

# brandxmp Group

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<https://github.com/bakerjd99/jackshacks/blob/main/brandxmp.ijs>

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## brandxmp Overview

**brandxmp** is a J script that brands sidecar [XMP](#) files generated by [Darktable](#).

**brandxmp** scans image directories containing XMP metadata files and inserts [Dublin Core](#) `title` elements like:

```
<dc:title>
  <rdf:Alt>
    <rdf:li xml:lang="x-default">_DSC8001.NEF|9a629837f0107ade4957352dfb55ecd483f932e2b46a63e6f56276a886c5611d</rdf:li>
  </rdf:Alt>
</dc:title>
```

The `title` string consists of the file name and the SHA256 hash of the corresponding image file. I never alter source image files so this hash will be a unique stable key associated with the original image.

## brandxmp Interface

```
audbranddir [8] audit xmp/raw image directories
sidecars    [17] image raws with corresponding sidecar xmp files
titbranddir [19] brand eligible xmp files in directory
titbrandxmp [20] brand xmp sidecar file with file name and hash of associated image
```

## Installing brandxmp

If you have a current version of J (9.0x+ or later) installed **brandxmp** can be downloaded as a J [addon](#) script by typing the following commands into a JQt or JHS session.

*NB. install addon files in ~addons/jacks*

```
install 'github:bakerjd99/jackshacks'
```

*NB. installed files*

```
dir '~addons/jacks'
```

*NB. load script*

```
load '~addons/jacks/brandxmp.ijs'
```

To update *brandxmp* and other files in *~addons/jacks* simply reinstall. New files will be added and existing files will be overwritten with current versions.

## Using *brandxmp*

To use *brandxmp* do the following:

1. Set Darktable to check for altered XMP files. The default setting is to create XMP files and then rewrite them with only Darktable edits. You want to preserve XMP changes made outside of Darktable.
2. Add a directory filled with RAW images to the Darktable library. Darktable creates the XMP files *brandxmp* needs. Any image processing program that creates XMP files with Dublin Core elements can be used instead of Darktable.
3. Shutdown Darktable.
4. Start J, load *brandxmp*, and scan the directory of added RAW files:

```
load '~addons/jacks/brandxmp.ijs'  
titbranddir 'c:/your/raw/directory' NB. win path
```

5. Restart Darktable and merge the XMP changes to the Darktable library database.
6. It's also a good idea to run `audbranddir` over branded XMP directories. `audbranddir` writes a simple text file in the target directory that summarizes raws and retains the original file names and SHA256 hashes inserted in `title` elements.

```
audbranddir '/Users/your/pictures/to/be/audited' NB. macos/linux path
```

After merging the XMP changes Darktable will export “developed” RAW images with the branded `title` element. If you use other image editors make sure they maintain this element. My favorite editors [Picture Window Pro](#), [Affinity Photo](#), [The GIMP](#), [ThumbsPlus](#), and [macOS Photos](#) all maintain this element. Yours may not!

## brandxmp Source Code

```
NB.*brandxmp s-- brand directories of xmp sidecar files with file name and hash.
NB.
NB. verbatim:
NB.
NB. interface word(s):
NB. -----
NB.  audbranddir - audit xmp/raw image directories
NB.  sidecars    - image raws with corresponding sidecar xmp files
NB.  titbranddir - brand eligible xmp files in directory
NB.  titbrandxmp - brand xmp sidecar file with file name and hash of associated image
NB.
NB. created: 2022jul13
NB. -----
NB. 22jul15 (audbrandxmp) added
NB. 22jul16 (audbrandxmp) renamed (audbranddir) to match (titbranddir)

coclass 'brandxmp'

NB.*dependents
NB. (*)=: shabrand wrecho RAWFILETYPES XMPBRDEL XMPTITLEFRAG
NB.*enddependents

NB. xmp brand delimiter character
XMPBRDEL=: ' | '
```

