DECUS

PROGRAM LIBRARY

DECUS NO.	FOCAL8-270
TITLE	MONOPOLY
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SOURCE LANGUAGE	PS/8 FOCAL ^{R}

MONOPOLY
========
(WITH APOLOGIES TO MESSRS WADDINGTONS) & Parker Brothers!

FROM: C.C. WILTON-DAVIES,
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HARDWARE REQUIRED:-

      PDP-8, LINC-8 OR PDP-12 WITH 8K MEMORY AND DECTAPE, LINCTAPE
OR (PREFERABLY) A DISC. LINC-8'S WITHOUT DISC WILL NEED HARDWARE
MODIFICATIONS IN ORDER TO RUN OS/8 OR PS/8.

ADDITIONAL SOFTWARE REQUIRED:-

      PS/8 OR OS/8 OPERATING SYSTEMS, OMSI'S PS/8 FOCAL, PREFERABLY
THE JULY 72 VERSION OR LATER.

LOADING THE PROGRAM SUITE

      ** THIS VERSION OF 'MONOPOLY' IS SUPPLIED EITHER AS A PAPER TAPE
OR AS AN ASCII FILE 'MONOPO.FD' ON AN OS/12 LINCTAPE, AND COMPRISES
9 FOCAL PROGRAMS WHICH CALL EACH OTHER AS SUBROUTINES SO THAT THE
COMPUTER WILL ACT AS 'BANKER' IN A GAME WHICH FOLLOWS THE ENGLISH
BOARD VERSION FAIRLY CLOSELY.
      LINCTAPE VERSION - COPY THE ASCII FILE ONTO LTA0 (FOR EXAMPLE)
WITH PIP   'LTA0:MONOPO.FD<LTA1:MONOPO.FD/A'. MOUNT A LINCTAPE WITH
ZEROED DIRECTORY ON UNIT 1. TYPE '^C', THEN 'AS LTA1 DSK' (OR BETTER,
USE A DISC AS 'DSK' IF YOU HAVE ONE).THEN PROCEED FROM %£% BELOW.
      PAPER TAPE VERSION - PLACE THE PAPER TAPE IN THE HIGH-SPEED
READER, RUN PIP AND TYPE 'SYS:MONOPO.FD<PTR:'. IN RESPONSE TO THE
'^', STRIKE ANY KEY, AND THE PAPER TAPE SHOULD READ IN.
      %£% YOU SHOULD NOW HAVE AN ASCII FILE CALLED 'MONOPO.FD'
WHICH IS 38 BLOCKS LONG ON AN APPROPRIATE FILE-STRUCTURED DEVICE.
TO CONVERT THIS INTO THE NECESSARY 9 FOCAL PROGRAMS, RUN THE OMSI
PS/8 FOCAL, AND ANSWER '4' TO THE INITIAL DIALOGUE.
      THESE 9 PROGRAMS SHOULD BE ON DEVICE 'DSK'. IF THIS IS A
DISC, WELL AND GOOD, BUT IF LINCTAPE OR DECTAPE, THE PROGRAMS SHOULD
BE AS NEAR THE DIRECTORY AS POSSIBLE TO SAVE LONG PAUSES DURING PLAY;
IN THIS CASE, MOUNT A ZERO-DIRECTORY TAPE ON DEVICE 'DSK'. NOW GIVE
THE DIRECT FOCAL COMMAND 'OPEN INPUT (DEVICE:)MONOPO'.THE FIRST PART
OF THE FILE WILL NOW BE READ IN AND AUTOMATICALLY BE STORED AS THE
PROGRAM 'MONP.FC' ON 'DSK'. AN ERROR MESSAGE, PROBABLY ?03.28,
WILL THEN BE TYPED OUT. RESPOND WITH 'O R I' ('OPEN RESTORE INPUT'),
THE NEXT PART OF THE FILE WILL BE STORED AS THE PROGRAM 'MONREN.FC',
AND THE ERROR MESSAGE WILL AGAIN APPEAR. EACH TIME YOU GET THE ERROR
MESSAGE, RESPOND WITH 'O R I' - FINALLY THE WORD 'MONOPOLY' WILL BE

      ** ONLY THE PAPER TAPE VERSION HAS BEEN SUBMITTED TO DECUS.

TYPED OUT, AND THE GAME HAS STARTED. ALL 9 PROGRAMS WILL HAVE BEEN
SAVED.

DIRECTORY OF DSK

          THE RELEVANT SECTION OF THE DIRECTORY OF DEVICE DSK SHOULD NOW
READ:-

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MONP.  FC    5
MONREN.FC    2
MONCHA.FC    4
MONCOM.FC    3
MONHOU.FC    4
MONSEL.FC    3
MONMOR.FC    2
MONLST.FC    2
MONOPO.FC    6
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          AS MENTIONED ABOVE, IF THE DEVICE IS DECTAPE OR LINCTAPE, THIS
SECTION SHOULD BE THE FIRST PART OF THE DIRECTORY. THE ORDER HAS BEEN
CHOSEN TO MINIMISE PAUSES FOR TAPE MOVEMENT.

