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TITLE	RANDOM WALK/ARRAY
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FOCAL PROGRAM:

RANDOM WALK/ARRAY

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CERTAIN MONTE CARLO METHODS IN MATHEMATICS, VISUALIZING THE PATH OF AN IDEAL GAS PARTICLE IN INTRODUCTORY PHYSICAL SCIENCE, AS WELL AS THE INTRODUCTION TO CERTAIN STATISTICAL PROCEDURES ARE AIDED BY THE ABILITY TO RANDOMLY GENERATE AND PLOT A TWO DIMENSIONAL ARRAY.

AT LEAST ONE MANUFACTURER OFFERS A "SPIN-THE-BOTTLE" TECHNIQUE FOR RANDOMLY SELECTING THE NEXT PAIR OF COORDINATES IN A 2-D ARRAY TO DRAMATIZE THE RANDOM WALK FOR INTRODUCTORY PURPOSES.

THIS PROGRAM WILL RANDOMLY POPULATE A 25 BY 25 ARRAY, KEEPING TRACK OF THE ORDER IN WHICH SITES ARE SELECTED, THEN TYPE A MAP OF THE SITES (AS MANY AS 30 PER PACE) UNTIL INTERRUPTED. ANY LOCATION ON THE MAP CAN BE OCCUPIED ANY NUMBER OF TIMES ON ONE PACE, SO THAT SOME STRIKE-OVERS ARE EXPECTED. IT IS FURTHER EXPECTED THAT THE USER WILL PERFORM THE LABOR OF CONNECTING THE NUMERICAL POSITIONS IF HE NEEDS TO SEE THE CONNECTING PATHS. SOME ADDITIONAL CALCULATIONS RELATING TO THE MEAN FREE PATH ARE INCLUDED AS THOUGH THEY WERE OCCURRING ON A UNIFORM MATRIX (WILL NOT EXPERIMENTALLY MATCH THE 6 X 5 RATIO OF THE TELETYPE). THIS CAN CERTAINLY BE MODIFIED TO MAKE THE CALCULATED RESULTS MATCH THE MEASURED RESULTS FROM THE TELETYPE PRINTOUT.

PROGRAM OPERATION:

RANDOM COORDINATES ARE SELECTED OVER A 25 X 25 ARRAY TO THE NUMBER PER PACE SPECIFIED. THE SELECTED SITES ARE TYPED AND NUMBERED IN THE ORDER IN WHICH THEY WERE SELECTED. THE MEAN FREE PATH FOR THAT PACE AND THE AVERAGE SO FAR ARE TYPED. A QUASI-SIGMA VALUE IS TYPED. THE PROCESS IS REPEATED UNTIL INTERRUPTED.

LIMITATIONS:

THE PROGRAM AS WRITTEN USES FOCAL 5/69 (DECUS FOCAL8-52) WHICH HAS A VERY GOOD FRAN FUNCTION. THE PROGRAM CAN EASILY BE REWRITTEN TO WORK IN OTHER VERSIONS OF FOCAL. THERE IS NO NEED TO REMOVE THE EXTENDED FUNCTIONS FOR EVEN A LARGE NUMBER OF SITES PER PACE. A LARGE NUMBER, HOWEVER, WILL CAUSE REPEATED OVERPRINTING IN INDIVIDUAL LOCATIONS INTERFERING WITH THE LEGIBILITY.

