

## Step by step use of UnloadAZK and Analyze tools in DMDX

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Just a reminder to start:

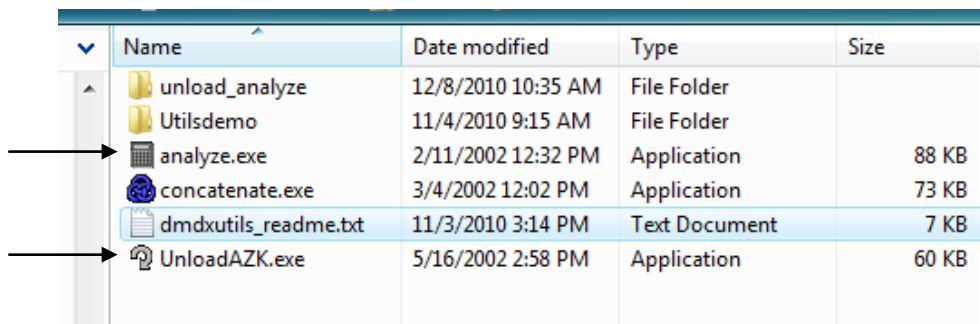
For each `.rtf` script you have, DMDX will save the results in an `.AZK` file with the same name than the `.rtf` script. The `.AZK` file is actually a simple text file, where all the results are written. The `.AZK` extension is only there because it needs to be recognized by DMDX.

This means that if you have 2 versions of the same `.rtf` script (for, let say two different versions, for left-handers and for right-handers), or several `.AZK` for the same script (because the experiment was run on different computers), you will want to unload all `.AZK` files into one.

A second important reminder: Before you start working or doing anything with your result file, make a **BACKUP copy** of everything you have about your experiment. It's not the moment to mess up with that now that all the participants are tested. So: before you continue: BACK-UP your entire experiment in a different folder on your computer, and *ideally* also on an external drive, on a CD, or at least a USB memory stick (personal note: I always have at least 3 identical backups of my entire documents at any time. I do a backup every day)

Now let's get started.

The DMDX Utils look like this:



Name	Date modified	Type	Size
unload_analyze	12/8/2010 10:35 AM	File Folder	
Utilsdemo	11/4/2010 9:15 AM	File Folder	
analyze.exe	2/11/2002 12:32 PM	Application	88 KB
concatenate.exe	3/4/2002 12:02 PM	Application	73 KB
dmdxutils_readme.txt	11/3/2010 3:14 PM	Text Document	7 KB
UnloadAZK.exe	5/16/2002 2:58 PM	Application	60 KB

I mostly use “Analyze.exe” and “UnloadAZK.exe”. They are small applications. You can download them on the DMDX website (<http://www.u.arizona.edu/~jforster/dmdx/>) or (coming soon) from the L2Psycholinguistics Lab website. The “readme.txt” file is also quite useful, and I'll put parts of it in these guidelines.

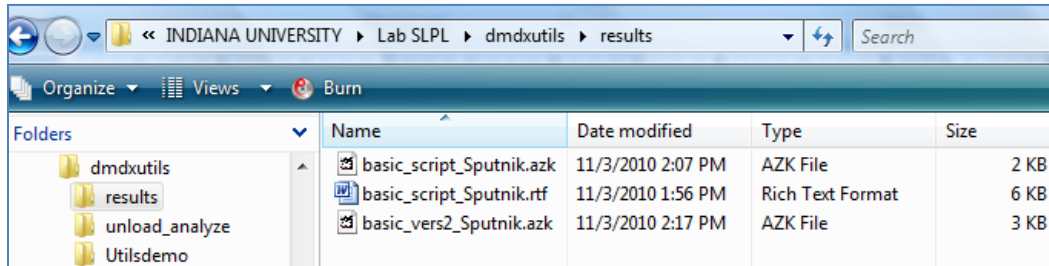
### 1) figure out if you need to use UnloadAZK first.