PLAYING THE GAME

          THE 'MASTER' OF THE NINE PROGRAMS IS THE LAST-NAMED, WHICH
CALLS THE OTHERS AS SUBROUTINES OF ITSELF AT APPROPRIATE MOMENTS IN
THE GAME. ON SUBSEQUENT OCCASIONS, THE GAME MAY BE STARTED BY ANSWERING
'0' TO THE INITIAL DIALOGUE OF 'FOCAL', THEN GIVING THE DIRECT
COMMAND 'L R MONOPO' ('LIBRARY RUN MONOPOLY').
          THE COMPUTER TYPES 'MONOPOLY' AND ASKS FOR THE NUMBER OF PLAYERS.
AT LEAST 8 MAY PLAY, BUT 20 IS TOO MANY, EVEN FOR THE JULY 1972 VERSION
OF PS/8 FOCAL. ALL PLAYERS USE THE SAME KEYBOARD IN THE PRESENT VERSION,
BUT DOUBTLESS SOME WILL WISH TO AMEND THE PROGRAMS TO USE SEPARATE
KEYBOARDS. A BRIEF LIST OF INSTRUCTIONS FOLLOWS, WHICH SHOULD BE KEPT
FOR QUICK REFERENCE. EACH PLAYER WILL START WITH $2000 IN HIS ACCOUNT,
AND NO PROPERTY.
          PLAYER 1 WILL START, MOST APPROPRIATELY BY STRIKING 'P' (PLAY)
IN RESPONSE TO THE QUESTION 'NOW WHAT?'. HIS DICE THROW WILL THEN
PRINT OUT, AND THE MASTER PROGRAM CALCULATES HIS SUBSEQUENT BOARD
POSITION AND CALLS THE APPROPRIATE LINE OF 'MONP.FC' TO TELL HIM
HIS POSITION ON THE BOARD. 'CHANCE' OR 'COMMUNITY CHEST' WILL LEAD
TO APPROPRIATE ACTIONS DETERMINED BY THE PROGRAMS 'MONCHA.FC' OR
'MONCOM.FC'. IF THE PLAYER LANDS ON A PROPERTY, 'MONP' TYPES THE
NAME, PRECEDED BY A LETTER DENOTING THE SET TO WHICH THE PROPERTY
BELONGS, AND A NUMBER DENOTING ITS POSITION ON THE BOARD. IF THE
PROPERTY IS OWNED BY ANOTHER PLAYER, RENT IS CALCULATED BY 'MONREN'
AND AUTOMATICALLY TRANSFERRED BETWEEN THE TWO ACCOUNTS. IF THE
PROPERTY HAS NO OWNER, THE PLAYER IS ASKED 'WILL YOU BUY IT?' AT
THE PROPER PRICE, AND MUST TYPE 'Y'(YES) OR 'N'(NO) AS REQUIRED.
THE COMPUTER THEN ASKS AGAIN 'NOW WHAT?'. IF 'P' IS TYPED AGAIN,
THE MASTER PROGRAM EXAMINES THE PREVIOUS DICE THROW: IF A DOUBLE

WAS THROWN, THE PLAYER HAS ANOTHER TURN. IF NOT HIS TURN WILL PASS
TO THE NEXT PLAYER. IF THREE OR MORE SUCCESSIVE DOUBLES ARE THROWN,
THE PLAYER WILL 'GO TO JAIL'.

OTHER KEYS MAY BE STRUCK IN RESPONSE TO THE 'NOW WHAT?'
QUESTION. 'B' WILL PRODUCE A BANK BALANCE, 'L' A LIST OF THAT PLAYER'S
PROPERTY AND TOTAL ASSETS, 'H' WILL CALL 'MONHOU' FOR BUYING HOUSES,
'S' WILL ALLOW THE PLAYER TO BUY OR SELL PROPERTIES WITH OTHER PLAYERS
AT NEGOTIATED PRICES, 'M' WILL ALLOW HIM TO MORTGAGE OR UNMORTGAGE
ANY OF HIS PROPERTIES, AND 'E' WILL END THE GAME AFTER TYPING
OUT THE BANK BALANCE, PROPERTY LIST AND TOTAL ASSETS OF EACH PLAYER
IN TURN. IF 'E' IS STRUCK INADVERTENTLY, THE GAME MAY BE RESTARTED
BY GIVING THE DIRECT COMMAND 'G 1.4'.

