# Bagger GUI User Guide: How to Create and Validate Bags with Bagger

July 2024 Bagger version 2.8.1



NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES



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# **Overview**

Bagger is a Library of Congress tool for bagging files into the BagIt specification structure. It is a graphical user interface (GUI) designed by Library of Congress to be a user-friendly alternative to the command-line BagIt application. The official download of the Bagger tool, as well as more information on the BagIt specification, can be found on the Library of Congress GitHub page at <a href="https://github.com/LibraryOfCongress">https://github.com/LibraryOfCongress</a>.

The structure of the bags created in this guide conform to the BagIt specification 0.97.

## Bag structure created using this guide:

```
<base directory>/

| bag-info.txt

| bagit.txt

| manifest-sha256.txt

| tagmanifest-sha256.txt

\--- data/

| [payload files]
```

# **Before You Begin**

# **Special Note on Non-Windows Operating Systems**

This manual presumes that you are moving material within a Windows environment (that the original machine and bag destination—probably a hard drive—are both running on Windows operating systems). If materials originate on a Mac OS computer or computer running another non-Windows operating system, please contact the staff of the Digital Services Section for further assistance.

# **Special Note on Administrator Rights**

The "Downloading and Installing Bagger" section of this manual presumes that the reader has administrative rights (i.e., is able to download and install software) on the machine they are working on. For agencies working within the North Carolina Department of Information Technology system, that is usually *not* the case. If you are working within the DIT network, you will need to contact your department's IT department or put in an IT Service Desk ticket to have Bagger installed.

# **Important Considerations Before Bagging Records**

Before you begin the file-bagging process, please review our guidance document on transfer of electronic records to the State Archives, available here:

## **Digital File Transfer Guidelines**

https://archives.ncdcr.gov/government/digital-records/north-carolina-digital-repository/digital-file-transferguidelines

# 1. Downloading and Installing Bagger

As noted above, only users who have administrative rights on their machine will be able to install Bagger themselves. If you are on the North Carolina Department of Information Technology system, or if you are prompted for admin credentials and are thus unable to install Bagger, contact your IT support team.



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## **1.1 Download Files from GitHub**

Download the most recent version of Bagger by visiting the Bagger GitHub page at <a href="https://github.com/LibraryOfCongress/bagger">https://github.com/LibraryOfCongress/bagger</a>. The page has a link to the latest available release at <a href="https://github.com/LibraryOfCongress/bagger/releases/latest">https://github.com/LibraryOfCongress/bagger</a>. The page has a link to the latest available release at <a href="https://github.com/LibraryOfCongress/bagger/releases/latest">https://github.com/LibraryOfCongress/bagger</a>. The page has a link to the latest available release at <a href="https://github.com/LibraryOfCongress/bagger/releases/latest">https://github.com/LibraryOfCongress/bagger</a>.

Lice	nse Public-Domain
Int	roduction
The	Bagger application was created for the U.S. Library of Congress as a tool to produce a package of data files according to
the I	BagIt specification (http://tools.ietf.org/html/draft-kunze-bagit).
The	Bagger application is a graphical user interface to the BagIt specification. The latest Bagger release is available on GitHub
at h	tps://github.com/LibraryOfCongress/bagger/releases/latest
Bag	ger differs from the java Bagit Library by providing graphical user interface for file and data manipulation features as well
as a	visual view of the bag contents, bag state and options. In addition Bagger provides a project profile capability. Users can
crea	te customized bag-info.txt data with project specific properties that the user defines.
<b>T</b> 1	e project profiles can be edited manually and shared with other users.

After navigating to the most recent version, click on the *[version].zip* link. At the time this guide was written, Bagger 2.8.1 was the most recent version.

v2.8.1 ♥ cd742e	Release 2.8.1	
	Assets	
	D bagger-2.8.1.zip	18.9 MB
	Source code (zip)	
	Source code (tar.gz)	
	minor update to copy new North Carolina State and Local government profiles to the default pr location	ofiles

The download will begin and show up in your downloads bar. You can save the zip file wherever you like, but note the location. Your computer will likely automatically save it in a download folder.

bagger-2.8.1.zip	^			



## **1.2 Extract Zipped Files**

If you are running a Windows system that supports reading zipped files, you can use the Windows default zip reader. In your Downloads folder, select the zip file **bagger-2.8.1.zip** and right click. Select **Extract all...**, then choose a destination folder, such as your C: drive or Desktop. Click **Extract**. (You may also choose to use 7-Zip or another file archiver utility.)

