

FRED Login: **teacher**

FRED PW: **teacher1**

BitCurator Admin PW: **bcadmin**

## Born-digital Processing: Disk Imaging Workflow

### Setting Up

1. **Turn on** the F.R.E.D. computer and monitors. Underneath the desk set on top of the Dell computer tower is an input switcher. **Press 1 to select the FRED.** (2 is the Dell computer.)



2. If the media is a CD/DVD, place the disk in the CD/DVD reader in the FRED.
3. **Every other type of media will need to be plugged into the FRED through a write blocker.** Locate the portable Tableau Forensic USB Bridge write blocker located in a fanny pack sized bag with an **orange tag** and labeled Digital Intelligence. Usually it's next to the FRED **on top of the toolbox.**



4. Connect the power and USB cords to the **write blocker**. Plug in the power cord to a power socket underneath the table and **plug in the USB cord to one of the 3 USB ports to the right of the power button** on the FRED.

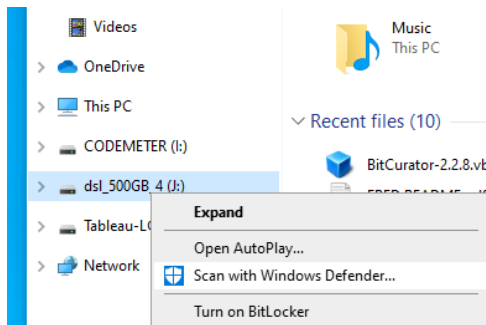
5. Plug the media **directly into the portable write blocker** and **DO NOT** turn it on yet. The setup will look like this:



6. Log into the FRED using the **teacher** account. If the FRED hasn't been turned on in a while, **update the date and time**. You can do this by searching "Date and time" in the search box next to the start menu.
7. In the **BitCurator Shared Folder** on the Windows Desktop, create the following folder structure: *(Note: You can copy the example directory **ualr-ms-collection#\_diskimage\_000** and rename the folders accordingly.)*
  - a. **ualr-ms-collection#\_diskimage\_001**
    - i. **ualr-ms-collection#\_diskimage\_001\_SIP**
      1. **Documentation**
        - a. **Primary Reports**
        - b. **Secondary Reports**
        - c. **Carrier Photos**
      - ii. **ualr-ms-collection#\_diskimage\_001\_AIP**
        1. **Original Files**
      - iii. **ualr-ms-collection#\_diskimage\_001\_DIP**
  8. Copy the **media carrier photographs** taken during the **Pre-Disk Imaging Workflow** into the **Carrier Photos** folder.

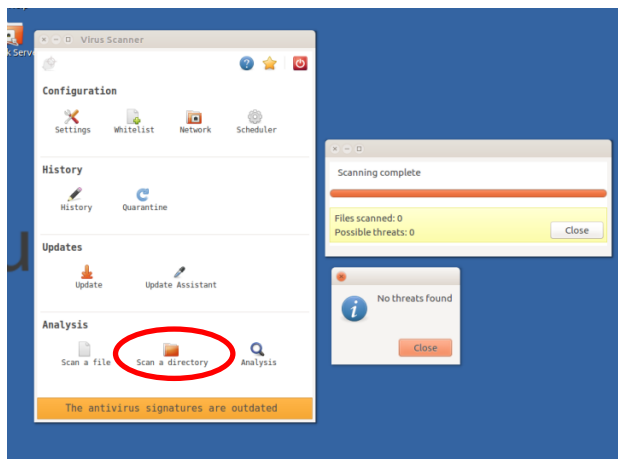
## Checking for Viruses

9. On the **write blocker**, press the power button to **turn it on**. In Windows, **open File Explorer** and look through the navigation panel. **Under “This PC” locate the external drive plugged in through the write blocker. Right-click** the drive and select “Scan with Windows Defender...”



