

Chapter 9 - Lecture 1

ENGR1120 - 800 - Honors Programming for Engineers

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Data Input from .csv Files

Lecture 1 - Data Input from .csv Files

- Data Files
- File IO
- File Input from .csv
- Example in MATLAB

What is a Data File?

What is a Data File ?

- Standard way of organizing data for computer **storage**
- The data can represent many different things but it is all stored **digitally**
- Different **file types** are used for different purposes
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Why use Data Files?

Why use Data Files ?

- Organize large amounts of information
- Share large amounts of information
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What is File IO?

What is File IO?



File Input in a Program

File Input in a Program

- get data from a file during **Program Execution**
- data can be stored in a variable(s) to be used by your program

Comma Separated Values

The individual values in a file are often separated or *delimited* by a comma. Other characters are also used such as the space or *newline*.

.csv and MS Excel

.csv files are compatible with many different software systems

- MATLAB
- MS Excel
- ilearn

The fopen() Function

Open the file with the **fopen()** function

```
[FID]=fopen(FILENAME , PERMISSION)
```

- Input 1: FILENAME - the name of the file to open
- Input 2: PERMISSION - direction of access 'r' or 'w'
- Output 1: FID - the file identifier

The File Identifier

The **file identifier** (FID) gives important info

- If the file opens properly the FID will have a positive value
- The FID will have a negative value if there was an **error**
 - File is not in the proper **directory**
 - The **current folder** has not been set properly
 - Please organize you file structure!
- FID can also give information about the **End Of File**

The fscanf() Function

fscanf() can access the data only if the file is open

```
[A , COUNT]=fscanf (FID , FORMAT , SIZEA) ;
```

- Input 1: FID - the **file identifier** fid
Input 2: FORMAT - format specification of the scan
Input 3: SIZEA - number of values to be scanned
- Output 1: A - an array containing the scanned **data**
Output 2: COUNT - the number of elements in **A**

The fclose() Function

Remember to close the file with **fclose()**

```
[ST]=fclose(FID)
```

- Input 1: FID - the **file identifier** fid
- Output 1: ST - status of close?
- Close the file after your program accesses the data
- THIS IS EASY TO FORGET BUT IMPORTANT!!!

A Simple Example

```
FID = fopen('input_data.csv','r');  
  
A = fscanf(FID,'%f')  
  
fclose(FID);
```

A More Complex Example

```
fid=fopen('lab9_degrees.csv','r');

i=1;
while ~feof(fid)
    data(i)=fscanf(fid,'%f',' ',1);
    i=i+1;
end

fclose(fid);
```

References

- Your MATLAB textbook - Chapter 9 - Low Level File IO