Arabic Mathematical Symbol Insertion Application System Using Arabic Pack for Math Type Software

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ABSTRACT

Arabic mathematical expressions use special symbols and usually written from right to left. Most of Arabic users are facing problem of adding special Arabic mathematical symbols specifically these symbols supposed to be written in the Arabic format (from right to left) and don't find all these special symbols in typing all the related applications.

There are different Arabic math symbols needed to be added in the mathematical statements and equations. In Microsoft (MS) Word or other applications, users may find many of these symbols but not all. The proposed system will use software and tools including Arabic Pack for Math Type and it paints. It includes all Arabic symbols to be inserted in the different applications such as MS Word and MS Power Point.

The application system will facilitate the insertion of all symbols in the applications and allows users to maximize, minimize, edit and format these symbols easily. The configuration of the system is very easy and automatically be added to MS Word and Power Point application bars.

***Keywords*: Math type, Arabic Pack, Arabic Symbols, Mathematical Symbols, Paint.**

1. Introduction:

Many Arabic users (typist) want to include different Arabic symbols in documents but don't find all the Arabic symbols in applications such as MS Word, MS Excel, and MS Power Point. This paper proposes an application that will solves problem of adding different Arabic symbols.

The proposed system is expected to help typists who need to write Arabic mathematical equations. This system will help users to type in Hindi numbers (٤٣٢١), letters, symbols, Arabic square root sign and the summation sign. Math symbols including.

The rest of paper is organized as follows: section 2 background of the research paper including the tools and techniques will be used to conduct the research objectives. Section three is methodology talking about the methods, and applications will be used to design the proposed system. Section four is result and discussion of the research and the last section is conclusion the research paper.

2. Backgrounds

The following sections will include an overview of some related computer application software which will be used to conduct the Mathematical and symbol Arabic application.

2.1. Math type:

As it was introduced by Leas, Persoon, and Zacherle, (Leas, et al., 2008) The Math Type is a software application specially designed and created by Design Science to let the creation and adding of mathematical symbols, presence in computerized applications.

Leas (2008) mentioned that the Math Type is influential interactive equation editor for Windows and Macintosh that allows the user to create mathematical symbols for Word processing, web pages designing, desktop publishing, presentations, eLearning, Math documents, authoring tool, and other types of software. It is also used to make perfect formatted Math materials, research papers, web pages, slide presentations, journal articles, and books. For more details see Figures 1 and 2.

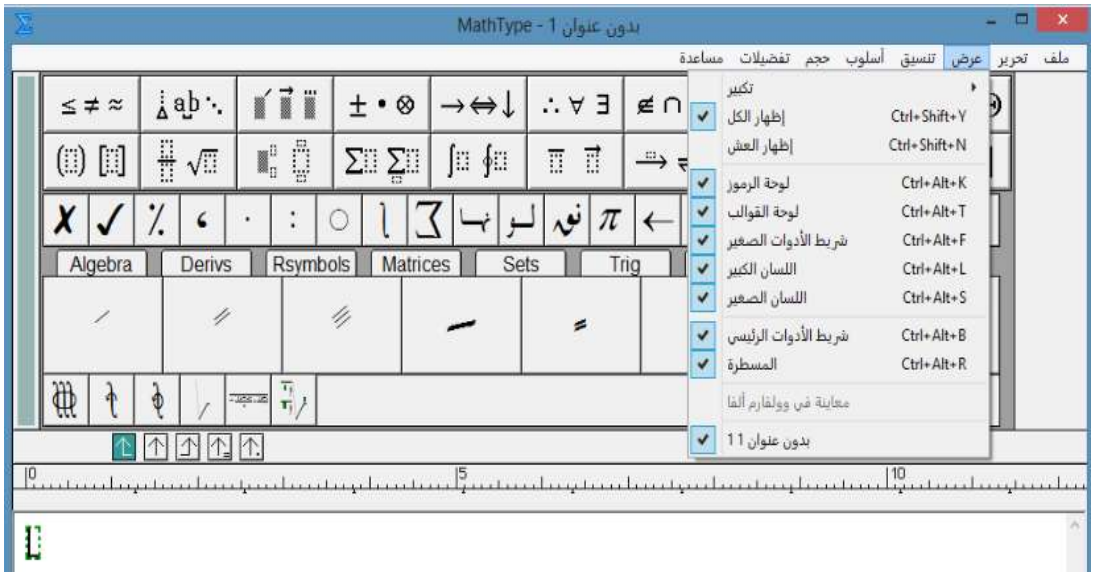

Figure 1: Math Type Interface

Figure 2: Math Type 6.0 (Windows version)

2.1.1. Characteristics of Math Type:

According to Noble (2007) the combination of Mathematical equation editing software's and the Math Type, have several advantages including:

1. Easy to deal with, with fast speed to get response from the user.
2. All equations can be saved in Word files or other related applications and can be edited and modified at any time.