*NB. brand file with name and sha256 hash: shabrand 'c:\temp\IMG\_0162.jpg'*

```
shabrand=: (XMPBRDEL ,~ justfileext@winpathsep) , sha256@read
```

*NB. write bytes (x) and return file (y)*

```
wrecho=: {{ y [ x (write :: _1:) y }}
```

*NB. image types considered raw - adjust if necessary*

```
RAWFILETYPES=: <;._1 ' jpg tif tiff nef dng png jpeg heic'
```

```
XMPTITLEFRAG=: (0 : 0)
```

```
<dc:title>
```

```
<rdf:Alt>
```

```
<rdf:li xml:lang="x-default">[~(fhash)~]</rdf:li>
```

```
</rdf:Alt>
```

```
</dc:title>
```

```
)
```

*NB.\*end-header*

*NB. carriage return character*

```
CR=: 13{a.
```

*NB. interface words (IFACEWORDSbrandxmp) group*

```
IFACEWORDSbrandxmp=: <;._1 ' audbranddir sidecars titbranddir titbrandxmp'
```

*NB. line feed character*

```
LF=: 10{a.
```

*NB. root words (ROOTWORDSbrandxmp) group*

ROOTWORDSbrandxmp=: <;.\_1 ' IFACEWORDSbrandxmp ROOTWORDSbrandxmp VMDbrandxmp audbranddir titbranddir'

*NB. version, make count and date*

VMDbrandxmp=: '0.7.0';12;'25 Feb 2024 10:24:43'

*NB. name and extension of xmp audit file*

XMPAUDITFILE=: '00auditxmp.txt'

*NB. xmp list line length*

XMPWID=: 75

*NB. name of directory xmp zip backup file*

XMPZIPFILE=: '00xmpbak.zip'

*NB. retains string (y) after last occurrence of (x)*

afterlaststr=: ] }.~ #@[ + 1&(i:~)@([ E. ])

*NB. retains string after first occurrence of (x)*

afterstr=: ] }.~ #@[ + 1&(i.~)@([ E. ])

allraws=: 3 : 0

*NB.\*allraws v-- list all raw image files in directory.*

*NB.*

*NB. monad: blcl =. allraws clDirectory*

```
NB.
NB.  r0=. 'c:\pictures\2022\North Rim Monument Valley\06_jun\d7500'
NB.  r1=. '/Users/johnbaker/Pictures/2022/Idaho/07_jul/d7500'
NB.  allraws r0
NB.
NB. dyad:  blcl =. blclRawExt allraws clDirectory
NB.
NB.  (;:'nef dng') allraws rp

RAWFILETYPES allraws y
:
NB. j profile !(*)=. dir IFUNIX

NB. file extension case matters on unix systems (sigh)
if. IFUNIX do. ext=. x,toupper&.> x else. ext=. x end.

a: -.~ , ;1&dir&.> (<(tslash2 y) , '*.') ,&.> ext
)

NB. trims all leading and trailing blanks
alltrim=: ] #~ [: -. [: (*./\ . +. *./\ ) ' '&=

NB. signal with optional message
assert=: 0 0"_ $ 13!:8^:((0: e. ])^`'(12"_)

audbranddir=: 3 : 0
```



```
NB.*audbranddir v-- audit xmp/raw image directories.
NB.
NB. Scans a directory containing raw image files where files with
NB. extensions from (RAWFILETYPES) are considered raw and writes
NB. a simple text file in the directory that lists:
NB.
NB. verbatim:
NB.
NB. 1. counts of raw types in directory
NB. 2. raws without sidecar xmps
NB. 3. raws with xmps missing titles
NB. 4. titles of xmps - shows name/hash if branded
NB.
NB. monad: (clAuditFile ; clXmpZip) =. audbranddir clDirectory
NB.
NB.  r0=. 'c:/pictures/2022/Washington/04_apr/d7500'
NB.  r1=. 'c:\pictures\2022\North Rim Monument Valley\06_jun\d7500'
NB.  r2=. '/Users/johnbaker/Pictures/2022/Idaho/07_jul/d7500'
NB.  audbranddir r0

NB. if no raws return empty and do not write audit file
if. 0 = #raw=. allraws y do. '' return. end.

NB. start file text
txt=. (timestamp ''),LF,y
txt=. txt,LF,LF,'raw file counts',LF,ctl extfreq raw
```