- did you use the same `.rtf` script on different machines?
- did you use different versions of the same script (e.g. left-handed and right-handed version)?
- do you have several result files (“`.AZK` files”) with a different name (e.g. because – by mistake – you saved each participant's file separate) ?

If your answer is “yes” to any of those questions, then, you need to use UnloadAZK.

## 2) How to use the UnloadAZK utility

- a. First, create a new folder “Results”
- b. Make a **copy** of all the .AZK files you want to unload into that folder. Keep the original ones where they are, just in case something happens during unloading. (yes... on top of the backup)
- c. Next to all the .AZK you want to combine, put also a **copy** of the .rtf script into the folder. The following screenshot shows the 2 azk files, the rtf file that are in my “results” folder:



This is what the “readme.txt” file says about UnloadAZK.

### (1) UNLOADAZK

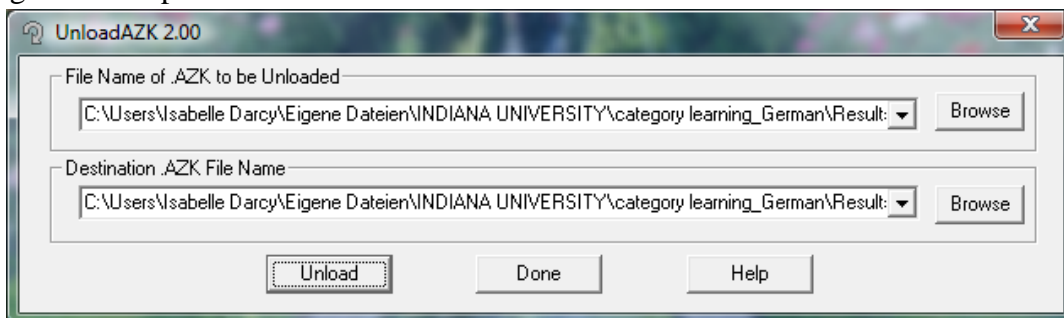
This program is designed to transfer .azk files from multiple machines and combine them into a single .azk output file. It replaces the older utility UNLOAD.

This program asks for a source file (an .azk file) and a destination. The .azk file is transferred to the new destination, appending the new material to any existing file with the same name. The original file is then renamed as an .rdb (raw data backup) file.

**Comment:** this is useful for combining from multiple rtf script versions (as long as they use the same item numbers), for example if you use 2 versions of the same script but with a slightly different block structure or pseudo-randomization. In this case, make sure the AZK destination file you choose has the same name as the rtf you'll use as input file.

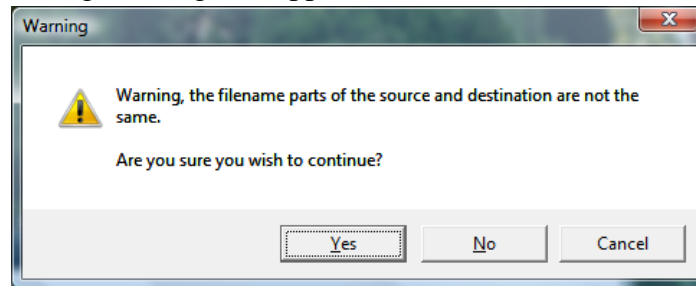
### 3) Open the utility by clicking on it.

A dialog window opens.



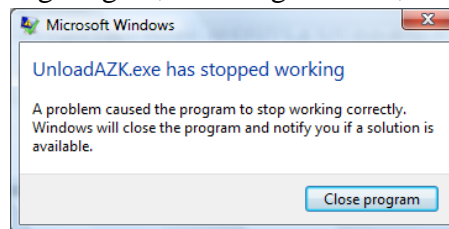
You see two lines: the source .AZK and the destination .AZK. You can select files by clicking on each Browse buttons. Choose the destination (second one) to be the one that has the same name than the .rtf script you have copied (in our example: basic\_script\_Sputnik.azk,

which has the “same” name as the .rtf script: basic\_script\_Sputnik.rtf). Choose the other one as the source (basic\_vers2\_Sputnik.azk). Click unload. The following warning will appear in most cases:

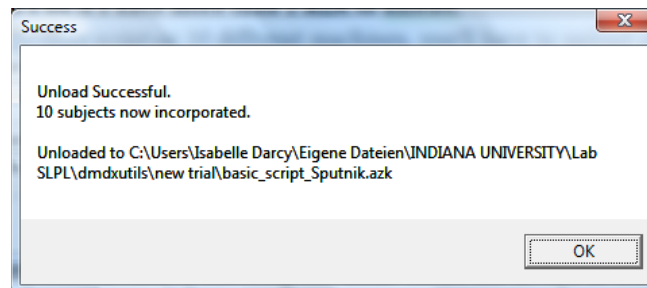


This is normal if your .azk files have different names (e.g. they differ by the version name...). Click “yes”.

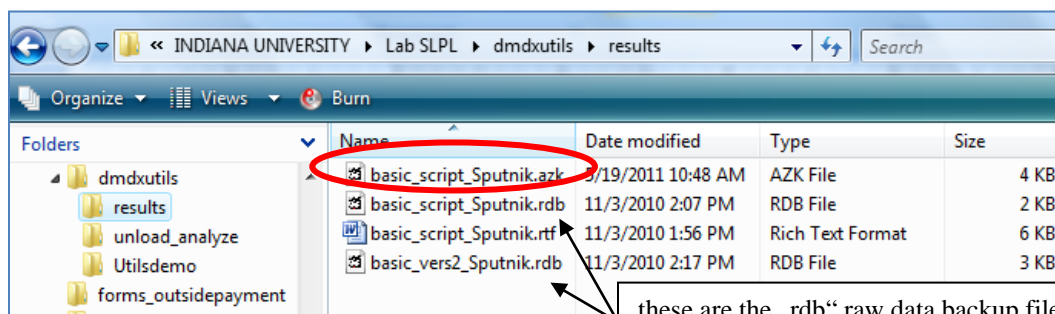
Warning: At this point, in windows Vista, it is very common that the program stops working. If that happens, just keep doing it again, selecting the files, a couple times (usually 3...).



It ends up working, at some point. If successful, you’ll see this screen. Verify that the number of subjects is correct.



This is the screenshot showing the content of my folder “results” after the unloading. The two original files :



these are the „rdb“ raw data backup files, showing which files have been unloaded into the “final” result file above.

**Question: What do I do if I have more than 2 AZK to unload.**

If you have tested the same script on 10 different machines, you'll have to unload all AZKs into another 9 times, until you have them all. The risk of appending one AZK twice into another is almost null, since once unloaded, all .azk files get renamed into .rdb files for security.

If you have many files (one per subject, for instance), the best would be to start by renaming the first file (e.g. ABX\_subject01.AZK) into the “final” result file (e.g. ABX\_results.AZK). Then, “unload” every other in turn, by choosing this “final” result file always as the destination. Choose the source AZK (the first one) to be the other ones in turn. The source AZK will be appended to the destination AZK.

Example:

ABX\_subject01.AZK becomes the final result file “ABX\_results.AZK”

Then, choose ABX\_subject02.AZK as the source (first) .AZK to be unloaded. Choose “ABX\_results.AZK” as the destination file. Unload.

Then, start again: choose ABX\_subject03 as the next source .AZK to be unloaded, with “ABX\_results.AZK” as the destination file. Unload.

and so on with ABX\_subject04, etc.

For all of those, the destination file will be the same: ABX\_results.AZK

Note: if you are working with several .rtf versions, it doesn't matter which .rtf you copy, as long as they all have the same item numbers.

I recommend to unload all files in the order in which you have tested subjects (or by subject number), see below.

**Order of combination (or order of unloading):**

If you have tested on several computers (in the lab, for instance), you need to unload several AZKs – as said. So for instance, you have file 1 (subjects 01-05) and file 2 (subjects 06-10). If in addition, you have 2 different experiments (e.g. ABX and Lexical decision), you'll want to be careful to unload the files in the same order for each experiment. Here is why:

DMDX will attribute “subject numbers” in the order in which they appear in the result file. This means that if you first unload version 2 into version 1, the version 2 (subjects 6-10) will be appended to the basic script version. Subject numbers will be 01-05 for version 1 and then 06-10 for version 2, which is the same as your subject numbers.