3. Can control the fonts, size, style, bolding, height, width, color, and movement, of symbols anywhere in the equation.
4. Equations that are written through the Math Type can be transferred to any other device. The user can share even if there is a program Math Type subject to the availability of lines that the designer needs.
5. The use of Preference Files allows users to add any number of fonts, files and call it when needed.

Math type application will be used as the main application as it is very useful which is compatible with many MS Office applications. The interface can also be translated into Arabic.

2.2. Arabic Pack for Math Type

Arabic Pack for Math Type is developed by Mohamed Elmazeri (2007). The most popular versions of this product are: 2.0 and 3.0.

2.3. Arabic Math Type Patch

The Arabic Math Type Patch is a group of special settings for a particular files containing most Arabic mathematical symbols, and Arabic fonts which is applied in these settings to force the program "Math Type". It is used to add Mathematical equations in Arabic format using the font files which prepared in advance for this purpose. In addition, when needed it makes copy of needed expression files by dynamic linking to the Math Type. Furthermore, there is an executable file in Math Type parsed into Arabized Word templates, PowerPoint, to the preset preferences file in accordance with certain settings. For editing purposes, the new title will be added to the application's toolbar containing symbols, mathematical templates equations, and mathematical laws.

2.3.1. Characteristics of the Arabic Pack for Math Type

According to Elmazeri (2007) the main characteristics of Arabic pack for Math Type includes:

1. Arab package does not affect the performance or work of the Math Type.
2. Equations can be edited in English and even in the presence of Arab Pack.
3. The package provides most of the Arab icons in Math Type window making it in hand at any moment.
4. Toolbar contains several Arab templates that contain equations and mathematical laws ready in all branches of mathematics.
5. You can add or remove any mold or icon from the toolbar and can save any equation in the toolbar.
6. Package made Arab editing mathematical equations in Arabic through Math Type fun after it had been difficult task.

Arabic Pack for Math Type application will be used to insert the Arabic symbols so as the font and will be loaded in to the Math Type application

2.4. Paintbrush

Kaye (2001) defined Paintbrush as it is a simple paint program for Macintosh Operating System (Mac OS X) and Microsoft, specially designed to draw, and modify images, and figures. It provides users with a means to make simple images quickly, something that has been noticeably absent from the Mac for years. For more details see Figures 3 and 4.

Figure 3: Paint Main Interface

Figure 4: Paint Toolbar

The paint application will be used to draw any Arabic symbols needed and then it will be inserted into Arabic Pack for Math Type application as font which will be displayed in to the Math type application so you can modify it as you need (Kaye, 2001).

Most of Arabic Symbols are hand written, scanned and then turned into characters in a font file using Font creator. It is a software for creating and editing true type font's (TTF) files.

3. Methodology

Mixing of many different applications together has been used in order to obtain a powerful system allowing users to add, modify, and delete the Arabic symbols easily in using most writing software such as MS Word, and MS Power Point.

Mainly Arabic Pack for Math is a software application designed to be one of the most software application for the Arabic symbols. Secondly, Arabic Math type patch was used for the purpose of loading special added designed symbols named (Mazeri Arabic math symbol 1 Mazeri Arabic math symbol 2, Mazeri normal Arabic letter) which will be appeared in the Math type software preferences.

Math type uses a file called a preferences file which contains a set of presetting to tell the math type to write the equations using the font e.g (x), and using the size eg. (12), and write the number using the font e.g(y) and so on.

Two preference files are prepared, they are called:

1. Mazeri Arabic equation.eqp
2. Mazeri Arabic.eqp

These preferences files can be found in the Math Type program preferences folder. Users can create their own preferences file.

Equations created by Math Type can be transferred into any computer if the fonts used by Math Type is installed on that computer. These are present in the host machine and using the same preference file in order to show the equations in the exact form, as shown in Figure 5.

