Mirror SmugMug Statistics

July 14, 2022

0.1 Mirror SmugMug Statistics

This notebook runs queries against the `sqlite` database `mirror.db` that holds consolidated Smug-Mug online image metadata.

Images are here: https://conceptcontrol.smugmug.com/.

```
[1]: NB. J version - notebook runtime
     smoutput 9!:14''
     smoutput timestamp 6!:0 ''
```

```
j903/j64avx2/windows/release-a/commercial/www.jsoftware.com/2021-12-16T15:15:09/
clang-13-0-0/SLEEF=1
14 Jul 2022 10:21:25
```

0.1.1 Load `mirrorstats` script

The `mirrorstats.ijs` script must be made available to the J `load` utility. The `JOD` `mls` verb does this automatically.

Alternatively you can edit the J start up script `~config/startup.ijs` and add lines like:

```
buildpublic_j_ 0 : 0
mirrorstats  ~temp/mirrorstats.ijs
)
```

```
[2]: load 'mirrorstats'
```

```
NB. (mirrorstats) interface word(s): 20220712j122126
NB. ------------------------------
NB. NotDivisible  NB. albums with image counts that are not divisible by 3 and 5
NB. albdist       NB. all mean album distances km from position (x)
NB. fsd           NB. fetch sqlite dictionary array
NB. fst           NB. fetch sqlite reads table
NB. meanalbdist   NB. mean km distance of geotagged album images from (x)
```

0.1.2 Set `mirror.db` database file location

Note: a test `mirror.db` is available on GitHub.

```
[3]: NB. set sqlite db file
     (3 : 0)''
     ALTMIRRORDBPATH_mirrorstats_=:''
     if.     IFWIN  do. ALTMIRRORDBPATH_mirrorstats_=:'c:/SmugMirror/Documents/
      ↪XrefDb/'
     elseif. IFUNIX do. ALTMIRRORDBPATH_mirrorstats_=:'~/jupyter_notebooks/dbs/'
     end.
     if. fexist dbf=: ALTMIRRORDBPATH,MIRRORDB do. dbf else. 'db not set' end.
     )
     smoutput dbf
```

c:/SmugMirror/Documents/XrefDb/mirror.db

0.1.3 Set various utils

```
[4]: NB. set portable box characters for LaTeX
     0 0$portchars ''

     NB. cell clip format
     ccf=: [ {."1 [: ": ]
```

0.1.4 Set homebase coordinates

The home coordinates are set in this fashion to avoid embedding location data in code.

`homebase.txt` is simple text file with a single line like:

109.375956 -33.852775

Longitude and Latitude are in decimal degrees and use the sign conventions of Jean Meeus's book *Astronomical Algorithms*.

```
[5]: NB. longitude and latitude of home decimal degrees
     NB. western longitudes +, northern latitudes +
     (3 : 0)''
     if. fexist  ALTMIRRORDBPATH,'homebase.txt' do.
       MeeusHomeLonLat_mirrorstats_=: _999&". read ALTMIRRORDBPATH,'homebase.txt'
     else.
       MeeusHomeLonLat_mirrorstats_=: 0 0
     end.
     )
     smoutput (;:'Longitude Latitude') ,: <"0 MeeusHomeLonLat_mirrorstats_
```

```
+---------+--------+
|Longitude|Latitude|
+---------+--------+
|0        |0       |
+---------+--------+
```

0.1.5 Load SQLITE data

```
[6]: NB. image columns
({."1 r)=: {:"1 r=: 'select * from OnlineImage order by UpLoadDate desc' fsd dbf

NB. album columns
({."1 r)=: {:"1 r=: 'select * from Album order by OnlineImageCount desc' fsd dbf
```

0.1.6 Total online image count

```
[7]: 'select count(*) as OnlineCount from OnlineImage' fst dbf
```

```
+-----------+
|OnlineCount|
+-----------+
|5194       |
+-----------+
```

0.1.7 Recent album adjustments

```
[8]: NB. most recently "updated" albums
r=: 'select ImagesLastUpdated, AlbumName from Album order by LastUpdated desc␣
 ↪limit 5' fsd dbf

NB. display with album "centroid" distance
NB. 0 distance means no geotagged images
(>&.> {:"1 r) , < ,. meanalbdist&> ;1{1{ r
```

```
+-----------------------+---------------------------+-------+
|2022-07-13T23:25:16+00:00|North Rim Monument Valley 2022|11925.6|
|2022-07-13T23:24:15+00:00|Direct Cell Uploads           |      0|
|2022-07-13T01:47:26+00:00|Image Hacking                 |10952.1|
|2022-07-11T18:55:42+00:00|Grandparents                  |11509.7|
|2022-07-11T18:50:59+00:00|From Hazel's Albums           |11551.9|
+-----------------------+---------------------------+-------+
```

