

Chapter 5

MatCos 3.X: Secondary School Presentation and Brief Pedagogical and Didactic Comments

ABSTRACT

The authors present a sketch of the Matcos 3.X environment. In particular, they present the axiomatic and genetic commands. There are genetic commands for the following: plane and solid geometry, arithmetic and classical algebra, calculus, and numerical methods, with an outline of real functions with two real variables, descriptive statistics, elements of combinatorics, probability, and linear algebra. Each command will be illustrated with an example. There are also comments and suggestions on the pedagogical and didactic use of some commands. The commands will not be displayed in strictly alphabetical order, but a more logical and consequential line has been preferred. At the end of the chapter, the alphabetical list of all the commands available in the programming environment will be shown.

“I think, I program, I learn” ~F. A. Costabile

1. INTRODUCTION

MatCos 3.X is, at the moment, the last module of the MatCos Project. It includes all the commands of the previous modules, but also contains other genetic commands aimed at mathematical concepts not really of Secondary School level. As we have already said, the Project consists of the modules 3.0 and 3.X and another eight modules entitled 3.1-3.8. We will present the module 3.X which includes all the others. Of course, the user need only consider the commands in which she or he is interested. Module 3.X has the same educational and teaching objectives as the others, consistent with the aims of the project, already illustrated previously.

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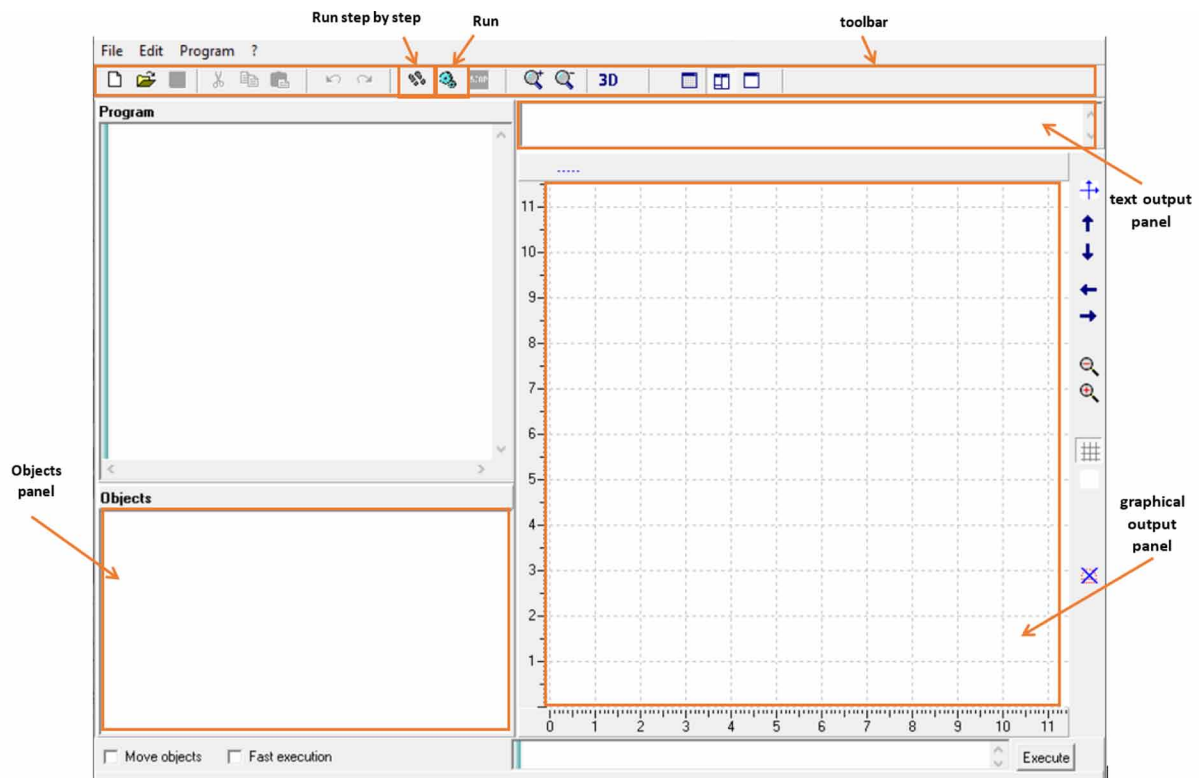
MatCos 3.X

The setting is therefore similar to module 3.0. In fact, there are axiomatic commands, related to the language and to the general character, and genetic commands related to the following mathematical disciplines: geometry, arithmetic, algebra, calculus and numerical methods, statistics, combinatorics, probabilities and databases. Some commands are more advanced, typical of symbolic languages, or aimed at some specific problems for which, starting from the data, they provide the approximate solutions with the request for precision. Therefore, these commands require a particular didactic use which will be discussed later. It must also be said that this type of commands has been inserted to give a broader perspective, both theoretical and applicative.

2. AXIOMATIC COMMANDS

MatCos 3.X presents the following user interface:

Figure 1.



In the *graphical output panel*, the graphic objects created by the program (points, lines, histograms, functions, etc.) are displayed. While in the *text output panel*, the texts (strings or variable values) are displayed.

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