🚹 Extract Compressed (Zipped) Folders	
Select a Destination and Extract Files	
Files will be extracted to this folder:	
C:\Users\japatrick-burns\Desktop	Browse
V Show extracted files when complete	

# 2. Creating a Bag

# 2.1 Open Bagger

Navigate to where you have saved the unzipped folder **bagger-2.8.1** (or whichever version of bagger you have installed), open the **bin** folder, and double click on the Windows Batch File **bagger.bat**.

🔁 bin 🛛 🗙	+				-		×
⊕ New ~ 🔏 🗘 🗋		↑↓ Sort $\overline{}$ $\equiv$ View $\overline{}$					
$\leftarrow$ $\rightarrow$ $\checkmark$ $\uparrow$ $\blacksquare$ $\rightarrow$ This PC $\rightarrow$ [	DAH (L:) > Intranet > ar >	Digital_Services > Software > bagger	-2.8.1 > bin	~ C	Search bin		P
Ø Music		* Name	Date modified	Туре	Size		
🚺 Videos		* Dagger	6/14/2023 11:03 AM	File	7 KB		
🚞 Workflow	<	🕤 bagger	6/14/2023 11:03 AM	Windows Batch File	5 KB	>	
📒 Transfers		* baggerLinter	6/14/2023 11:03 AM	Python Source File	6 KB		
D02_TO_BE_MOVED		* discoverJavaVersions	6/14/2023 11:03 AM	Python Source File	3 KB		

A black terminal window will first appear and then, a moment later, this image:





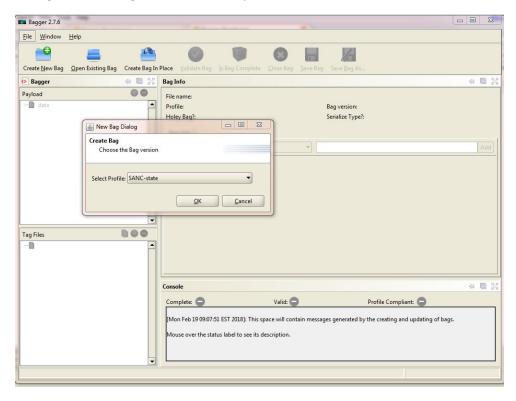
If you receive an error message related to Java, please skip down to the Appendix on resolving Java errors.

# 2.2 Create a Bag

## **Setting Up a New Bag**

On the main screen of the Bagger Application, click Create New Bag.

A small dialog box will come up that asks you to select a profile. Select SANC-state for state agencies or SANC-local for local government agencies and municipalities. Click **OK**.



The pane on the right side of the interface shows a list of metadata to fill out. Fields marked with a red "R" are required.



📼 Bagger 2.7.6		
<u>File Window H</u> elp		
Create New Bag Open Existing Bag Create Bag In	n Place Validate Bag Is Bag Complete Close Bag Save Bag Save Bag As	
📀 Bagger 🐳 🔯 💱	Bag Info	o 🖸 👯
Payload 🕒 🕒	Dagrano	-
- data	Standard :	
	Profile Name R SANC-state	
	itemNumber R	
	rcNumber R	
	transferringAgencyName R	
	creatingAgencyName	
	creatingAgencySubdivision	
	transferringEmployee R	
Tag Files	receivingInstitution R State Archives of North Carolina, Division of North Carolina D	epartment of N
	receivingInstitutionAddress R 109 E. Jones St. Raleigh, NC 27601	-
	Console	4 🖾 💱
	Complete: 🗢 Valid: 🗢 Profile Compliant: 🖨	
	[Mon Feb 19 09:07:51 EST 2018]: This space will contain messages generated by the creating and updating of bags. Mouse over the status label to see its description.	
-	[Mon Feb 19 09:09:58 EST 2018]: A new bag has been created in memory.	