0.1.8 Recent image additions

```
[9]: NB. last 15 images loaded
;"1 ] 15 {. (10 {.&.> RealDate) ,. (<' - ') ,. OnlineImageFile
```

```
2022-06-23 - canyon lookout fans.jpg
2022-03-15 - last mono day.jpg
1931-05-20 - hazel age 19 may 20 1931.jpg
1959-10-01 - aileen john baker casper wyoming 1959.jpg
2022-07-08 - ketchum festival shade beer.jpg
2022-07-08 - annual ketchum art festival.jpg
2022-07-08 - mali ketchum art craft festival.jpg
```

```
2022-07-08 - ketchum ore wagon museum.jpg
2022-07-08 - summer sun patio umbrellas.jpg
2022-07-07 - dreaming precariat.jpg
2022-06-23 - old canyon guy.jpg
2022-06-22 - polygamy porter.jpg
2022-06-24 - supai tunnel kaibab trail.jpg
2022-06-23 - velvia north rim cliff sunset.jpg
2022-06-25 - me roosevelt point.jpg
```

0.1.9 Album statistics

```
[10]: NB. 10 largest albumns
      10 {. (>AlbumName) ,. ": ,. >OnlineImageCount
```

```
Idaho Instants              480
The Way We Were             429
Cell Phoning It In          347
Weekenders                  336
Missouri Moments            315
California Captures         270
My Kids                     196
Image Hacking               170
Montana Now and Then        166
Panoramas                   161
```

```
[11]: NB. album image counts
      dstat OnlineImageCount
```

```
sample size:           79
minimum:                0
maximum:              480
1st quartile:          17
2nd quartile:          48
3rd quartile:         109
first mode:            21
first antimode:       480
mean:             79.6709
std devn:         96.6227
skewness:          2.2503
kurtosis:          8.2677
```

0.1.10 Images per year

My image dates are a mixture of EXIF dates and manually assigned dates. The manually assigned dates are rarely accurate and reflect my best guess as to when a picture was taken. Many images do not have dates. They show up in year 0.

```
[12]:  NB. images per year - year 0 means no date
       70 list ',' ,.~  ": rf=: \:~ |: yic=: > freq 0 {"1 rdt=: itYMDhms RealDate
```

```
2022 243, 2021 163, 2020  98, 2019 446, 2018 294, 2017 227, 2016 298,
2015 207, 2014  98, 2013 172, 2012 178, 2011 217, 2010 152, 2009 144,
2008 180, 2007 284, 2006 166, 2005 120, 2004 110, 2003  79, 2002 118,
2001 135, 2000  33, 1999   6, 1996   1, 1995  19, 1994   8, 1993   8,
1992  18, 1991  12, 1990   4, 1989  14, 1988   6, 1987  10, 1986   6,
1985   4, 1984   2, 1983  42, 1982   4, 1981  37, 1980  17, 1979  90,
1978  27, 1977  10, 1976  20, 1975   8, 1974  22, 1973   4, 1972   5,
1971  23, 1970  33, 1969  22, 1968  45, 1967  32, 1966  24, 1965   5,
1964  13, 1963   8, 1962  20, 1961   6, 1960   7, 1959  16, 1958  13,
1957   7, 1956   6, 1955  11, 1954  10, 1953   4, 1952   7, 1951   3,
1950   9, 1949  17, 1948  10, 1947   3, 1946   5, 1945   2, 1944   2,
1943   1, 1942   1, 1941   7, 1940   6, 1939   2, 1938   3, 1937   2,
1936   5, 1935   4, 1934   3, 1933   1, 1932   1, 1931   5, 1930   1,
1929   1, 1928   1, 1927   2, 1925   2, 1924   1, 1920   2, 1919   2,
1917   2, 1916   2, 1914   1, 1912   1, 1910   4, 1908   3, 1907   1,
1906   2, 1905   3, 1902   2, 1901   1, 1900   1, 1897   1, 1894   1,
1888   2, 1880   2, 1870   1, 1864   1,    0 181,
```