*NB. raws without xmps*

```
noxmp=. raw -. 0 {"1 sid=. sidecars y
txt=. txt,LF,LF,(":#noxmp),' raws without xmps'
if. #noxmp do.
  txt=. txt,LF,ctl XMPWID list '/'&afterlaststr&.> noxmp
end.
```

*NB. extract title element text from all xmps*

```
elt=. 'dc:title'&geteletext@read&.> 1 {"1 sid
bm=. 0 = #&> elt
```

*NB. xmps without title elements*

```
ubxmp=. bm # 0 {"1 sid
txt=. txt,LF,LF,(":#ubxmp),' raws with xmps missing titles'
if. #ubxmp do.
  txt=. txt,LF,ctl XMPWID list '/'&afterlaststr&.> ubxmp
end.
```

*NB. xmps with titles*

```
htxmp=. ;elt #~ -.bm
txt=. txt,LF,LF,(":#htxmp),' raws with xmps having titles'
if. #htxmp do.
```

*NB. raw file names*

```
rit=. ,&XMPBRDEL&.> '/'&afterlaststr&.> (0 {"1 sid) #~ -.bm
```

*NB. title text*

```
brtxt=. ('"x-default">'&afterstr)@('</rdf:li>'&beforestr)&.> htxmp
txt=. txt,LF,ctl ;"1 rit ,. brtxt
```

```
end.
```

```
NB. backup current xmp files -- uses J's zip.exe assumed on path
```

```
adir=. tslash2 y
```

```
ferase xmpbak=. '",'',adir,XMPZIPFILE,'''
```

```
NB. j profile !(*)=. IFWIN IFUNIX
```

```
if. IFWIN do.
```

```
  opts=. (fexist xmpbak) #' -f '
```

```
  zcmd=. 'zip ',opts,' -j ',xmpbak,' ','',adir,'*.xmp''
```

```
elseif. IFUNIX do.
```

```
  NB. msgs=. shell 'rm ',xmpbak
```

```
  zcmd=. 'zip ',xmpbak,' ','',adir,'*.xmp'
```

```
elseif.do.
```

```
  'OS not supported' assert 0
```

```
end.
```

```
NB. j profile !(*)=. shell
```

```
smoutput msgs=. shell zcmd
```

```
NB. write audit file
```

```
afile;xmpbak [ (toHOST tlf txt) write afile=. adir,XMPAUDITFILE
```

```
)
```

```
NB. retains string before first occurrence of (x)
```

```
beforestr=: ] {.^ 1&(i.~)@([ E. ])
```

```
betweenstrs=: 4 : 0
```

```
NB.*betweenstrs v-- select sublists between nonnested delimiters
NB. discarding delimiters.
NB.
NB. dyad: blcl =. (clStart;clEnd) betweenstrs cl
NB.          blnl =. (nlStart;nlEnd) betweenstrs nl
NB.
NB. ('start';'end') betweenstrs 'start yada yada end boo hoo start ahh end'
NB.
NB. NB. also applies to numeric delimiters
NB. (1 1;2 2) betweenstrs 1 1 66 666 2 2 7 87 1 1 0 2 2

's e'=. x
llst=. ((-#s) (|.!.0) s E. y) +. e E. y
mask=. ~:/\ llst
(mask#llst) <;.1 mask#y
)

NB. boxes open nouns
boxopen=: <^(L. = 0:)

changestr=: 4 : 0

NB.*changestr v-- replaces substrings - see long documentation.
NB.
NB. dyad: clReps changestr cl
NB.
NB. NB. first character delimits replacements
```

```

NB.    '/change/becomes/me/ehh' changestr 'blah blah ...'

pairs=. 2 {.(1) _2 [\ <;._1 x      NB. change table
cnt=._1 [ lim=. # pairs
while. lim > cnt=.>:cnt do.      NB. process each change pair
  't c'=. cnt { pairs           NB. /target/change
  if. +./b=. t E. y do.         NB. next if no target
    r=. I. b                    NB. target starts
    'l q'=. #&> cnt { pairs      NB. lengths
    p=. r + 0,+/\(<:# r)$ d=. q - 1 NB. change starts
    s=. * d                     NB. reduce < and > to =
    if. s = _1 do.
      b=. 1 #~ # b
      b=. ((l * # r)$ 1 0 #~ q,l-q) (,r +/ i. l)} b
      y=. b # y
      if. q = 0 do. continue. end. NB. next for deletions
    elseif. s = 1 do.
      y=. y #~ >: d r} b        NB. first target char replicated
    end.
    y=. (c $~ q *# r) (,p +/i. q)} y NB. insert replacements
  end.
end. y                          NB. altered string
)

NB. character table to newline delimited list
ctl=: }.@(@,(1&(",1)@(-.@(*./\."1@(&' '0]]))) # ,@((10{a.)&(",1)@]]))

cutnestidx=: 4 : 0