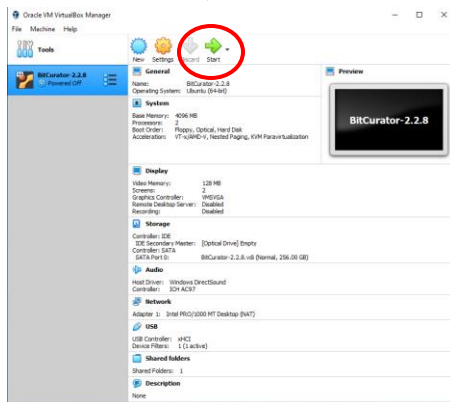
- If the result finds 0 viruses, you can move forward with the remaining steps in the disk imaging workflow.
- If the result finds a virus (or more), do NOT move forward with the workflow.
  - Immediately safely eject the device.** Contact the CAHC’s Director of Digital Projects and Initiatives for next steps.
  - On a computer with Internet access, Google the detected virus to help determine next steps.

NOTE: If Windows and/or Windows Defender **cannot recognize the device** (it doesn’t show up in the Windows OS at all), then wait to scan for viruses until you have booted *BitCurator*. You can use the **ClamTk** antivirus software available in *BitCurator’s Additional Tools* folder on the Desktop to scan for viruses. Select **Scan a Directory**, locate the external hard drive and Scan.

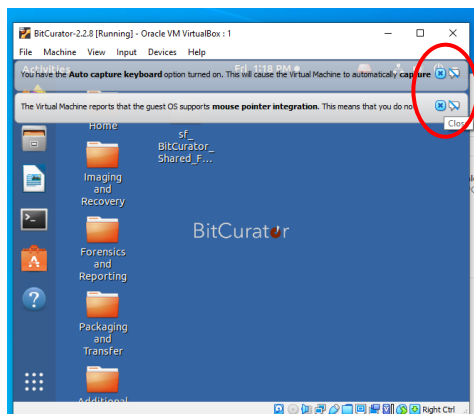


## Getting Started

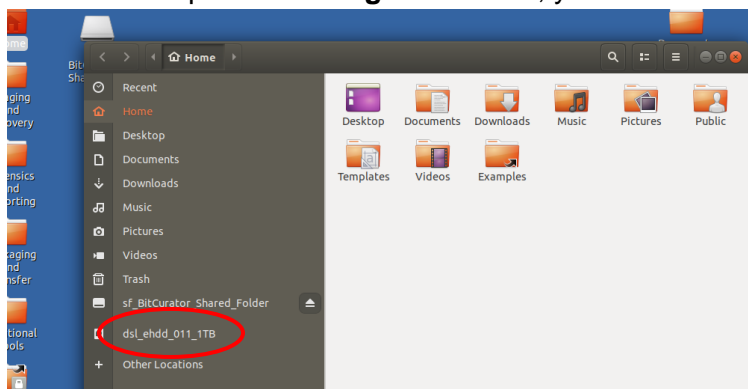
10. **Before doing anything else**, properly eject and **TURN OFF** the write blocker (device name T8R2).
11. On the Windows desktop, click on the **Oracle VM Virtualbox** icon. **Start** the BitCurator virtual machine, version 2.2.8.



12. It can take a few minutes for BitCurator to fully boot up, during which a number of windows **will display and disappear**. When BitCurator is fully booted, **turn on** the portable Tableau write blocker.
13. Two **popup windows** will display at the top of the screen. You can **x out** of both of these.



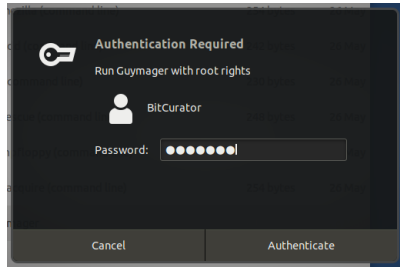
14. To check that BitCurator can “see” the attached external device, open the **Home** folder on the Desktop. In the **Navigation Menu**, you should see the external device listed.