Images per year statistics since the year 2000. It was around 2000 that I started saving digital image files.

```
[13]:  NB. images per year statistics for years after 1999
       dstat (1 {"1 rf) #~ 1999 < 0 {"1 rf
```

```
sample size:            23
minimum:                33
maximum:               446
1st quartile:          118
2nd quartile:          166
3rd quartile:          227
first mode:             98
first antimode:        243
mean:              180.957
std devn:          90.2035
skewness:           1.0579
kurtosis:           4.4244
```

0.1.11 Uploads per year

I often upload old images that get counted in prior years. These counts reflect actual database inserts. Note the count of 724 in 2019. I did not insert that many images in 2019. The upload count probably reflects reorganizing existing images. The count of 1531 in 2009 marks the year I transferred my online images to SmugMug.

```
[14]:  70 list ',' ,.~  ": uf=: \:~ |: upc=: > freq 0 {"1 udt=: itYMDhms UploadDate
```

```
2022   255, 2021   203, 2020   109, 2019   724, 2018   352, 2017   319,
2016   362, 2015   222, 2014   102, 2013   256, 2012   233, 2011   314,
2010   212, 2009 1531,
```

[15]: `NB. uploads per year statistics - less outliers > 600`
`dstat (1 {"1 uf) #~ 600 > 1 {"1 uf`

```
sample size:           12
minimum:              102
maximum:              362
1st quartile:       207.5
2nd quartile:         244
3rd quartile:       316.5
first mode:           255
first antimode:       255
mean:             244.917
std devn:         84.2436
skewness:         _0.3147
kurtosis:          2.2355
```

0.1.12   *Flarp* rate

The *flarp rate* gives a rough indication of how much image rework and reloading I do. It shows up as a discrepancy between year counts and upload counts.

[16]: `smoutput flc=: (0{upc) ,: (1{upc) - 1{(\:~)&.|: yic #"1~ (0{yic) e. 0{upc`

```
2022 2021 2020 2019 2018 2017 2016 2015 2014 2013 2012 2011 2010 2009
  12   40   11  278   58   92   64   15    4   84   55   97   60 1387
```

Flarp statistics excluding the first upload year.

[17]: `dstat }: 1{flc`

```
sample size:           13
minimum:                4
maximum:              278
1st quartile:        13.5
2nd quartile:          58
3rd quartile:          88
first mode:            12
first antimode:        12
mean:             66.9231
std devn:         70.8172
skewness:          2.1248
kurtosis:          7.2818
```

0.1.13 `NotDivisible` counts

`NotDivisible` counts how many images must be added to a gallery so that the total number of gallery images is evenly divisible by 3 and 5. The iPhone SmugMug app displays images in rows of 3 (portrait) or 5 (landscape) and I like completely filled rows. When the total is evenly divisible by 15 = 3 * 5 both portrait and landscape rows are filled.

```
[18]:  10 {. NotDivisible dbf
```

```
+-------+-+-+--+--------------------+
|[Count]|3|5|15|[Album Name]        |
+-------+-+-+--+--------------------+
|161    |1|4|4 |Panoramas           |
+-------+-+-+--+--------------------+
|142    |2|3|8 |Caught My Eye        |
+-------+-+-+--+--------------------+
|7      |2|3|8 |Does Not Fit         |
+-------+-+-+--+--------------------+
|7      |2|3|8 |Test Patterns        |
+-------+-+-+--+--------------------+
|7      |2|3|8 |Partial Restorations |
+-------+-+-+--+--------------------+
|22     |2|3|8 |To Much Information   |
+-------+-+-+--+--------------------+
|7      |2|3|8 |Fake Pixels          |
+-------+-+-+--+--------------------+
|64     |2|1|11|Banff and Jasper 2006|
+-------+-+-+--+--------------------+
|49     |2|1|11|New York 2005        |
+-------+-+-+--+--------------------+
```

0.1.14 Dominant color keywords

Keywords starting with `0_` are dominant color keys assigned by the Python `SmugPyter` program.

```
[19]:  NB. keyword columns
       ({."1 r)=: {:"1 r=: 'select * from ImageKeywordXr' fsd dbf
```

```
[20]:  topbotk=: 4 : 0
       NB.topbotk v-- (x) top and bottom (y) keys
       kf=: ofreq y
       kf=: (' ' ,. >;0{kf) ,.~ ":>,.;1{kf
       (x {. kf) ,. |. (-x) {. kf
       )
```