```

```
NB.*cutnestidx v-- cut list into nested runs and other.
NB.
NB. Nested runs are delimited by begin and end tags. This verb is
NB. oriented toward XML parsing where typical begin end tags are
NB. <ul> </ul> and tags with attributes like: <hoo boy="2">
NB. </hoo>
NB.
NB. This verb can process numeric lists but care must be taken to
NB. insure the pad item (1{.0$y) does not match begin and end
NB. values.
NB.
NB. dyad: (ilIdx ;< blcl) =. (clStart;clEnd) cutnestidx cl
NB.       (ilIdx ;< blnl) =. (nlStart;nlEnd) cutnestidx nl
NB.
NB. xml=. 'yada <ol><li>one</li><ol><li>sub one</li></ol></ol> boo'
NB. ('<ol';'</ol>') cutnestidx xml
NB.
NB. 88 99 cutnestidx (i.5),88,(10?10),99 88 5 5 5 5 5 99

if. #y do.
  's e'=. .,&.> x          NB. start end lists
  ut=. 1{.0$y              NB. padding
  assert. -.s -: e         NB. they must differ
  assert. -. (s -:ut) +. e -:ut
  sp=. s E. ut=.y,ut       NB. start mask
```

```

NB. quit if no delimiters
if. -.1 e. sp do. (i.0);<<y return. end.

ep=. e E. ut          NB. end mask
assert. (+/sp) = +/ep  NB. basic balance
dp=. sp + - ep        NB. start end marks
assert. 0 *./ . <: +/\ dp  NB. nested balance
ep=. I. _1=dp [ sp=. I. 1=dp  NB. start end indexes
ut=. +/\dp -. 0        NB. scanned marks
dp=. /:~ sp,ep        NB. all indexes
sp=. (firstones 1<:ut)#dp  NB. starts of nested
ep=. (#e)+(0=ut)#dp      NB. starts of other
dp=. /:~ ~.0,sp,ep      NB. cut starts
ut=. }: 1 dp} (>:#y)#0   NB. cut mask
(dp i. sp);<ut <;.1 y    NB. nest indexes cut list
else.
  (i.0);<<y          NB. empty arg result
end.
)

NB. delete trailing line feed if necessary: dlf 'ab',LF
dlf=: ] }.~ [: - (10{a.) = {:

extfreq=: 3 : 0

NB.*extfreq v-- file extension frequency in descending order.
NB.

