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Expected Mean Squares on MS-DOS

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An interactive program for calculating the expected mean squares for balanced designs was developed for use on a Tektronix 4054 desktop computer (Engeman 1982). That program used BASIC string commands that did not translate well into other forms of BASIC, including that for MS–DOS machines. The program has since been rewritten to run on MS–DOS machines. Its output has also been expanded. The new version was written in BASIC on an AT&T PC 6300 and will run on most MS–DOS machines that support BASIC.

The theoretical expected mean squares are calculated from the analysis of variance (ANOVA) model; hence, data are not used. The user is asked by the program to input the details of the ANOVA model. The notation used when interacting with the program is that which is generally used to write design models for analyses of variance. The notation and calculation procedures are in Hicks (1973). The information requested from the user includes labels for the terms in the model and the appropriate subscripts, which indicate main effects, interactions, and nesting. The user is then asked to indicate for each subscript whether it is associated with a fixed or random effect. The user also specifies the range of values for each subscript. As this information is requested from the user, a simple example is presented and referred to throughout the program to help the user understand what is being requested. After the user has completed inputting the necessary information, a table of all input information is presented. The user is then given the option of making changes or correcting mistakes.

The output consists of the table of input information and the expected mean squares for each term in the model. The user has the option to change a subscript from fixed to random or vice versa and recalculate the expected mean squares.

The program is available from us as a listing. Alternatively, those interested may send us a 5¼-inch diskette, which will be returned with the program on it. Although the program is highly interactive and includes an example in the displayed text, documentation is also available and will be included with the listing or disk. There is no charge.

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REFERENCES

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Hicks, C. R. (1973), *Fundamental Concepts in the Design of Experiments*, New York: Holt, Rinehart & Winston.