Note: the abundance of neutral, (grey and near grey), colors. Well exposed color balanced images tend, on average, to be neutral. This is why photographers use grey cards and color balancing software picks neutrals.

```
[21]:  NB. top/bottom 20 color keywords
       ColorKeys=: Keyword #~ ('0_'&-:)@(2&{.)&> Keyword
       20 topbotk ColorKeys
```

```
529 0_darkslategrey          1 0_forestgreen
375 0_black                  1 0_aquamarine
266 0_darkolivegreen         1 0_purple
236 0_steelblue              1 0_magenta
234 0_dimgrey                1 0_lightyellow
209 0_darkgrey               1 0_lawngreen
193 0_rosybrown              1 0_lavenderblush
178 0_gainsboro              1 0_indigo
178 0_lightsteelblue         1 0_lightgreen
173 0_lightgrey              1 0_springgreen
172 0_cornflowerblue         1 0_cyan
168 0_grey                   1 0_hotpink
168 0_tan                    1 0_darkmagenta
121 0_silver                 1 0_mediumspringgreen
120 0_lavender               1 0_floralwhite
 93 0_lightslategrey         1 0_cornsilk
 91 0_peru                   1 0_mediumorchid
 90 0_sienna                 2 0_greenyellow
 82 0_skyblue                2 0_lime
 80 0_saddlebrown            2 0_limegreen
```

0.1.15 Print size keywords

Print size assumes a resolution of 360 DPI (Dot (pixels) per Inch). This is slightly higher than the frequent default of 300 DPI and was chosen because twice the resolution, 720 DPI, is a common setting for fine art prints. Online prints from SmugMug and elsewhere that use the print sizes computed here will render well.

```
[22]:  NB. top/bottom 20 print size keywords
       SizeKeys=: ColorKeys -.~ Keyword #~ ({.&> Keyword) e.&> <'0123456789'
       NB. remove odd keys that do not follow name conventions
       NssKeys=: <;._1 ' 0z0 0z1'
       SizeKeys=: SizeKeys -. (<;._1 ' 50th'),NssKeys
       20 topbotk SizeKeys
```

```
943 4x6         1 2.25x4
911 5x7         1 10x16
551 8x12        1 8x40
305 10x15       1 12x30
274 5x6.7       1 6x24
270 6x8         1 16x24
198 3x4         1 3x3
152 2.5x3.5     1 5x8
136 4x5         1 5.5x14
```

```
93 5x5         1 9x21
67 6x10        1 4x5.3
61 3x5         1 2x2.5
55 8x10        2 10x40
52 2x3         2 16x20
28 4x4         2 12x24
27 10x14       2 6x15
25 3.5x5       2 10x13
25 8x8         2 11x28
15 6x6         2 11x16
15 5x6         2 9x16
```

[23]: *NB. size keys that indicate not enough pixels or nonstandard aspect ratio*
`NssKeys ,. <"0 +/"1 NssKeys =/ Keyword`

```
+---+---+
|0z0|258|
+---+---+
|0z1|475|
+---+---+
```

0.1.16 Descriptive keywords

All keywords that are not color or size keys.

[24]: `DescKeys=: Keyword -. ColorKeys,SizeKeys,NssKeys`
`20 topbotk DescKeys`

```
1317 geotagged            1 rafting
1037 usa                  1 prayer
 546 mali                 1 tooth
 395 me                   1 saber
 247 idaho                1 columns
 228 park                 1 remnants
 205 helen                1 pictographs
 202 iphone               1 skeleton
 187 lake                 1 sizes
 173 river                1 rafts
 173 canada               1 dell
 168 missouri             1 large
 150 jacob                1 josie
 143 museum               1 powers
 128 ontario              1 fremont
 127 montana              1 knife
 117 canyon               1 hazhard
 114 sculpture            1 lectern
 100 evelyn               1 bride
  91 trail                1 bedazzled
```

0.1.17 Panorama statistics

I have enjoyed making panoramas for years. I consider any image with an *aspect ratio >: 2* a panorama. Many of my panoramas have nonstandard ratios, i.e. they are not simple 2x1, 3x1, 4x1, 5x1 ... ratios and consequently do not get assigned a size key.

```
[25]: NB. rounded image aspect ratios - aspect ratio is always >: 1
      ratios=: 0.005 round %/"1 \:"1~ OriginalHeight ,. OriginalWidth

      NB. aspect ratio counts
      PanAspects=: >: i. >: >. >./ratios
      smoutput RatioCounts=: ;"1 (2 <\ PanAspects) ,. <"0 }. }: PanAspects histogram2␣
       ↪ratios
```

```
1 2 4964
2 3  145
3 4   62
4 5   19
5 6    4
6 7    0
```