```

*NB. monad: ct =. rawfreq blclFiles*

```
'ext cnt'=. ofreq s: tolower@('.'&afterlaststr)&.> y
(4 s: ext) ,. ' - ' , "1 ": ,.cnt
)
```

*NB. boxes UTF8 names*

```
fboxname=: ([: < 8 u: >) ::]
```

*NB. erase files - cl / blcl of path file names*

```
ferase=: 1!:55 ::(_1:)@(fboxname&>)@boxopen
```

*NB. 1 if file exists 0 otherwise*

```
fexist=: 1:@(1!:4) ::0:@(fboxname&>)@boxopen
```

*NB. 0's all but first 1 in runs of 1's - like (firstone) but differs for nulls*

```
firstones=: > (0: , }:)
```

*NB. get pure element text*

```
geteletext=: ] betweenstrs~ [: tags [: alltrim [
```

*NB. file name and extension from fully qualified file*

```
justfileext=: ] #~ [: -. [: +./\ . '\ '&=
```

*NB. REFERENCE - standard z locale verb*

```
list=: list_z_
```



*NB. like (freq) but results in descending frequency*  
ofreq=: [: (([: < [: \: [: ; 1 { ]) { &.> ]) ~. ; #/.~

*NB. reads a file as a list of bytes*  
read=: 1!:1&([`<@.(32&>@ (3!:0)))

*NB. sha-256 hash from bytes: sha256 'hash me again'*  
sha256=: 3&(128!:6)

sidecars=: 3 : 0

*NB.\*sidecars v-- image raws with corresponding sidecar xmp files.*

*NB.*

*NB. monad: btcl =. sidecars clDirectory*

*NB.*

*NB. p0=. 'c:/pictures/2022/idaho/01\_jan/iphoneraw'*

*NB. sidecars p0*

*NB.*

*NB. dyad: btcl =. blcl sidecars clDirectory*

*NB.*

*NB. p0=. '/Users/johnbaker/Pictures/2022/Idaho/07\_jul/d7500'*

*NB. p1=. 'C:\pictures\2022\North Rim Monument Valley\06\_jun\d7500'*

*NB. (;'nef dng') sidecars p1 NB. only real raws*

*NB. image types considered "raws"*

RAWFILETYPES sidecars y

:

```
raw=. x allraws y
```

```
NB. darktable sidecar file names are created by  
NB. appending '.xmp' to the source file name  
(fexist xmp) # raw,.xmp=.raw ,&.> <' .xmp'  
)
```

```
NB. session manager output  
smoutput=: 0 0 $ 1!:2&2
```

```
NB. xml BEGIN and END tags  
tags=: '<'&,@,&'>' ; '</'&,@,&'>'
```

```
timestamp=: 3 : 0
```

```
NB.*timestamp v-- formats timestamp as dd mmm yyyy hr:mn:sc  
NB.  
NB. monad: cl =. timestamp zu | nlTime  
NB.  
NB. timestamp '' NB. empty now  
NB. timestamp 2007 9 16 NB. fills missing  
NB. timestamp 1953 7 2 12 33
```

```
if. 0 = #y do. w=. 6!:0'' else. w=. y end.  
r=. }: $ w  
t=. 2 1 0 3 4 5 {"1 [ _6 [\ , 6 {"1 <. w  
d=. '+++::' 2 6 11 14 17 }"1 [ 2 4 5 3 3 3 ": t
```

```
mth=. _3[\'    JanFebMarAprMayJunJulAugSepOctNovDec'
d=. ,((1 {"1 t) { mth) 3 4 5 }"1 d
d=. '0' (I. d=' ') } d
d=. ' ' (I. d='+') } d
(r,20) $ d
)

titbranddir=: 3 : 0

NB. *titbranddir v-- brand eligible xmp files in directory.
NB.
NB. NOTE: this verb reads entire directories filled with large
NB. >20MB image raw files to compute SHA256 hashes for each
NB. image. It may take a minute or so depending on the size and
NB. number of images in a directory.
NB.
NB. monad: blcl =. titbranddir clDirectory
NB.
NB. r0=. 'c:\pictures\2022\North Rim Monument Valley\06_jun\d5100'
NB. r1=. '/Users/johnbaker/Pictures/2022/Idaho/07_jul/d7500'
NB. titbranddir r0

NB. "raws" with sidecar xmp
if. #ds=. sidecars y do.

NB. insert file name & hash in title element
xmps=. titbrandxmp&.> <"1 ds
```

```
NB. write branded xmp files
xmps wrecho&.> 1 {"1 ds
else.
  0$<' ' NB. no eligible xmps
end.
)

titbrandxmp=: 3 : 0

NB.*titbrandxmp v-- brand xmp sidecar file with file name and
NB. hash of associated image.
NB.
NB. monad: clXmp =. titbrandxmp blImageXmpFiles
NB.
NB. xmp=. 'c:/pictures/2022/Idaho/07_jul/d7500/_DSC8496.NEF.xmp'
NB. ps=. xmp ;~ (-#'.xmp') }. xmp
NB. titbrandxmp ps
NB.
NB. ds=. sidecars 'c:/pictures/2022/North Rim Monument Valley/06_jun/d7500'
NB. xmps=. titbrandxmp&.> <"1 ds

xmp=. read xmp [ 'raw xmp'=. y

NB. single Dublin Core publisher and creator
NB. elements must exist to safely brand
dcp=. '</dc:publisher>'; '</dc:creator>'
if. -.1 1 -: +/"1 dcp E.&> <xmp do. xmp return. end.
```