Some of the metadata fields in the Bagger profile will be blank by default. See below for a list of the default values:

# State Agency Records

Field	<b>Required</b> ?	Default Value
Item Number	Yes	
RC Number	Yes	
Transferring Agency Name	Yes	
Creating Agency Name	No	
Creating Agency Subdivision	No	
Transferring Employee	Yes	
Receiving Institution	Yes	State Archives of North Carolina, Division of North Carolina Department of Natural and Cultural Resources
Receiving Institution Address	Yes	109 E. Jones St. Raleigh, NC 27601
Dates of Records (YYYY-MM-DD) - (YYYY-MM-DD)	Yes	



Field	Required?	Default Value
Digital Originality	Yes	Options: ???
		Original (Born Digital)
		Original Surrogate (Digitized/Migrated & Physical/Original
		Destroyed) Surrogate (Digitized/Migrated & Physical/Original Kept)
		Not-Yet-Known
Classification (for	Yes	Options: ???
Access)		Open/Public
		Open/Redacted Contains Some Confidential Records
		Confidential/Sensitive
		Not-Yet-Known
Digital Contant	Vee	
Digital Content Structure	Yes	Options: ??? Compound (Multiple Types)
Structure		Word Processing
		Plain Text
		Text With Markup
		Spreadsheet
		Presentation
		Database
		AUDIO
		Audio: Mono
		Audio: Stereo
		VIDEO Video: High Quality/Professional
		Video: Medium Quality/Amateur
		Video: Animation/Interactive
		IMAGE
		Image: Raster (for Tiff, PNG, Jpeg, jpeg2000, etc.)
		Image: Vector/CAD
		Image: Raw/Native
		Image: Geospatial Raster
		Image: Geospatial Vector
		Email
		Web Content: Site/Page/SocialMedia/Blog/etc.
		Software: Game/Application/Virtual Machine/Code/etc. Disk Image/Forensic Image
		Archive: Zip/Tar/Arc/Warc/SIRF/VEO/etc.
		Encrypted (Key-Available/Accessible-Content)
		Encrypted (No-Key/Inaccessible-Content))
		Not-Yet-Known
Notes	No	



## Local Records

Field	<b>Required</b> ?	Default Value
Records Series Title	Yes	
Transferring County Name	Yes	
Creating Agency Name	Yes	
Creating Agency Subdivision	No	
Transferring Employee	Yes	
Receiving Institution	Yes	State Archives of North Carolina, Division of North Carolina Department of Natural and Cultural Resources
Receiving Institution Address	Yes	109 E. Jones St. Raleigh, NC 27601
Dates of Records (YYYY-MM-DD) - (YYYY-MM-DD)	Yes	
Digital Originality	Yes	Options: ??? Original (Born Digital) Original Surrogate (Digitized/Migrated & Physical/Original Destroyed) Surrogate (Digitized/Migrated & Physical/Original Kept) Not-Yet-Known
Classification (for Access)	Yes	Options: ??? Open/Public Open/Redacted Contains Some Confidential Records Confidential/Sensitive Not-Yet-Known



	, 	
Field	Required?	Default Value
Digital Content	Yes	Options: ???
Structure		Compound (Multiple Types)
		Word Processing
		Plain Text
		Text With Markup
		Spreadsheet
		Presentation
		Database
		AUDIO
		Audio: Mono
		Audio: Stereo
		VIDEO
		Video: High Quality/Professional
		Video: Medium Quality/Amateur
		Video: Animation/Interactive
		IMAGE
		Image: Raster (for Tiff,PNG,Jpeg,jpeg2000,etc.)
		Image: Vector/CAD
		Image: Raw/Native
		Image: Geospatial Raster
		Image: Geospatial Vector
		Email
		Web Content: Site/Page/SocialMedia/Blog/etc.
		Software: Game/Application/Virtual Machine/Code/etc.
		Disk Image/Forensic Image
		Archive: Zip/Tar/Arc/Warc/SIRF/VEO/etc.
		Encrypted (Key-Available/Accessible-Content)
		Encrypted (No-Key/Inaccessible-Content))
		Not-Yet-Known
Notes	No	

#### Adding "Payload" to Bag

There is nothing saved to your bag yet. To add a folder(s)s/file(s) (i.e., what Bagger calls the "payload"), either click on the green **Add Data** button or go to **File > Add Data**...