If you try the opposite, and append the basic script to the version 2, what happens to the subject's ID? → If you unload version 1 into destination file version 2, version 1 will be appended to version 2, and you'll end up with subject numbers 01-05 for your actual subjects 06-10, and subject numbers 06-10 for your actual subjects 01-05. Needless to say, this will create confusion

at some point. If you do 2 different orders in each experiment (I'm speaking of experience.....), it will be possible, but a real pain, to figure it out without making mistakes.

You can play around with one or two files (make backup copies!!) first, and see what happens.

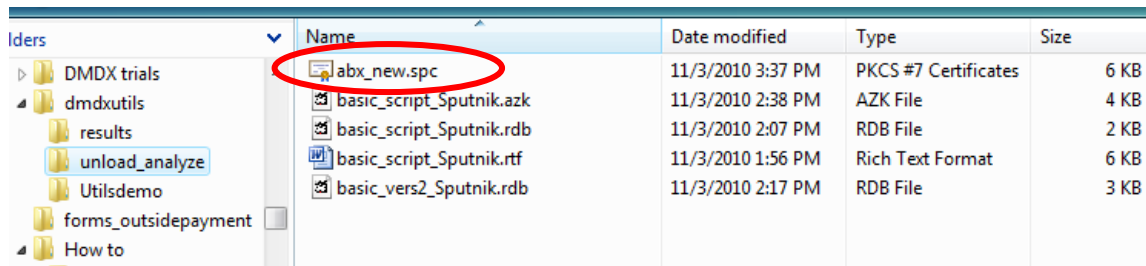
## The Analyze tool in DMDX

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As a general comment, I suggest using DMDX Analyze for a "quick" overview of the data. It may not be suitable for a serious item analysis. For this, your best bet would be to prepare the data file based on the "raw" and full AZK file.

4) Now that you have your "final" azk file, that contains all other data as well, you are ready to use the utility "ANALYZE"

For this, we will first need a specification file .spc, where we will describe the conditions. It looks like this:



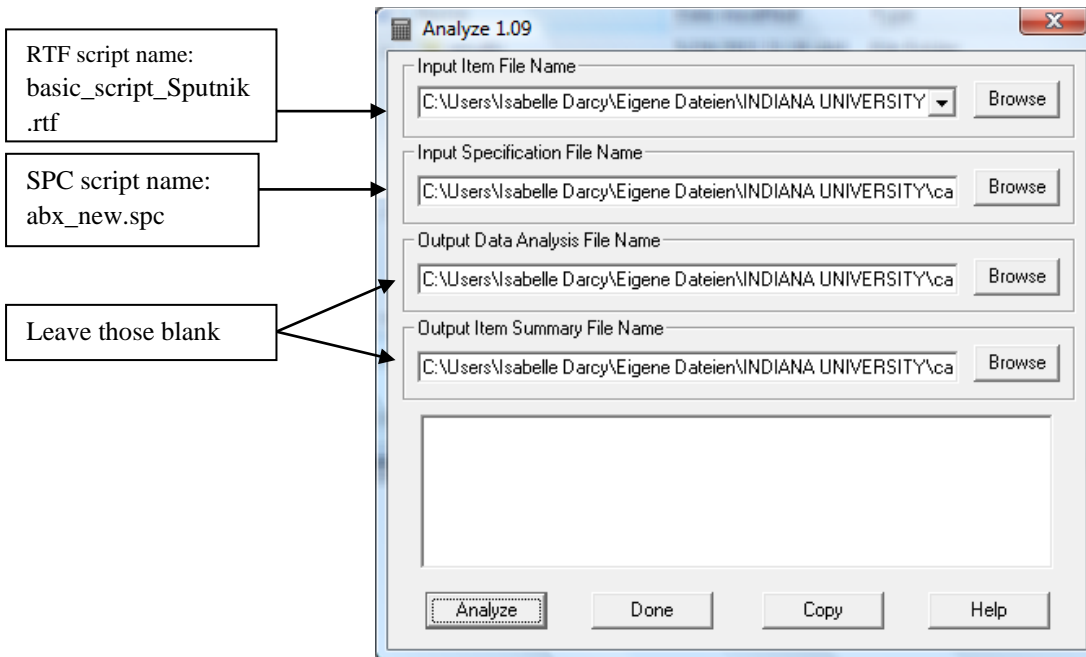
Name	Date modified	Type	Size
abx_new.spc	11/3/2010 3:37 PM	PKCS #7 Certificates	6 KB
basic_script_Sputnik.azk	11/3/2010 2:38 PM	AZK File	4 KB
basic_script_Sputnik.rdb	11/3/2010 2:07 PM	RDB File	2 KB
basic_script_Sputnik.rtf	11/3/2010 1:56 PM	Rich Text Format	6 KB
basic_vers2_Sputnik.rdb	11/3/2010 2:17 PM	RDB File	3 KB

