PowerShell: Automation and Companion of SAS

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Introduction

- PowerShell is a cross-platform task automation and configuration management framework, consisting of a command-line shell and scripting language.
- Open source software.
- Pre-installed on Windows environment.
- Few tasks can be done easily and quickly with PowerShell as compared to SAS. In this presentation, following examples will be discussed:
  - Converting SAS files to text files
  - Automate backup creation
  - Taking user Input using GUI

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SAS File to Text File

- Sponsor request text files for SAS programs - ADaM and TFL Programs
- Few lines of PowerShell script

```
$SOURCE = '.\sas-files';
$TARGET = '.\text-files';

$FILE_LIST = (Get-Item "$SOURCE\*.*" -Include "*.sas").name

ForEach ($FILE in $FILE_LIST)
   {
      Copy-Item $SOURCE\$FILE -Destination $TARGET\$($FILE -replace '.sas', '.txt')
   }
```

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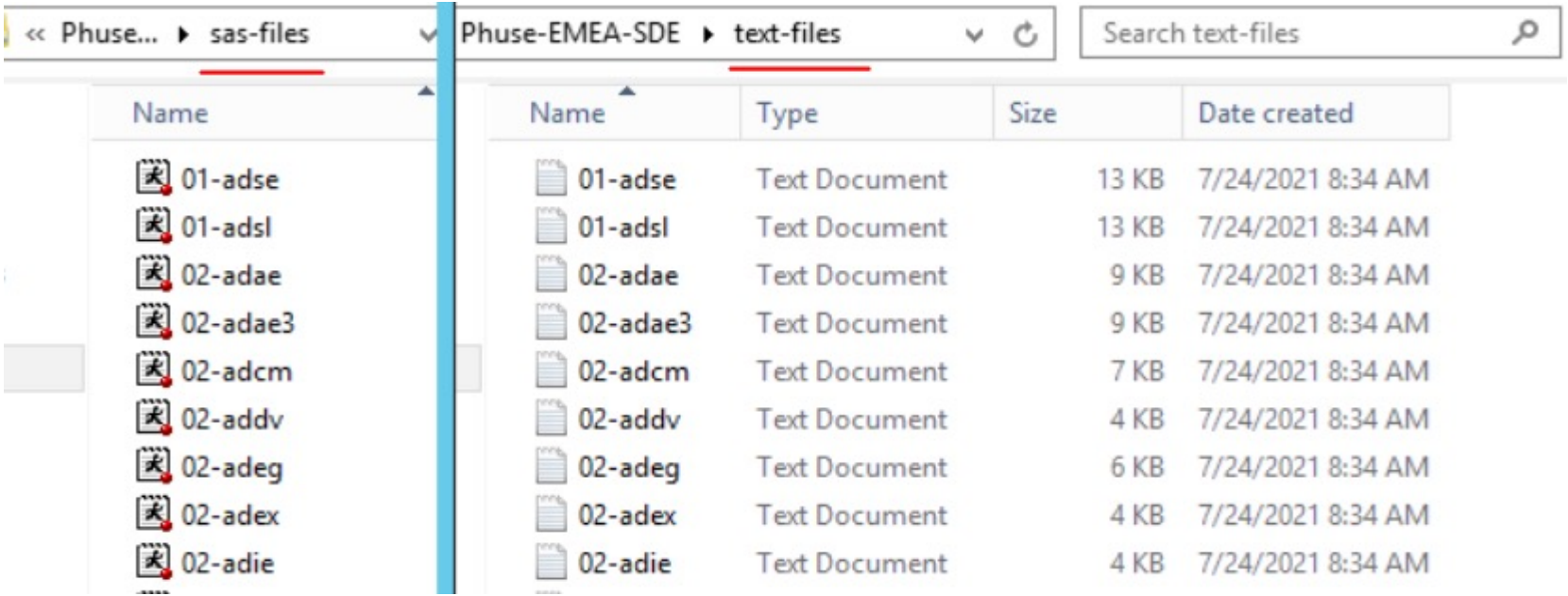
SAS File to Text File