0.1.18 Total number of panoramas with *Aspect Ratio >: 2*

Note: this simple criteria of picking images based on aspect ratio misses some panoramas. Some pictures, built from more than one image, have standard aspect ratios.

```
[26]: +/pancnts=: }. 2 {"1 RatioCounts
```

```
230
```

0.1.19 Online panorama ratios

```
[27]: NB. percentage of panoramic images by aspect ratio - last % is overall
      smoutput panper=: (}. 0 2 {"1 RatioCounts) ,. 0.01 round 100 * pancnts % #ratios
      smoutput '-' ,: '%' ,~ ": }. +/panper
```

```
2 145 2.79
3  62 1.19
4  19 0.37
5   4 0.08
6   0   0
---------
230 4.43%
```

0.1.20 Most extreme panoramas *Aspect Ratio >: 5*

```
[28]: NB. most extreme panoramas, i.e. aspect ratios >: 5
      80 ccf (OnlineImageFile ,. RealDate ,. Keywords) #~ 5 <: ratios
```

```
+----------------------------------+-----------------+------------------
|pyramid lake panorama.jpg         |2021-05-04T09:37:47|0_dodgerblue; 8x40;
+----------------------------------+-----------------+------------------
|adndlbanner01.jpg                 |                 |0_gold; 0z0; adndlb
+----------------------------------+-----------------+------------------
|jodlittlecubebanner.jpg           |                 |0_lightgrey; 0z0; j
+----------------------------------+-----------------+------------------
|alexandra bridge ottawa [407055261].jpg|2007-02-28T14:10:00|0_gainsboro; 0z1; a
+----------------------------------+-----------------+------------------
```

0.1.21 Recently uploaded panoramas

[29]:
```
NB. most recent panoramas
80 ccf ,. 5 {. (OnlineImageFile ,. RealDate ,. Keywords) #~ 2 <: ratios
```

```
+--------------------------+-----------------+--------------------------
|me roosevelt point.jpg    |2022-06-25T11:30:06|0_dimgrey; 4x10; arizona; geot
+--------------------------+-----------------+--------------------------
|view from window top.jpg  |2022-06-25T10:45:01|0_darkslateblue; 10x20; arizon
+--------------------------+-----------------+--------------------------
|pure point imperial.jpg   |2022-06-25T10:19:27|0_cornflowerblue; 10x25; arizo
+--------------------------+-----------------+--------------------------
|north rim window diptych.jpg|2022-06-25T13:20:21|0_darkolivegreen; 6x18; diptyc
+--------------------------+-----------------+--------------------------
|on the way to page.jpg    |2022-06-26T10:39:02|0_skyblue; 8x20; page; the; wa
+--------------------------+-----------------+--------------------------
```

0.1.22 GPS distances

[30]:
```
NB. distances in km from near to far excluding (0,0) lb
NB. convert to Meeus lb convention for (earthdist)
plb=: (i. #Longitude) ,. (-Longitude) ,. Latitude
plb=: |: plb #~ -.0 0 -:"1 ] 1 2 {"1 plb
plb=: /:~ (0{plb) ,.~ MeeusHomeLonLat earthdist 1 2{plb
```

[31]:
```
NB. format image distance
fmdist=: {{;"1 ":&.> (<"0 ] 0.01 round 0 {"1 y) ,. (<' - ') ,. (1 {"1␣
  ↪y){OnlineImageFile}}
```

[32]:
```
NB. 10 nearest geotagged images km
fmdist 10{.plb
```

```
1042.84 - ghana secondary school teacher bungalows 1976.jpg
1042.93 - corn harvest students tamale ghana.jpg
1043.05 - ghana secondary school [12075167].jpg
3446.24 - me livingstone airport [47004492].jpg
3453.59 - mali sprayview hotel [51064919].jpg
3454.27 - curio market from balloon [49529252].jpg
```

```
3454.37 - vic falls train station [51228396].jpg
3454.71 - me livingstone statue [19983766].jpg
3454.82 - victoria falls hotel distance marker [36406766].jpg
3463.73 - eclipse tour group [2486870].jpg
```

[33]:
```
NB. 10 furthest geotagged images km
fmdist |. _10{.plb
```

```
18358.9 - ruth kwajalein airport sign 1981.jpg
17705.9 - lab south view 12x4 [5037801].jpg
17705.9 - mid pacific marine lab from air [254442016].jpg
17705.9 - me next atoll looking south [5088708].jpg
17704.7 - enewetak from air [5561415].jpg
17694.4 - me runit dome [6671846].jpg
17687.9 - deep diving [7444953].jpg
16654.9 - me photographing battleship missouri.jpg
16654.8 - nimitz statue missouri battleship.jpg
16654.8 - battleship missouri plaque.jpg
```