5) Preparing an spc file.

This is a simple text file, which you can adjust for your purposes. I called it here "abx\_new.spc". There, it is important that you list all item numbers that belong in each condition. This is where the excel file you prepared (or should have prepared) for the .rtf script preparation will come in handy. An example is available from me or (coming soon) from the lab website.

6) Once your spc file is ready, you can use Analyze.

Clicking on it, the first thing you see is that it needs the rtf script \*and not the AZK file\*

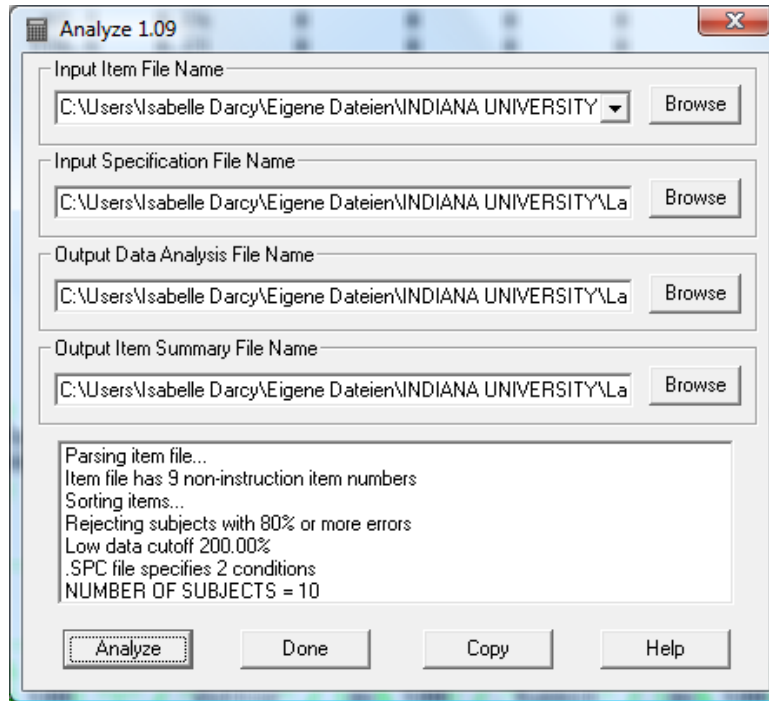


Note: The first time you'll use Analyze, all the lines will be blank. In my demonstration, since I've used it already, the program has the older file names written in it. But that doesn't matter.