Bagger	🖨 🔯 🖏 Bag
Payload	File
🗋 data	click to add files

A new dialog box will appear. Select the folder(s)/file(s) you would like to be bagged. You may select as many folders as you like from as many places as you like.

Select the **Open** button to place your selections in the bag. (Note: When you click **Open**, nothing happens to the actual files. You are simply preparing a list, and you may still add and remove files freely at this stage. You are not committing yourself to anything.)

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The new files will appear in the Payload section on the left:

	R R E Y
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and a second sec	

If you are on a Windows 7 computer, you may receive an error like the following:

Error - file	e not added
	Error adding bag file: C:\Users\Public\Desktop\Adobe Acrobat 9 Pro.Ink
G	due to:
	Cannot remove basePath C:\Users\rtrent\Desktop from C:\Users\Public\Desktop\Adobe Acrobat 9 Pro.Ink
	<u></u> K

If you receive an error like this, note the exact file paths that it suggests. In the error above, the user asked Bagger to retrieve a file from inside C:\Users\rtrent\Desktop and bagger indicated that it was unable to retrieve the file because its actual path is C:\Users\Public\Desktop\Adobe Acrobat 9 Pro.Ink. In this example, the user needed to navigate to C:\Users\Public\Desktop\Adobe Acrobat 9 Pro.Ink to add the Adobe Acrobat 9 Pro.Ink file. These errors occur because of the way users are handled in Windows 7. A file may be visible to several users but is owned by only one user.



#### Saving the Bag

Click on the Save Bag As... button.

Make sure that the tag manifest and payload manifest boxes are checked and set to sha256:

🕌 Save Bag Dialog		_	
Save Bag Define the Bag settings			
Save in: Holey Bag?: Base URL	Holey Bag		Browse
Serialize Type?: Generate Tag Manifest?: Tag Manifest Algorithm:	▼ sha256	◉ none ○ zip	•
Generate Payload Manifest? Payload Manifest Algorithm	(	ок	<u>C</u> ancel

Click the **Browse** button and browse to the desired folder on your device.. In the **File Name** box, type in the name of the bag. This will be the title of the folder that holds the bag. Note: please use the **Browse** button to navigate to the correct location and then type in the bag name, rather than simply typing the path into the **Save in** field, as Bagger will encounter an error and be unable to save the bag.

#### Follow these rules when naming a bag:

- Always end the bag name with \_bag
- For State Agencies, begin the bag name with the item number of the transfer
- For Local Agencies, begin the bag name with the record type (Minutes\_bag; Maps\_bag)
- If the bag contains confidential information, include the word CONFIDENTIAL in the name
- Replace all empty spaces with underscores (Easley\_Exec\_Orders instead of Easley Exec Orders)
- Include the date the bag was made (today's date)
- Make the name of the bag meaningful, so that if you look at the bag another date, you can easily discern the nature of its contents without having to open it
- Examples bag name: 3989\_lankford\_documents\_20120214\_bag

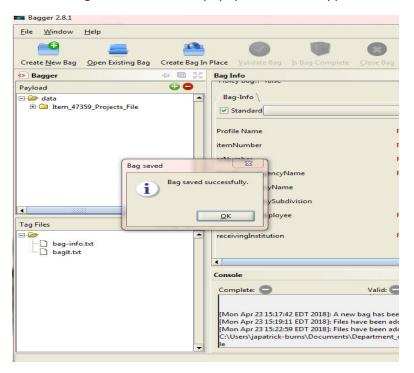
Click **OK** to begin saving the bag. After you click **OK**, Bagger will first checksum the original files, then copy the files onto the hard drive.

NOTE: After you click OK to save the bag, if you hover your cursor over Bagger, the cursor will appear busy. This will continue until Bagger has finished checksumming the files. Once Bagger begins to copy the files, a progress bar will



appear, and the cursor will return to normal. Do not worry if Bagger appears to hang for a long time. It is simply checksumming the files.

