shows an
outline of the RAM card and its chip locations. The tests are routine;
nothing spectacular is shown.

==

TUNING APPLE II FLOPPY DRIVES (1995)

by Stephen Buggie

This is a disk to guide the user in the steps required to do track-center alignment adjustment on 5.25" drives. APTEST is presented on Side B, while an extensive set of docs is given on side A.

For unknown reasons, the drive alignment software will not load on a IIc. Therefore, a IIc-compatible version is also available. This disk is entitled, TRACK-CENTER ALIGNMENT. This version can also be used on the IIe and IIgs.

This disk, and its procedures, will be demonstrated at APPLE II KANSASFEST in July 1996!

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                        VITESSE DRIVE-CHECK (c1993)

                        DRIVE-CHECK FOR THE APPLE II
                        COPYRIGHT 1993 BY VITESSE, INC.
--------------------------------------------------------------------
                        CURRENT DRIVE: SLOT 6 DRIVE 2

                                 MAIN MENU

                            SELECT DISK DRIVE
                            CLEAN DISK DRIVE
                            VERIFY FLOPPY DISK
                            DRIVE SPEED TEST
                             DRIVE SEEK TEST
                            DRIVE WRITE TEST
                             ALL DRIVE TESTS
                             QUIT TO PRODUCE
```

This software gets my vote for the worst diagnostic available for
the Apple II. Why? Several reasons:

First, the drive speed test is seriously bugged to the extent that it is
useless. The screen states that the drive speed test will take two minutes
--- but it continued endlessly without completion. This fault was noticed
on the original disk as well as on two backups obtained independently. The
drive speed test is flawed because no readout is given regarding direction
(+/-) or extent of drive speed error. With the software equivalent of an
"idiot light" on a car dashboard, the software only gives a pass/fail
judgment on disk speed. This is clearly deficient because the other speed
checkers give appropriate graphical or numerical information.

Second, the user interface is simple and uninformative. While this could
be overlooked if this software dated from the early 1980's, one would
expect that a 1993 software product ought to have an appealing look.

Third, publisher support is deficient. This diagnostic is still supported
(Vitesse), but inadequately. By phone, I described the drive speed bug and
was told to return the disk accompanied by a replacement fee. I judged that
the software, even if it worked, was not worth even the cost of the disk
replacement fee.

In conclusion, this software is a big dud. Readers are cautioned against
it even if it is available at a discounted rate. VITESSE DRIVE-CHECK is an
ironic disappointment: the most recently released diagnostic is also the
least worthwhile one to have.

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