ImportData(9) Example   B. Towler, UMass Amherst

The following SMath file demonstrates how data from a comma separated file (csv) can be imported into SMath. For convienence, variables are used as surrogates for the arguments to the importData(9) function.

This Smath file assumes a csv file containing 10 rows and 3 columns of numeric data is located in the root directory of the C drive.

fName:= "C:\myDataFile.csv"   Text variable for filename includes path

dSymbol:= "."   decimal symbol; note some countries use "," as a mark

colDelimiter= ","   Standard CSV uses commas as a delimiter; other characters can be used

1. To import the entire data set, we explicitly define the row and column sizes. Then the importData(9) function is called and assigned to the matrix AA.

fmRow:= 1   Variable used for the start row

toRow:= 10   End row of import

fmCol:= 1   Variable used for the start column

toCol:= 3   End column of import

$AA := \text{importData}(fName, dSymbol, 0, colDelimiter, fmRow, toRow, fmCol, toCol, 0)$

$$AA = \begin{pmatrix} 1 & 0.1 & 12.8337 \\ 2 & 0.8 & 74.4025 \\ 3 & 2.7 & 64.5114 \\ 4 & 6.4 & 91.8753 \\ 5 & 12.5 & 23.8372 \\ 6 & 21.6 & 43.198 \\ 7 & 34.3 & 60.9308 \\ 8 & 51.2 & 78.2965 \\ 9 & 72.9 & 70.8713 \\ 10 & 100 & 38.5252 \end{pmatrix}$$

2. We can also import the entire data set by using the default settings. The fmRow, toRow, fmCol, toCol variables can be set to a value of 0 (the default setting). The default setting for fmRow and fmCol is row/column 1. The default setting for toRow and toCol is the matrix size.

fmRow:= 0   Value of 0 indicates default; default is first row

toRow:= 0   Value of 0 indicates default; default is last row

fmCol:= 0   Value of 0 indicates default; default is first column

toCol:= 0   Value of 0 indicates default; default is last column

$BB := \text{importData}(fName, dSymbol, 0, colDelimiter, fmRow, toRow, fmCol, toCol, 0)$

$$BB = \begin{pmatrix} 1 & 0.1 & 12.8337 \\ 2 & 0.8 & 74.4025 \\ 3 & 2.7 & 64.5114 \\ 4 & 6.4 & 91.8753 \\ 5 & 12.5 & 23.8372 \\ 6 & 21.6 & 43.198 \\ 7 & 34.3 & 60.9308 \\ 8 & 51.2 & 78.2965 \\ 9 & 72.9 & 70.8713 \\ 10 & 100 & 38.5252 \end{pmatrix}$$

3. A submatrix of the CSV can be imported by altering the arguments. Here, we'll extract a 3 by 3 matrix from rows 7 to 9 and columns 2 to 3.

fmRow:= 7   Row 7 is the first row

toRow:= 9   Row 9 is the first row

fmCol:= 2   Column 2 is the first column

toCol:= 3   Column 3 is the last column

CC:= importData(fName, dSymbol, 0, colDelimiter, fmRow, toRow, fmCol, toCol, 0)

$$CC = \begin{pmatrix} 34.3 & 60.9308 \\ 51.2 & 78.2965 \\ 72.9 & 70.8713 \end{pmatrix}$$