- Result of running script



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SAS File to Text File

- Processing Time - `Measure-Command`
- Below screenshots are showing time taken for converting 25 and 1,000 SAS files

```
Days              : 0
Hours             : 0
Minutes           : 0
Seconds           : 0
Milliseconds      : 240
Ticks             : 2401394
TotalDays         : 2.7793912037037E-06
TotalHours        : 6.67053888888889E-05
TotalMinutes      : 0.004002323333333333
TotalSeconds      : 0.2401394
TotalMilliseconds : 240.1394
```

```
Days              : 0
Hours             : 0
Minutes           : 0
Seconds           : 9
Milliseconds      : 523
Ticks             : 95236839
TotalDays         : 0.000110227822916667
TotalHours        : 0.00264546775
TotalMinutes      : 0.158728065
TotalSeconds      : 9.5236839
TotalMilliseconds : 9523.6839
```

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Backup Creation

- To create backup of the files associated with the delivery after release of a deliverable to sponsor.
- Data will be posted in archive folder under different subfolders. Example - consider the situation in which the tool is run on 10JUL2020(Dry Run). Data will be saved in the below folder:
  - .\study-number\biostat\area-name\archive\2020-07-10-t-12-12-06_Dry_Run
- Tool will copy fixed number of files. List of files to be included should be decided based feedback received from all key stakeholders (e.g., programmers, managers) involved.
- Files copied will depend upon the component (SDTM, ADaM, ADaM-TFL) selected by user.

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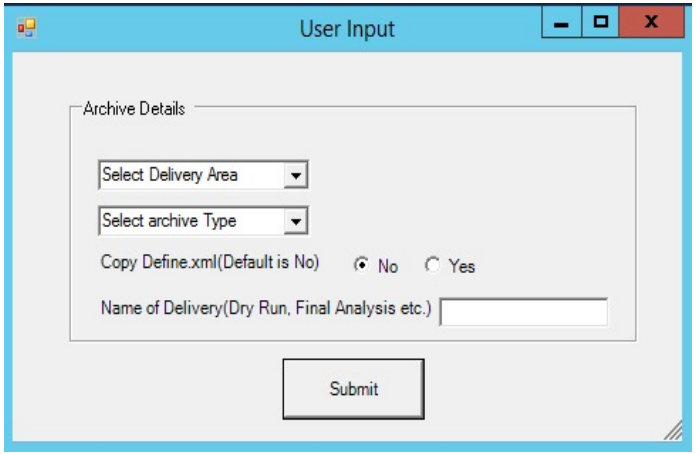
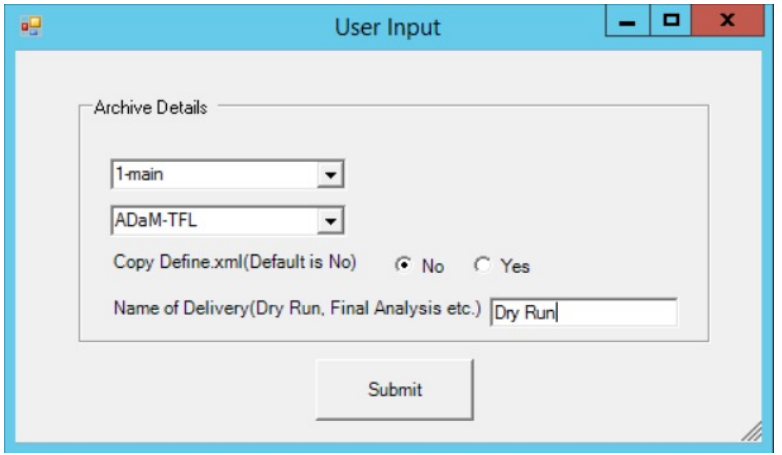
Backup Creation

- When a user runs PowerShell script for backup creation, below window will be shown.



- Screenshot showing options selected by user.