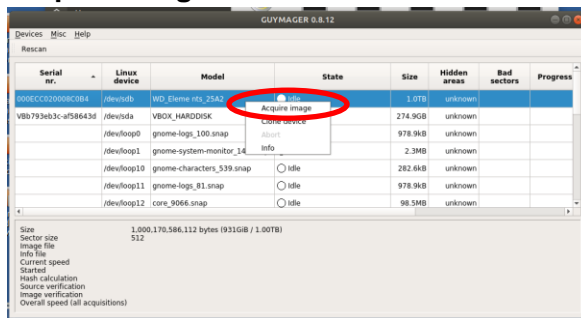
## Building a Submission Information Package (SIP)

### Creating a Disk Image File

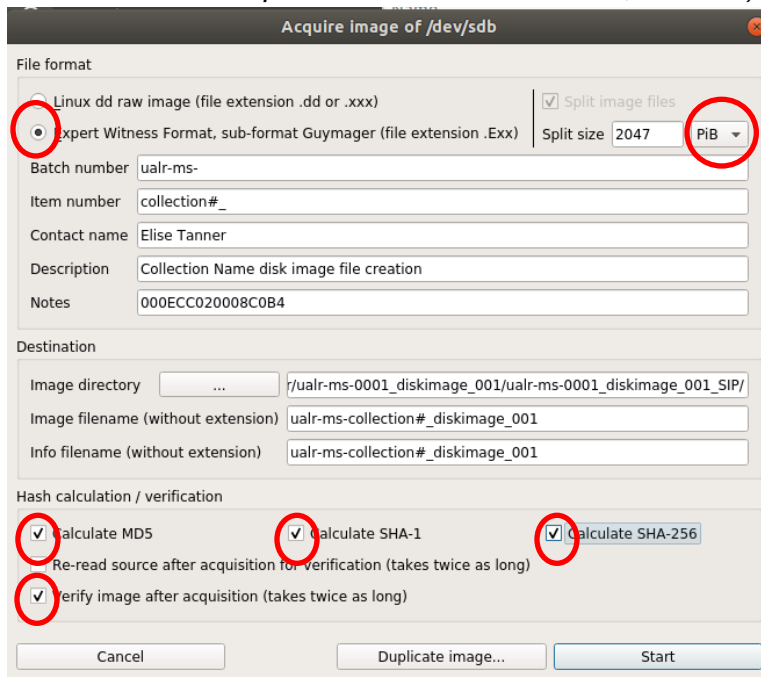
15. In the **Imaging and Recovery** folder on the Desktop, select the **Guymager** application to create a disk image.
16. You will be prompted to enter the **administrator password**, which is **bcadmin**.



17. **Right click** on the appropriate drive which is usually at the top of the list and select **Acquire Image**.

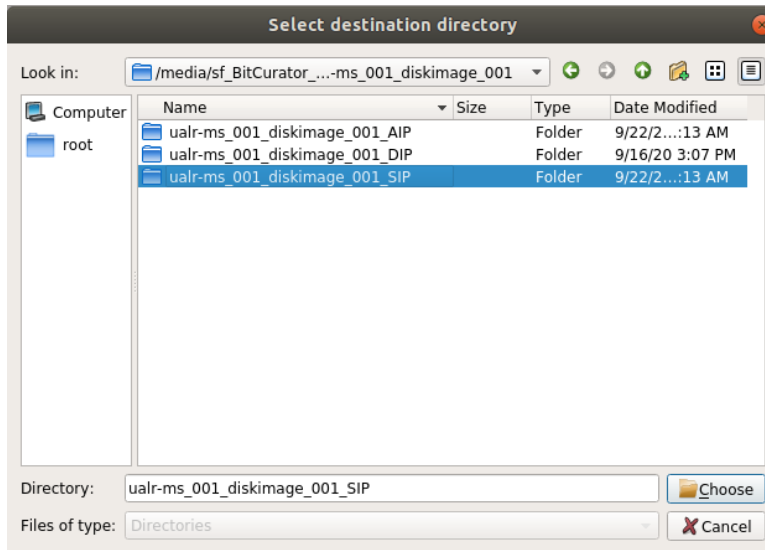


18. A new window will appear. For **File format**, select **Expert Witness Format**. (Note: the file extension for Expert Witness Format is **.E01**, not **Exx**.)