[34]:
```
NB. image distance statistics
dstat 0 {"1 plb
```

```
sample size:        1317
minimum:         1042.84
maximum:         18358.9
1st quartile:    10058.5
2nd quartile:    11759.2
3rd quartile:    12094.7
first mode:      11909.8
first antimode:  1042.84
mean:            11235.6
std devn:        2033.14
skewness:        _0.7066
kurtosis:         7.5674
```

[35]:
```
NB. 1s mark panoramas
pbits=: (}.PanAspects) <:"0 1 %/"1 \:"1~ OriginalHeight ,. OriginalWidth

NB. panorama image distances
gtp=: plb #~ (1 {"1 plb) e. I. 0{pbits
```

[36]:
```
NB. 10 nearest panoramas
fmdist 10 {. gtp
```

```
3549.61 - ndeke hotel sign [37985773].jpg
7656.21 - me spittal pond bermuda [278786543].jpg
8879.8 - 132 topham terrace orleans white winter.jpg
8881.84 - petrie island river [98449654].jpg
```

```
8897.37 - alexandra bridge ottawa [407055261].jpg
8928.88 - battersea beach dog lake panorama.jpg
8933.55 - kingston from fort henry [2355485].jpg
8934.79 - confederation harbor [12870536].jpg
9429.28 - bed and breakfast view.jpg
9682.96 - artsgarden.jpg
```

[37]: *NB. 10 furthest panoramas*
`fmdist |. _10 {. gtp`

```
17705.9 - lab south view 12x4 [5037801].jpg
16653.2 - waikiki beach diamond head panorama.jpg
16651.5 - honolulu from diamond head panorama.jpg
16651.3 - diamond head caldera interior.jpg
16564.4 - mauna kea sunset summit panorama.jpg
12657.6 - oregon coast.jpg
12565 - mali sedi crystal cove park [2208469192].jpg
12558.4 - crater lake east rim panorama.jpg
12526.7 - mono lake panorama north overlook.jpg
12518.8 - baja california coast.jpg
```

[38]: *NB. mean panorama distance*
`dstat 0 {"1 gtp`

```
sample size:          109
minimum:         3549.61
maximum:         17705.9
1st quartile:    11615.9
2nd quartile:    11942.2
3rd quartile:    12100.9
first mode:      12101.2
first antimode:  3549.61
mean:              11711
std devn:        1685.87
skewness:         _0.1925
kurtosis:         10.201
```

[39]: *NB. mean album geotagged image distances*
`mad=: albdist 0`

[40]: *NB. album "centroid" distance statistics*
`dstat ;0 {"1 mad`

```
sample size:           61
minimum:         1042.94
maximum:         17794.8
1st quartile:    9396.75
2nd quartile:    10952.1
```

```
3rd quartile:     11892.9
first mode:       11803.9
first antimode:   11803.9
mean:             10391.1
std devn:         2670.06
skewness:         _0.8302
kurtosis:          5.6797
```

[41]: NB.*format album distances.*
`fmtad=:{{('8.2'&(8!:2) ,. km) ,. ' - ' ,"1 alb [ 'km alb'=. |: x {. y}}`

[42]: NB. *10 nearest albums*
`10 fmtad /:~ mad`

```
 1042.94 - Ghana 1970's
 3596.33 - Zambia Eclipse Trip
 4678.38 - ACS School Trips 1960's
 5310.90 - Beirut Lebanon 1960's
 6378.44 - Iran 1960's
 6735.58 - Barbados Late 1970's
 6736.08 - Diving at Bellairs Barbados BW
 6884.68 - South America 1979
 7657.01 - Briefly Bermuda
 8665.71 - New York 2005
```

[43]: NB. *10 furthest albums*
`10 fmtad \:~ mad`

```
17794.80 - Enewetak Atoll 1980's
16610.10 - Hawaii 2018
12604.47 - 63
12552.96 - California Captures
12362.69 - Seattle Vancouver 2020
12362.54 - GPS Extremes
12249.74 - Inlaws Outlaws and Friends
12218.38 - Along the Yukon River
12129.49 - Logos Screenshots Covers
12104.15 - Improvised Imaging Devices
```

0.1.23   All done - thanks for playing!