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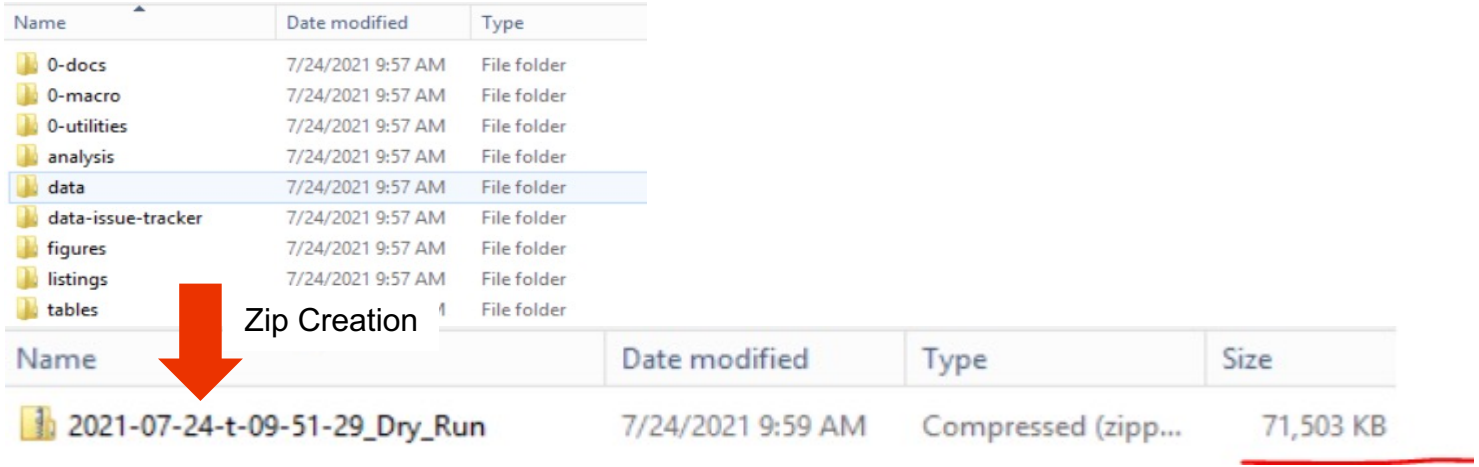
Backup Creation

- Result of running PowerShell script.
- All the files will be set to READ-ONLY mode and single ZIP file will be created.
- ZIP file is created to save the disk space (~500 MB before and ~70 MB after).



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Backup Creation

- Advantages
  - Consistent approach
  - Manual effort saved
  - Disk space saved

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GUI Development

- Graphical User Interface
- Can be used to take input from user
- Consider User needs to perform one of the 2 tasks - XPT or Define XML
- Generic code developed but User Input is needed

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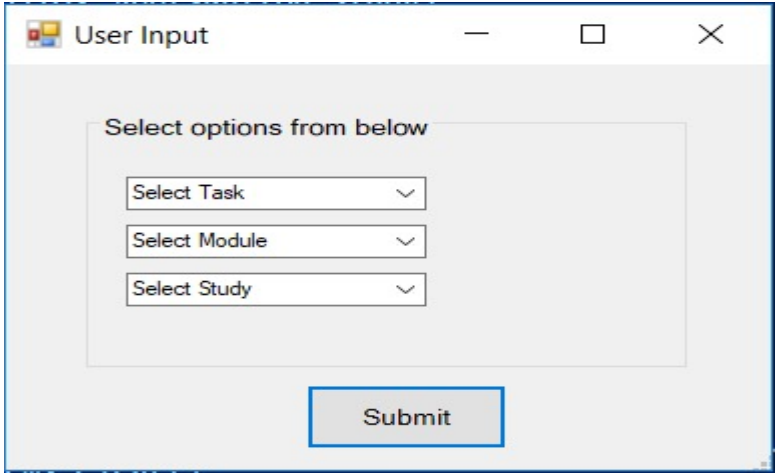
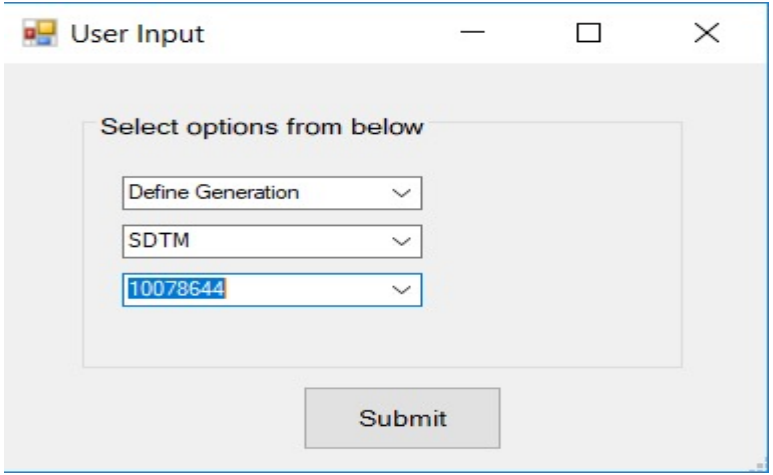
GUI Development

- Below GUI is created to take User Input



- User selected options



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GUI Development

- Script performs the following task
  - Save input taken to a text file
  - Run the appropriate SAS program in batch mode

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Q&A

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