19. Under **Split size**, change the denomination to **PiB**.

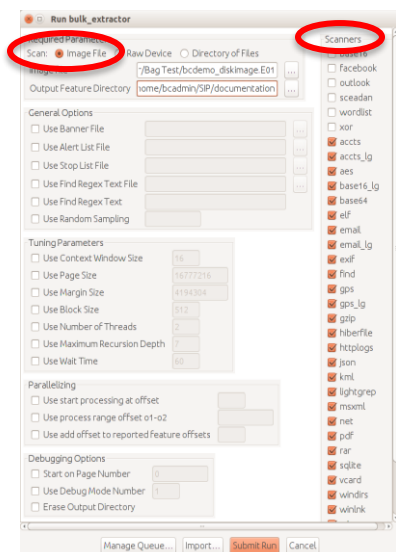
20. Fill in appropriate metadata fields.
  - a. Batch number = **ualr-ms-**
  - b. Item number = **collection#\_**
  - c. Contact name = your full name
  - d. Description = brief description
21. Click the ellipses next to **Image directory**. Browse to the package **SIP** folder via **media > sf\_BitCurator\_Shared\_Folder > ualr-ms-collection#\_diskimage\_001\_SIP**. Choose the SIP folder.



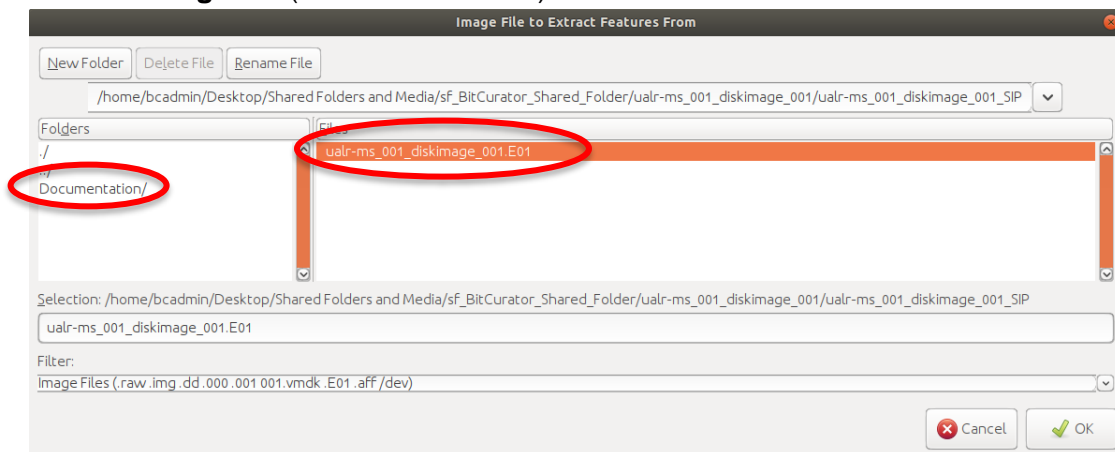
22. In **Image filename** type **ualr-ms-collection#\_diskimage\_001**
23. Under **Hash Calculation**, check **MD-5, SHA-1, SHA-256, Verify Image** after acquisition, and then click **Start**.
24. When complete, close Guymager and **EJECT THE ATTACHED DISK and turn off the write blocker**. (NOTE: At this point in the workflow, you can image multiple media/devices before moving on to Creating Documentation.)