Once the bag has been saved, a popup window will appear:



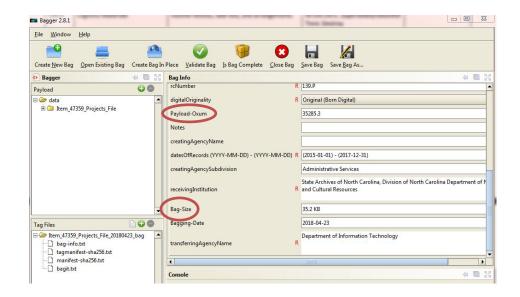
Click **OK** on the popup window. The popup window will disappear, and the main window will display information about the new bag:

Eile Window Help		
🗃 💼		
Create New Bag Open Existing Bag Create Bag In Place	e Validate Bag Is Bag Complete Close Bag	Save Bag As
	ig Info	- D 25
Payload 😮 🔵 🔽	Number R	139.P
	igitalOriginality R	Original (Born Digital)
	ayload-Oxum	35285.3
No	otes	
cre	reatingAgencyName	
da	atesOfRecords (YYYY-MM-DD) - (YYYY-MM-DD) R	(2015-01-01) - (2017-12-31)
cre	reatingAgencySubdivision	Administrative Services
re		State Archives of North Carolina, Division of North Carolina Department of N and Cultural Resources
Ba	ag-Size	35.2 KB
Tag Files 🕒 😳 🔵 Ba	agging-Date	2018-04-23
Ltem_47359_Projects_File_20180423_bag	ansferringAgencyName R	Department of Information Technology
manifest-sha256.bd		
bagit.txt Con	nsole	- <b>D</b> 33



## **Record the Size of the Saved Bag**

- On this screen, you will want to note two pieces of information for the "Bag Info" section of the transfer form appropriate for your use: the size of the bag, which can be found in Bagger as "**Bag-Size**"
- the number of files in the bag's payload, which can be found in Bagger in the numerals after the period in the "**Payload-Oxum.**" For example, in the screen copied below, the payload-oxum was 35285.3. Thus, there were 3 files in this bag.



Bag Name	Number of Files	Total File Size
Item_47359_Projects_File_Bag	3	32KB
Totals for the entire transfer:	3	32KB

### Validating a Bag

Immediately after creating a bag, it is a good idea to validate it to authenticate that the bag was successfully created. *See section 3.2 for more details.* 



# **3.1 Open Existing Bag**

On the main Bagger screen, click **Open Existing Bag**. A popup window will appear:

Bagger 2.8.1	
Eile     Window     Help       Image: Create New Bag     Open Existing Bag     Create	tet Bag In Place Validate Bag Is Bag Complete Close Bag Save Bag Save Bag As
📀 Bagger 🗧	🖻 💱 Bag Info 🖉 🗟 💱
Payload data	File name:       Profile:       Holey Bag?:   Serialize Type?:
	Existing Bag Location
Tag Files	SMSTaskSequence Quarantine cygwin64 Users Office2016 Windows packages St893C96166A PerfLogs msdia80.dll Program Files Program Files Program Data Python27
-11	File Name: Files of Type: All Files  Open Cancel  Cancel  Concel  Concen  Concel  Concel  Concel  Concen  Concel  Concen  Concen  Conc
	Complete: Valid: Profile Compliant: Mon Apr 23 15:57:59 EDT 2018]: This space will contain messages generated by the creating and updating of bags. Mouse over the status label to see its description.