A PLAYER MAY BECOME OVERDRAWN TO PAY RENTS AND OTHER PENALTIES,
BUT NOT TO BUY PROPERTY OR HOUSES, FOR WHICH HE MUST HAVE A SUFFICIENT
POSITIVE BANK BALANCE. IF HIS OVERDRAFT EXCEEDS THE VALUE OF HIS
PROPERTIES (ONLY RE-CALCULATED WHEN A PROPERTY LIST IS OBTAINED), HE
WILL BE SUSPENDED FROM PLAY AND OFFERED A CHANCE TO APPEAL AGAINST
HIS SUSPENSION. IF THE APPEAL FAILS, HE WILL BE UNABLE TO MOVE UNTIL
SUFFICIENT RENT IS PAID TO HIS ACCOUNT BY OTHER PLAYERS, OR ANOTHER
PLAYER BUYS PROPERTY FROM HIM FOR ENOUGH MONEY. IF A PLAYER OWNS
NO PROPERTY AND IS OVERDRAWN, HIS APPEAL WILL FAIL IRREVERSIBLY,
AND HE WILL RECEIVE NO FURTHER OPPORTUNITIES. A PROPERTY-OWNER MAY
APPEAL AS OFTEN AS HE LIKES, BUT UNLESS THE AMOUNT OF PROPERTY HE
OWNS HAS CHANGED SINCE THE LAST APPEAL OR 'L' OPTION, THERE IS
NO POINT IN APPEALING MORE THAN ONCE. A SUSPENSION IS AUTOMATICALLY
LIFTED WHEN THE BANK BALANCE IS HIGH ENOUGH.

RENTS ON PROPERTIES ARE INCREASED BY BUILDING HOUSES ON THE
PROPERTIES, BUT THIS MAY ONLY BE DONE WHEN A COMPLETE SET IS OWNED
BY THE PLAYER. THERE ARE 8 SETS, A-H. SETS A AND H CONTAIN 2 SITES
EACH, THE OTHERS 3 EACH. HOUSES MAY NOT BE BUILT ON OTHER PLAYERS
SITES, UTILITIES, STATIONS OR MORTGAGED PROPERTIES. A PLAYER IS
SUPPOSED TO BUILD EVENLY ON A SET, I.E. THE MAXIMUM AND MINIMUM
NUMBER OF HOUSES ON SITES WITHIN SETS SHOULD NOT DIFFER BY MORE THAN
1, BUT THE SOFTWARE EXERCISES NO CONSTRAINT IN THIS RESPECT. BUILDING
A 5TH HOUSE ON A SITE CONVERTS THE 'HOUSES' INTO A 'HOTEL', AND
NO FURTHER BUILDING ON THE SITE WILL BE PERMITTED. IT IS THEREFORE
IN A PLAYERS INTERESTS TO COLLECT SETS, AND IT MAY BE WORTH PAYING
A PREMIUM TO ANOTHER PLAYER TO COMPLETE A SET.

A PLAYER MAY BE SENT TO JAIL (AS IN THE BOARD GAME) BY LANDING
ON POSITION 30, RECEIVING A 'GO TO JAIL CARD' FROM 'CHANCE' OR
'COMMUNITY CHEST', OR ON THROWING A THIRD DOUBLE IN ONE TURN. UNLESS
HE HAS PREVIOUSLY RECEIVED A 'GET OUT OF JAIL FREE CARD', $50 WILL
THEN AUTOMATICALLY BE DEDUCTED FROM HIS ACCOUNT, AND HE WILL BE FREE
TO MOVE AGAIN. A FOURTH DOUBLE WILL IMMEDIATELY RE-SENTENCE HIM, AND
ANOTHER $50 FINE WILL BE LEVIED, AND SO ON.

'CHANCE' AND 'COMMUNITY CHEST' CONTAIN THE SAME 'CARDS' AS
THOSE IN THE BOARD GAME, BUT THEY ARE SELECTED BY RANDOM NUMBER RATHER
THAN BY SEQUENCE IN A SHUFFLED PACK, SO TWO CONSECUTIVE PLAYERS MAY
DRAW THE SAME 'CARD' OCCASIONALLY.

RENTS FOR UTILITIES AND STATIONS ARE AS IN THE BOARD GAME,

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BUT RENTS FOR PROPERTIES ON WHICH HOUSES MAY BE BUILT ARE CALCULATED FROM A FORMULA WHICH ONLY ROUGHLY APPROXIMATES THE VALUES FOUND IN THE BOARD GAME.

AS WELL AS ENTERTAINMENT AND A DEMONSTRATION OF THE POWER OF PS/8 FOCAL IN COMPUTING LINE NUMBERS AND USING LIBRARY COMMANDS, 'MONOPOLY' OFFERS A GOOD GO-NO-GO CHECKOUT OF THE HARDWARE, AS INTERMITTENT FAULTS PRODUCE EFFECTS THAT ARE MORE EASILY SEEN THAN AN ERROR IN THE 4TH DECIMAL PLACE IN A STATISTIC. HAPPY PLAYING!