## Creating Documentation

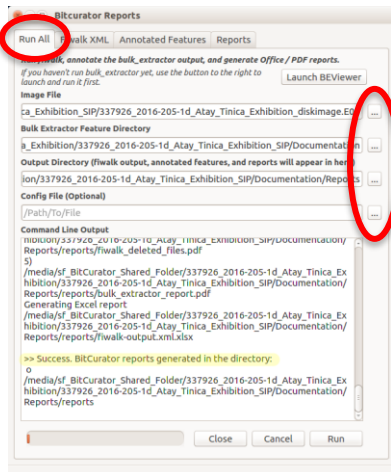
25. On the Desktop in the **Forensics and Reporting** folder, select **Bulk Extractor Viewer**.
26. In **Bulk Extractor Viewer**, under the **Tools** dropdown menu, select **Run Bulk Extractor**.



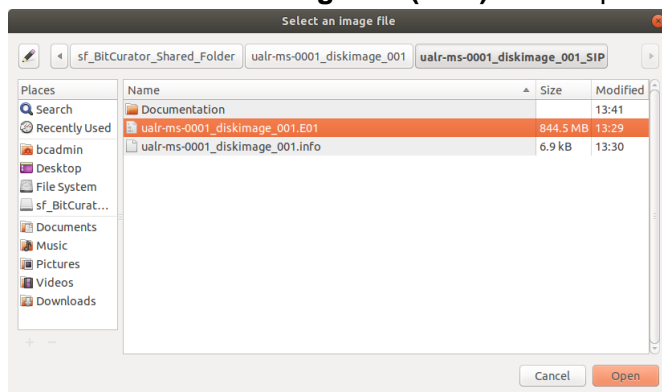
27. For **Scan**, click the **Image File** option.
28. For **Image File**, browse via **[Desktop > Shared Folders and Media > sf\_BitCurator\_Shared\_Folder > ualr-ms-collection#\_diskimage\_001\_SIP]** and select the **disk image file** (file extension **.E01**). Click **OK**.



29. For **Output Feature Directory**, browse to that same **SIP folder** and select the **Documentation folder**.
30. For the remainder of the options (including **Scanners**), keep the default settings. Lastly, click **Submit Run**.
31. When **Bulk Extractor** indicates **Progress** as **Done**, close the Bulk Extractor Viewer. Go back to the **Forensics and Reporting** on the Desktop, and select **BitCurator Reporting Tool**.

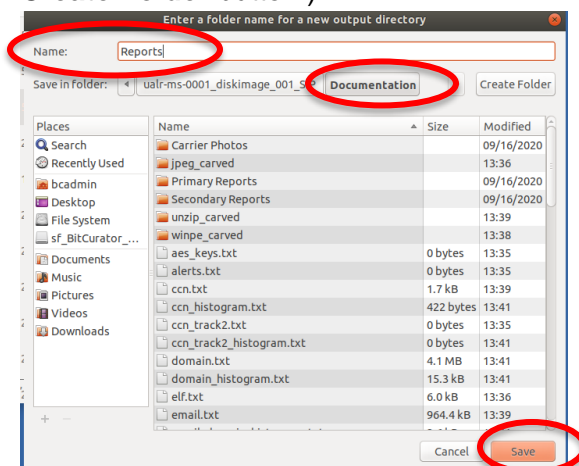


32. Select the **Run All** tab. In **Image File**, browse via **[Desktop > Shared Folders and Media > sf\_BitCurator\_Shared\_Folder > ualr-ms-collection#\_diskimage\_001\_SIP]** and select the **disk image file (.E01)**. Click **Open**.



33. In **Bulk Extractor Feature Directory**, browse to and select the **Documentation** folder in the **SIP** folder. Click **Open**.

34. In **Output Directory**, browse to and open the **Documentation** folder. In the empty output directory for **Name** type **“Reports”** and **CLICK SAVE**. (Note: **DO NOT** click the **Create Folder** button.)