Navigate to the bag you would like to validate and click **Open.** The bag will appear in the main screen:



File Window Help     Create New Bag Open Existing Bag Create Bag In Place Validate Bag Is Bag Complete Close Bag Save Bag Save Bag As     Bagger Image: Save Bag Save Bag As     Payload Image: Save Bag Save Bag As     Payload Image: Save Bag Save Bag As     Payload Image: Save Bag As     Payload-Oxum S285.3   Notes Image: CreatingAgencyName   Imag Files Image: Save Bag As   Payload Image: Save Bag As   Payload-Oxum State Archives of North Carolina, Division of North Carolina Department of North Carolina, Division of North Carolina Depar	Bagger 2.8.1	
Create New Bag Open Existing Bag Create Bag In Place Validate Bag Is Bag Complete Save Bag		
Payload   ItemNumber   ItemNumber   Item.47359_Projects_File   Item.47359	😬 📥 😬	
Item, 47359_Projects_File     Item, 47359_Projects_File <th>• Bagger 💠 🔯 💱</th> <td>Bag Info 🖉 🖉 💱</td>	• Bagger 💠 🔯 💱	Bag Info 🖉 🖉 💱
B: Them, 47359_Projects_File     digitalOriginality   Payload-Oxum   35285.3   Notes   creatingAgencyName   datesOfRecords (YYYY-MM-DD) - (YYYY-MM-DD) R   (2015-01-01) - (2017-12-31)   creatingAgencySubdivision   Administrative Services   creatingAgencySubdivision   Administrative Services   state Archives of North Carolina, Division of North Carolina Department of North Carolina, Division of North Carolina Department of Information Technology		itemNumber R 47359
Tag Files       State Archives of North Carolina, Division of North Carolina Department of Paging-Date         Bag-Size       35285.3         Bag-Size       35285.3         Bag-Size       35285.3         Bag-Size       35285.3         Bag-Size       35285.3         Bag-Size       35285.3         Bagging-Date       2018-04-23         Department of Information Technology       Department of Information Technology		rcNumber R 139.P
Tag Files   bag-info.tt		digitalOriginality R Original (Born Digital)
Tag Files       State Archives of North Carolina, Division of North Caroli		Payload-Oxum 35285.3
Tag Files       datesOfRecords (YYYY-MM-DD) - (YYYY-MM-DD) R       (2015-01-01) - (2017-12-31)         Tag Files       teceivingInstitution       Administrative Services         Bag-Size       35.2 KB         Bagsing-Date       2018-04-23         Department of Information Technology       Department of Information Technology		Notes
Tag Files       Tag Files       Tag Siles		creatingAgencyName
Tag Files     Image: State Archives of North Carolina, Division of North Carolina Department of North Carolina, Division of North Carolina Department of North Carolina, Division of North Carolina, Division of North Carolina, Department of Information Technology		datesOfRecords (YYYY-MM-DD) - (YYYY-MM-DD) R (2015-01-01) - (2017-12-31)
Tag Files     Image: Constraint of the system		creatingAgencySubdivision Administrative Services
Bag-size 33.2 KB Bag-info.txt Dagainfest-sha256.txt Bagging-Date 2018-04-23 Department of Information Technology		
bag-info.txt     Bagging-Date     2018-04-23       tagmanifest-sha256.txt     Department of Information Technology		Bag-Size 35.2 KB
tagmanifest-sha256.txt     Department of Information Technology		Bagging-Date 2018-04-23
	tagmanifest-sha256.txt	
Biglicht	bagit.txt	
Console 👘 🖸		Console 🗧 📴 👯
Complete: 😑 Valid: 😑 Profile Compliant: 📀		Complete: 🔤 Valid: 🚍 Profile Compliant: 🥥
[Mon Apr 23 15:57:59 EDT 2018]: This space will contain messages generated by the creating and updating of bags.         Mouse over the status label to see its description.		
(Mon Apr 23 15:58:50 EDT 2018): Opened the bag D:\ltem_47359_Projects_File_20180423_bag	<b></b>	[Mon Apr 23 15:58:50 EDT 2018]: Opened the bag D:\ltem_47359_Projects_File_20180423_bag

# **3.2 Validate Bag**

Click Validate Bag. Bagger will immediately start validating the bag.

A popup window may appear showing Bagger's progress:

🕌 Progr	ess 🔀
i	Validating bag verifying file checksum (5 of 10) data/20070220/20070220_day016_1.wav Cancel

# **3.3 Check results**

Once the validation is complete, a popup window will appear that says "Validation successful." Click OK.