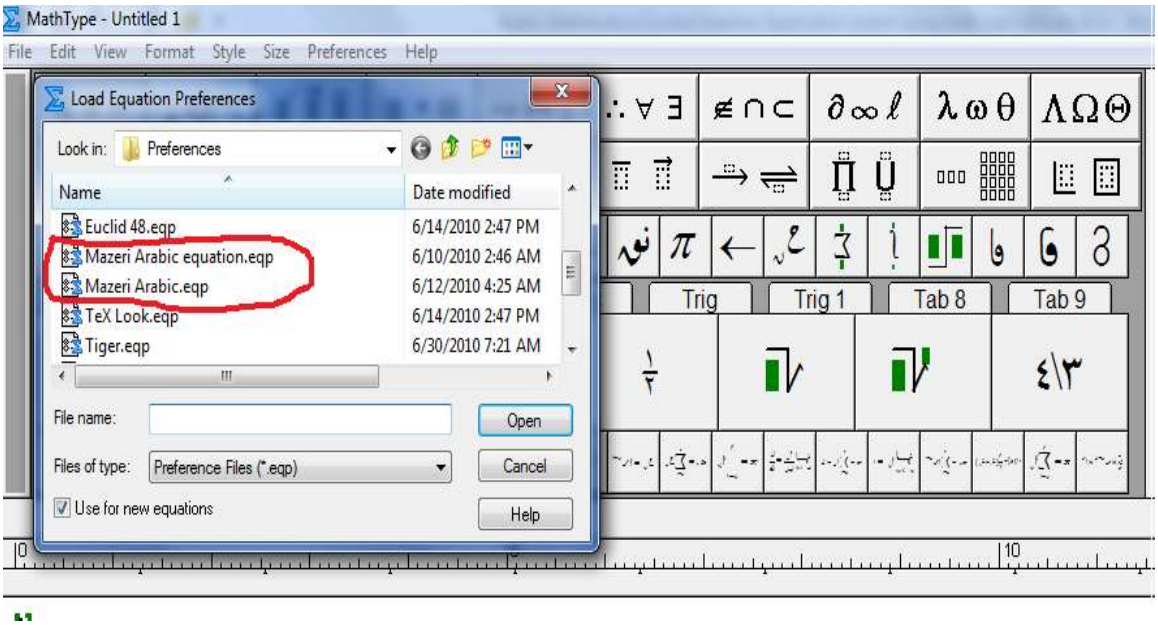

Figure 5: Mazeri Arabic Preferences

In the preferences, users can also change the size of the work space from workspace preferences, (as shown in Figure 6).

Figure 6: Workspace Arabic Preferences

The new preferences named Mazeri actually includes the new special Arabic symbols and it is a part of the application software with all functions (add, modify, and delete) after it has been installed in the computer. Recently there are some new Arabic symbols added by the updated versions, see Figure 7.

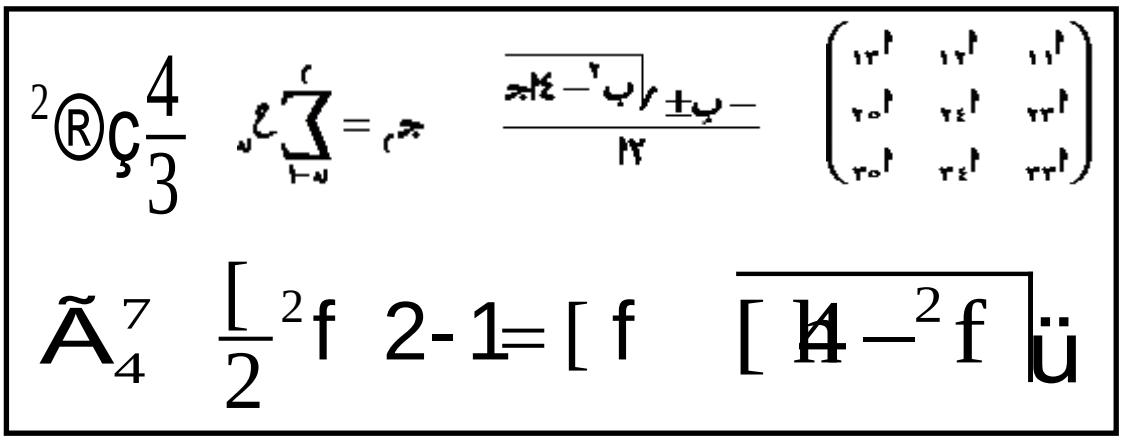

Figure 7: Special symbols from new preferences named Mazeri

To minimize the size of the symbols the user should highlight the symbol and press control + shift and <. If the user need to maximize the size of the symbols he should highlight the symbol and press control + shift and >. The most important feature of the new application

system is that it has ability to add any new symbols to the system with the ability to interact with all Arabic letters, numbers and directions.

4. Results and Discussion

The new system is very easy to use, came with Arabic interface and automatically added in some applications toolbar e.g. MS Word and Power Point. Users can easily modify these applications, likewise the new system has facilitated the insertion of all Arabic and mathematical symbols from right to left sequence of writing.

5. Conclusion

Researcher's things that Arabic Pack for Math Type will considered to be one of the best solutions of Arabic Mathematical insertion problems. Furthermore, the Arabic Pack for Math Type is an International Version because it is an application easy to deal with and has been standardized by the most writers. Therefore the authors would recommend all of the dealers including the libertarian of mathematics in computers, professors, students, typists and researchers to use. Authors are ready to do any kind of development when requested to do so.

Arabic Pack for Math Type succeeded in the process of making the editing of Arabic mathematical expression easily, quickly, accurately, and it is fun making Arabic equations using Math Type with Arabic Pack International Version.

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