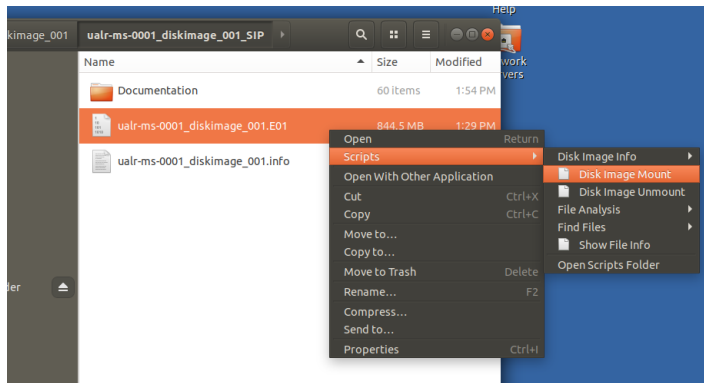


35. Back in BitCurator Reports, click **Run**. Scroll to the bottom of the **Command Line Output** window. It will read **Success** when finished. Close BitCurator Reports.

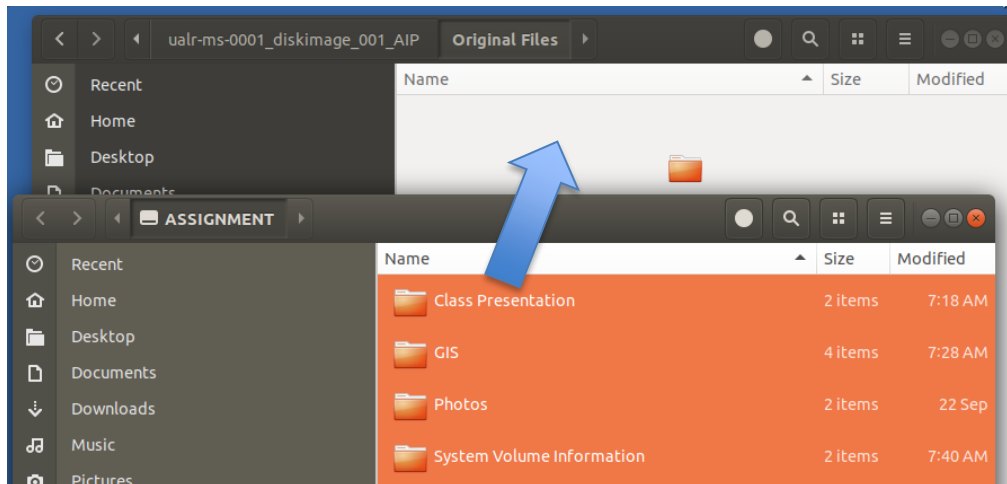


## Building the Archival Information Package (AIP)

36. Navigate to your **disk image file** and **right click**. Select **Scripts** and then **Disk Image Mount**.



37. With the disk image mounted, you can now extract the actual files. **Locate the mounted disk** on the desktop and **copy ALL of its contents** into the **Original Files** folder in the **AIP** folder.



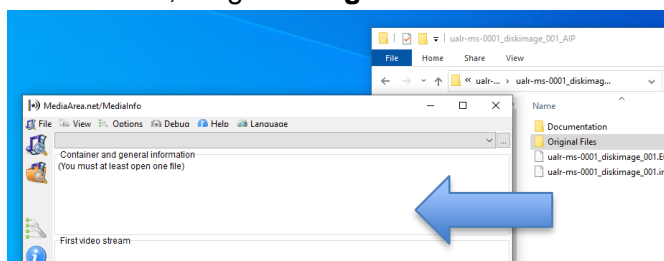
38. Once copied, unmount the disk image by **right-clicking** the **mounted disk** on the desktop and selecting **Unmount**. You will again be prompted to input the admin password: **bcadmin**.
39. At this point in the workflow, you will choose one of two routes:
- You will **keep the disk image** E01 file.
    - Move the **Documentation** folder and the **.E01** file from the **SIP** folder into the **AIP** folder with the extracted files.
  - You will **NOT keep the disk image** E01 file. It will be up to the supervising archivist as to which route to take.
    - Move only the **Documentation** folder from the **SIP** folder into the **AIP** folder with the extracted files. **Delete the .E01** disk image file.
40. **Save open files** and **close** all applications running in BitCurator.
41. Once everything is copied into the appropriate folders, **close BitCurator** (select the **Power Off Machine** option when prompted) and the **Virtual Machine**.