*NB. file name and sha256 brand*

```
tit=. dlf ('/[~(fhash)~]/',shabrand raw) changestr XMPTITLEFRAG-.CR
```

*NB. replace or insert title element*

```
'idx ctmp'=. (tags 'dc:title') cutnestidx xmp
if. #idx do. ;(<tit) idx} ctmp
else.
  (pt ,~ pt beforestr xmp),LF,tit,pt afterstr xmp [ pt=. ;0{dcp
end.
)
```

*NB. appends trailing line feed character if necessary*

```
tlf=: ] , ((10{a.)"_ = {:) }. (10{a.)"_
```

*NB. converts character strings to CRLF delimiter*

```
toCRLF=: 2&}.@:;@:((13{a.)&,&.>@<;.1@((10{a.)&,)@toJ)
```

*NB. converts character strings to host delimiter*

```
toHOST=: toCRLF
```

*NB. converts character strings to J delimiter LF*

```
toJ=: ((10{a.) I.@(e.&(13{a.))@]} ]>@:(#~ -.@((13 10{a.)&E.@,))
```

```
tolower=: 3 : 0
```

*NB.\*tolower v-- convert to lower case.*

*NB.*

*NB. monad: cl =. tolower cl*

```
x=. I. 26 > n=. ((65+i.26){a.) i. t=. ,y
($y) $ ((x{n) { (97+i.26){a.) x}t
)
```

toupper=: 3 : 0

*NB.\*toupper v-- convert to upper case*

*NB.*

*NB. monad: cl =. toupper cl*

```
x=. I. 26 > n=. ((97+i.26){a.) i. t=. ,y
($y) $ ((x{n) { (65+i.26){a.) x}t
)
```

*NB. appends trailing / iff last character is not \ or /*

tslash2=: ([: - '\/' e.~ {:) }. '/' ,~ ]

*NB. standardizes path delimiter to windows back \ slash*

winpathsep=: '\&('/' I.@:= ])} )

*NB. writes a list of bytes to file*

write=: 1!:2 ]`<@.(32&>@ (3!:0))

*NB.POST\_brandxmp post processor.*

```
(".;(0=nc <'SHOWSMO_ijod_'){ '1';'SHOWSMO_ijod_') smoutput IFACE=: (0 : 0)
NB. (brandxmp) interface word(s): 20240225j102443
NB. -----
NB. audbranddir  NB. audit xmp/raw image directories
NB. sidecars     NB. image raws with corresponding sidecar xmp files
NB. titbranddir  NB. brand eligible xmp files in directory
NB. titbrandxmp  NB. brand xmp sidecar file with file name and hash of associated image
)

cocurrent 'base'
coinset   'brandxmp'
```

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