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📼 Bagger 2.8.1	
<u>File Window H</u> elp	
Create New Bag Open Existing Bag Create Bag In	Place Validate Bag Is Bag Complete Close Bag Save Bag Save Bag As
📀 Bagger 🗢 🗟 🖧	Bag Info 🗢 🖸 💱
Payload 😳 🔵	itemNumber R 47359
	rcNumber R 139.P
	digitalOriginality R Original (Born Digital)
	Payload-Oxum 35285.3
	Notes
	creatingAgencyN Validation Dialog X datesOfRecords ( Validation successful. creatingAgencySt
<b>•</b>	receivingInstitutic           QK         Ministedire Services
Tag Files	Bag-Size 35.2 KB
🗋 bag-info.txt	Bagging-Date 2018-04-23
tagmanifest-sha256.txt manifest-sha256.txt	Department of Information Technology
🗋 bagit.txt	Console 🗢 🖸 💱
	Complete: 📀 Valid: 📀 Profile Compliant: 📀
-	[Mon Apr 23 15:57:59 EDT 2018]: This space will contain messages generated by the creating and updating of bags.         Mouse over the status label to see its description.         [Mon Apr 23 15:58:50 EDT 2018]: Opened the bag D:\Item_47359_Projects_File_20180423_bag

Note that the bag now has green check marks indicating that it is complete and valid.

In the event that the bag does not validate, click **Validate Bag** once again. If the validation is still unsuccessful, please return to **2.2 Create a Bag** to restart the process.

## **3.4 Close Bagger**

After validating the bag, you can close bagger using the et al. in the top right corner or by clicking **Close Bag**:



If Bagger asks you if you would like to save the bag, say no. (You have just finished saving the bag and do not need to resave it.)

Note: Do not delete the bags you have prepared for transfer until a representative from the State Archives confirms that the ingest process is complete.



# **Appendix: Resolving a Java Error**

Bagger requires Java Runtime Environment (JRE) be installed and accessible by Bagger. JRE is widely used, and most computers will already have a copy. If the computer you are working with (a) does not have a copy or (b) the computer cannot correctly locate its copy, you will receive an error when you attempt to open Bagger. The error may look like this:

#### C:\WINDOWS\system32\cmd.exe

```
ERROR: JAVA_HOME is not set and no 'java' command could be found in your PATH.
```

```
Please set the JAVA_HOME variable in your environment to match the location of your Java installation.
Press any key to continue . . .
```

If you receive a Java error, you will need to follow these steps with administrator rights to your computer. If you do not have administrator rights, your computer will refuse to allow you to make the following changes. If you are not sure if you have administrator rights, try the following steps and stop if you receive a message indicating that you need administrator rights to proceed.

## **Confirm whether JRE Is Installed**

You can check your computer to see if you have a JRE installed by navigating to the Control Panel.

For Windows 7, select Start -> Control Panel

For Windows 10, search for "Control Panel" in the search bar

If your Control Panel is in Category View (see below), click on **Category** and change it to **Small Icons**. Double-click on **Java** to open the Java Control Panel



Action Center BitLocker Drive Encryption	administrative Tools	AutoPlay	Backup and Restore
BitLocker Drive Encryption			Backup and Restore
	💶 Color Management	🔂 Configuration Manager	Credential Manager
Date and Time	🛞 Default Programs	📑 Desktop Gadgets	🚔 Device Manager
Devices and Printers	🖳 Display	Sease of Access Center	Flash Player (32-bit)
Folder Options	A Fonts	📇 Getting Started	HEAT EMSS Agent Control Panel
👌 HomeGroup	🚇 Indexing Options	🐑 Internet Options	للله Java (32-bit)
Keyboard	Location and Other Sensors	Mail (Microsoft Outlook 2016) (32-bit)	Mouse
Network and Sharing Center	📟 Notification Area Icons	NVIDIA Control Panel	Performance Information and Tools
Personalization	Phone and Modem	Power Options	Programs and Features
Realtek HD Audio Manager	Recovery	🧬 Region and Language	🐻 RemoteApp and Desktop Connections
Sound	Speech Recognition	🔞 Sync Center	1 System
Taskbar and Start Menu	Troubleshooting	용 User Accounts	📑 Windows CardSpace
Windows Defender	🔗 Windows Firewall	🖑 Windows Update	

Select the **Java** tab to view the screen that provides access to the Java Runtime Environment Settings. Select the **View...** button, and this will display the Java Runtime Versions you have installed.