## Building a Dissemination Information Package (DIP)

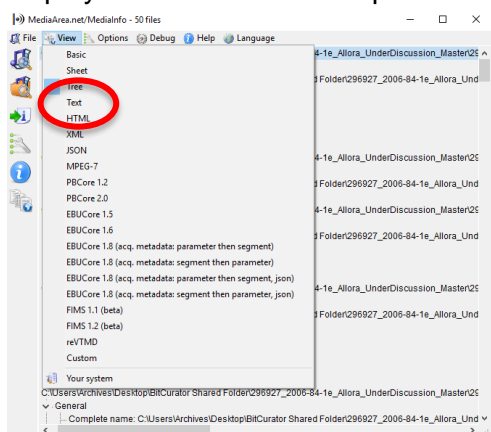
TBD

### Capturing Technical Metadata

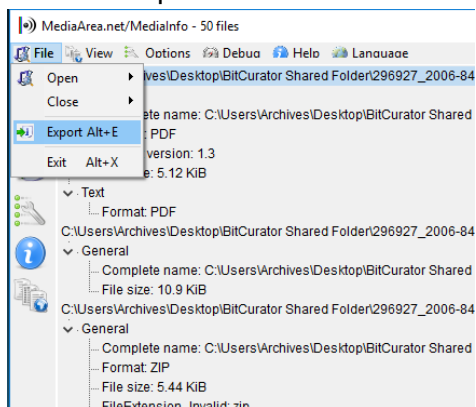
42. Now that the AIP package has been assembled, **technical metadata** for the files can be created. On the Windows 10 desktop, locate the **MedialInfo** shortcut and start the program.
43. In MedialInfo, drag the **Original Files** folder from the AIP folder into MedialInfo.



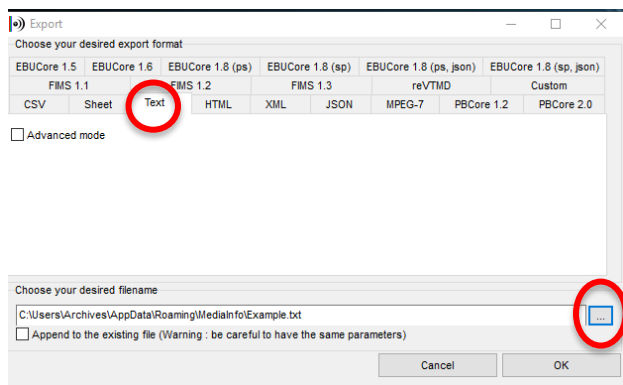
44. Once you've opened the **Original Files** folder directory in MedialInfo, go to the **View** drop-down menu to explore the different formats/schema in which the information can be displayed. The **Tree** view is particularly easy to parse.



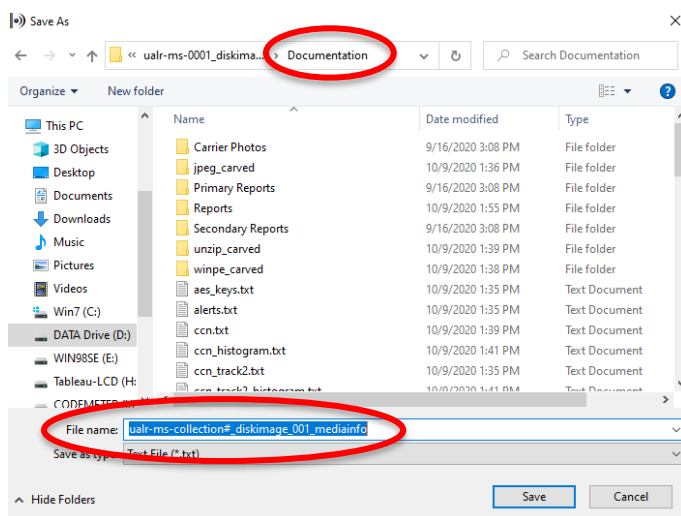
45. The next step is to **export this technical information** into a readable file format. Go to the **File** drop-down menu and select **Export**.