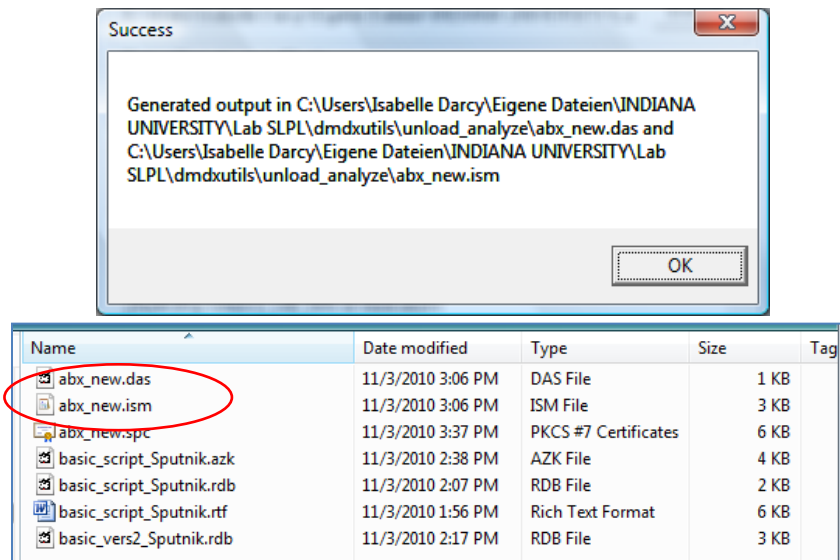
DMDX will find the **.AZK** based on the name of the **.rtf** script. Therefore, it is very important that you make sure both have the same name. If necessary, you can rename them equally. Prefer simple names to complicated names (the one I use below "basic\_script\_Sputnik.rtf") is rather complicated...). Do NOT use blank spaces in the names.

Name	Date modified	Type	Size	Tag
abx_new.das	11/3/2010 3:06 PM	DAS File	1 KB	
abx_new.ism	11/3/2010 3:06 PM	ISM File	3 KB	
abx_new.spc	11/3/2010 3:37 PM	PKCS #7 Certificates	6 KB	
basic_script_Sputnik.azk	11/3/2010 2:38 PM	AZK File	4 KB	
basic_script_Sputnik.rdb	11/3/2010 2:07 PM	RDB File	2 KB	
basic_script_Sputnik.rtf	11/3/2010 1:56 PM	Rich Text Format	6 KB	
basic_vers2_Sputnik.rdb	11/3/2010 2:17 PM	RDB File	3 KB	

Then, chose the spc file on the second line. Here, abx\_new.spc  
That's it. Click ANALYZE. You will see 2 screens: Verify that the subject number is appropriate.



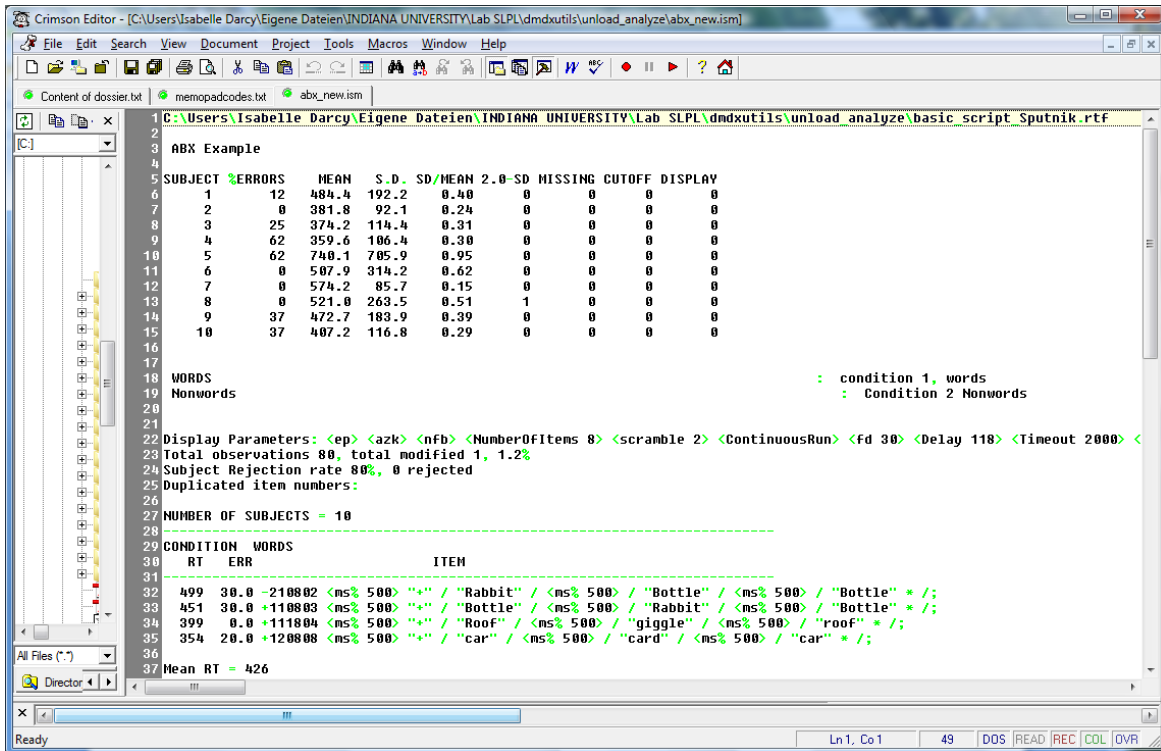
If it works, you should see that DMDX has created 2 files, an .ism file and a .das file. Those will form the basis of the data.