🛓 Java Control	Panel				- I I
	Security Advanced	ions and setting	s for Java applications a	and applets	View
Java Runtime	Environment Settin	gs			8
Pla Produ	uct Location	Path	Runtime Parameters	Enabled	Archite
1.8 1.8.0	_151 http://java	C:\Program			x86
			Find	Add	Remove
				ОК	Cancel
			OK	Cancel	Apply

This displays the version and the installation location.

If it appears that you have a JRE installed, skip down to step 1.2 to confirm that the JRE environmental variable is defined.

## Download and Install JRE if It Is Not Already Installed

- 1. Oracle: http://www.oracle.com/technetwork/java/javase/downloads/index.html
- 2. CNET: http://download.cnet.com/Java-Runtime-Environment-JRE/3000-2356\_4-10009607.html

Note: the JRE is generally installed to the C:\Program Files or C:\Program Files (x86) folder.

## **Configure JRE Environmental Variable**

Navigate to the Advanced system settings.

- For Windows 7: From the **Start** menu, right click on the **Computer** button. From right-click menu, select the **Properties** option. Select the **Advanced system settings** link on the left.
- For Windows 10: navigate to the Control Panel by searching "control panel" in the search bar. Click on System, then Advanced system settings.

Select the Environment Variables button near the bottom of the dialog box.

Computer Name	Hardware	Advanced	System Protection	Remote
You must be lo	gged on as a	an Administra	tor to make most of th	nese changes
Performance				
Visual effects	processor s	cheduling, m	emory usage, and vir	tual memory
				111
				Settings
User Profiles				
Desktop setti	ngs related to	o your logon		
				Settings
Startup and F	lecovery			
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		ure, and deb	ugging information	
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1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		lure, and deb	Environme	-

An Environment Variables window will appear. First verify that the JAVA\_HOME environment variable is **not** defined.

The environment variables are listed alphabetically. Scroll down the list, until you see where the environment variables would be listed that start with J. In the example below, there is no JAVA\_HOME variable listed in this display, so it is not yet defined. We will create it in the following steps.



Jser variables for jap	atrick-burns	
Variable	Value	
PATH TEMP TMP	C: \Users \japatrick-burns \AppData \Local %USERPROFILE % \AppData \Local \Temp %USERPROFILE % \AppData \Local \Temp	
ystem variables	New Edit Delete	
ystem variables Variable AGSDESKTOPJAVA ComSpec	Value	
Variable AGSDESKTOPJAVA	Value C:\Program Files (x86)\ArcGIS\Deaktop C:\WINDOWS\system32\cmd.exe C:\ProgramData\McAfee\Endpoint Secu	

To create a new Environmental variable, select the **New** button in the lower half of the window.

A new Edit System Variable window will appear.

In the *Variable name* field, type JAVA\_HOME. In the *Variable value* field, type the complete path to the folder that contains the JAVA bin folder, the lib folder, and the COPYRIGHT file. This will be **above the** bin folder that contains java.exe (Note: this will **not** be the bin folder, but the folder up one level from the bin folder).

lser variables for j	apatrick-burns	
Variable	Value	
PATH	C:\Users\japatrick-burns\AppData\Local	
TEMP	%USERPROFILE%\AppData\Local\Temp	
TMP	%USERPROFILE%\AppData\Local\Temp	
Variable value:	C:\Program Files (x86)\Java\tre 1.8.0	
NUMBER_OF_P	Cryrogrammes (xooypavayrez.co.)     8     New     Edit     Delete	

Click OK to close the Edit System Variable window.

Review the list of system variables and verify the JAVA\_HOME variable is there.

The system variables are listed alphabetically in the lower window. Scroll down through your list of system variables to confirm the JAVA\_HOME variable was properly assigned.



Click **OK** to close the **Environment Variables** window.

Click **OK** to close the **System Properties** window.