46. Select the **Text** tab and then click on the ... button



47. Browse to and select the **ualr-ms-collection#\_diskimage\_001\_AIP\_Documentation** folder.



48. Before selecting the Save button, in the **Filename** address bar, name the text file as: **ualr-ms-collection number\_diskimage\_001\_mediainfo**. Click **Save** to return to the **Export** window. Then click **OK** to run the export process.

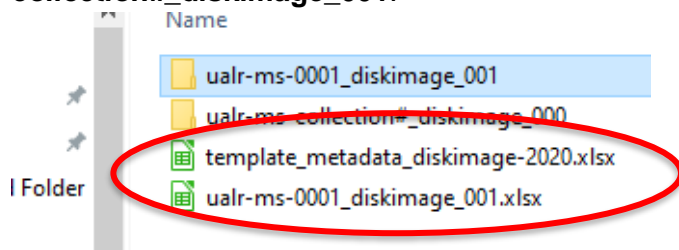
49. Next, **create HTML** and **XML** files by clicking each tab and then OK. They will save in the **same location** with the same file name as the text file.

50. Lastly, once all three (Text, HTML, and XML) files are created, move copies of these files into the **Documentation > Primary Reports** folders in **AIP** folder.

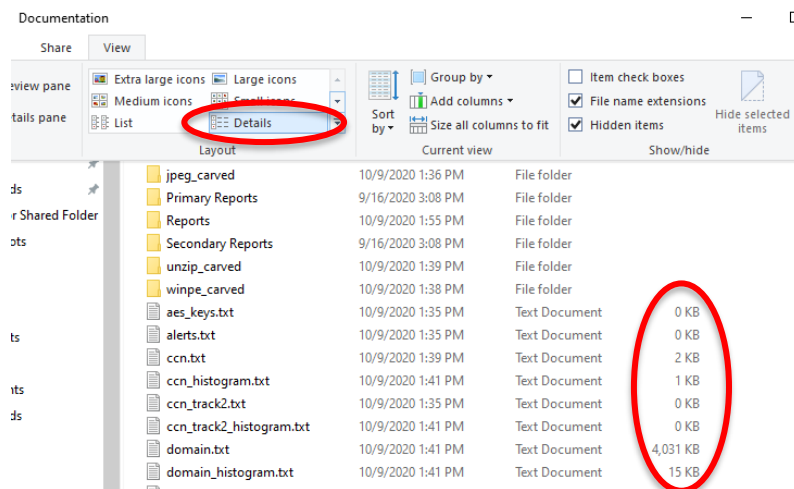
51. Lastly, use this technical data to fill out the metadata spreadsheet.

## Arranging and Describing

52. Open the **template\_metadata\_diskimage-2020.xlsx** spreadsheet file located on the Windows Desktop in the **BitCurator Shared Folder** and save it as **ualr-ms-collection#\_diskimage\_001**.



53. To begin arrangement, move the **.info** file into the **Documentation** folder. Next, open the **Documentation** folder. Delete reports and sub-folders devoid of any information. (Note: The simplest way to do this is to **change to the Details view** in the finder window so that the file size is visible. This way you don't have to open each folder to see if it's empty. **Delete all files and folders that indicate 0 KB.**)



54. Following the recommendations of the **Disk Imaging Metadata Spreadsheet Instructions** document, open each of the remaining reports created by **Bulk Extractor** and **MedialInfo** to **find and record** the information in the spreadsheet.
55. As you fill in the spreadsheet, place the **reports that you use** to fill out the spreadsheet into the **Primary Reports** folder. **All other reports** can be moved into the **Secondary Reports** folder. (Note: Do not keep sub-folders. Remove the files from each sub-folder and then delete it when empty.)
56. Once the spreadsheet is complete, **save** and review your work.