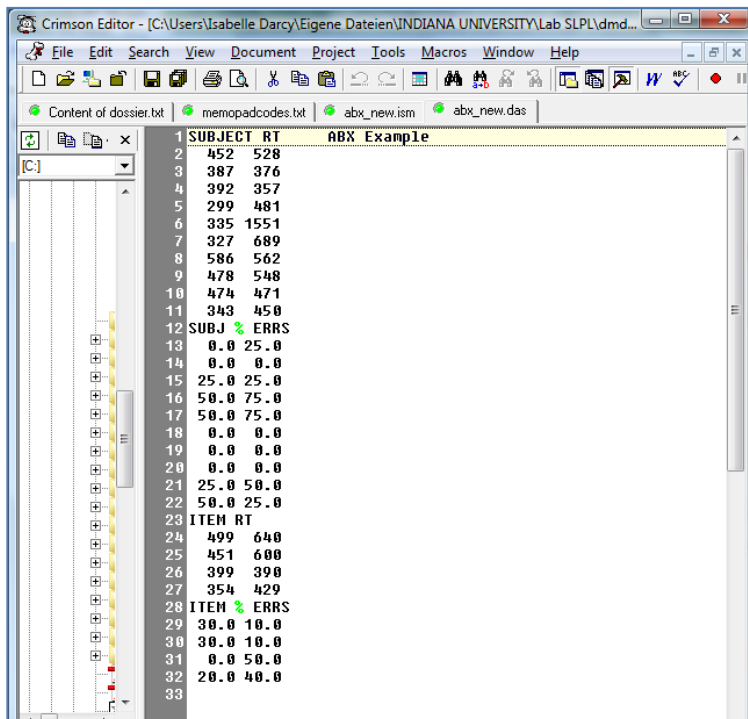
You can visualize these files with a text editor such as word pad, or better: Crimson Editor. The next step is to carefully export those raw data into a format such as Excel (and later possibly also SPSS), where you can code groups, subject numbers, etc. for analysis through statistical packages.



This is the ISM file, showing the global error rate per subject, the average Reaction Time MEAN by subject, and other data. Below, you have the item details.



Attention here: The “subject number” is the one reflecting the order in which you have unloaded the files into the AZK file. You see how important it is to unload them in an order that you are aware of, to avoid confusion as to the identity of each subject.



In the SPC file, I had asked the ANALYZE program to group the error rates and reaction times according to “word” vs. “nonword” conditions. This is what we see in the other file, the DAT file.

Subject RT is the mean RT on each condition by subject. Each line is one subject (you’ll see there are 10 lines). The first column is you first condition (you have to know which one it is), the second column is the other one. Below, you will see the error rates in the same format. Finally, the items RT and Error rates. You see that I have only 4 items per condition, so 8 in total (very short experiment ☺).

GOOD LUCK!!