

zad 1

skrypt:

```
from pprint import pprint
from PIL import Image
import piexif

codec = 'ISO-8859-1' # or latin-1

def exif_to_tag(exif_dict):
    exif_tag_dict = {}
    thumbnail = exif_dict.pop('thumbnail')
    exif_tag_dict['thumbnail'] = thumbnail.decode(codec)

    for ifd in exif_dict:
        exif_tag_dict[ifd] = {}
        for tag in exif_dict[ifd]:
            try:
                element = exif_dict[ifd][tag].decode(codec)

            except AttributeError:
                element = exif_dict[ifd][tag]

        exif_tag_dict[ifd][piexif.TAGS[ifd][tag]["name"]] =
element

    return exif_tag_dict

def main():
    filename = 'widok.jpeg' # obviously one of your own pictures
    im = Image.open(filename)

    exif_dict = piexif.load(im.info.get('exif'))
    exif_dict = exif_to_tag(exif_dict)

    pprint(exif_dict['GPS'])

if __name__ == '__main__':
    main()
```

```

70803/immobility/venv/bin/python /Users/immobility/venv/bin/python
{'GPSAltitude': (147966, 1000),
 'GPSAltitudeRef': 0,
 'GPSLatitude': ((51, 1), (6, 1), (232517, 10000)),
 'GPSLatitudeRef': 'N',
 'GPSLongitude': ((17, 1), (7, 1), (123373, 10000)),
 'GPSLongitudeRef': 'E',
 'GPSVersionID': (2, 3, 0, 0)}

```

Oryginalna nazwa pliku to DJI_0036.JPG
Ukryta wiadomość: Skryptowanie jest super

```

$ binwalk -w dok.JPG
DECIMAL          HEXADECIMAL      DESCRIPTION
-----
0                0x0              JPEG image data, EXIF standard
12               0xC              TIFF image data, little-endian offset of first image directory: 8
35999            0x8C9F           TIFF image data, little-endian offset of first image directory: 8

```

```
from PIL import Image

image = Image.open('widok.jpeg')

data = list(image.getdata())
image_without_exif = Image.new(image.mode, image.size)
image_without_exif.putdata(data)

image_without_exif.save('widok_without_exif.jpeg')

image_without_exif.close()
```

```
(venv) kamilslimak@kamilslimaks-macbook-~/P/deleteMetaFromImage> exiftool widok.jpeg > widok.txt
(venv) kamilslimak@kamilslimaks-macbook-~/P/deleteMetaFromImage> exiftool widok_without_exif.jpeg > widok_without.txt
(venv) kamilslimak@kamilslimaks-macbook-~/P/deleteMetaFromImage> sdiff widok.txt widok_without.txt
diff: widok_without.txt: No such file or directory
(venv) kamilslimak@kamilslimaks-macbook-~/P/deleteMetaFromImage> sdiff widok.txt widok_without.txt
```

output polecenia wyżej:

```

hannali@hannali:~/linuks-machbook-77/deleteMetaFromImage> sdiff widok.txt widok_without.txt
Exiftool Version Number      : 12.76      Exiftool Version Number      : 12.76
File Name                    : widok.jpeg   File Name                    : widok_without_exif.jpeg
Directory                    : -           Directory                    : -
File Size                    : 4.1 MB       File Size                    : 729 KB
File Modification Date/Time   : 2024:05:20 08:33:06+02:00 File Modification Date/Time   : 2024:05:20 08:44:45+02:00
File Access Date/Time        : 2024:05:20 08:40:06+02:00 File Access Date/Time        : 2024:05:20 08:44:47+02:00
File Inode Change Date/Time   : 2024:05:20 08:39:19+02:00 File Inode Change Date/Time   : 2024:05:20 08:44:45+02:00
File Permissions              : -rw-r--r--  File Permissions              : -rw-r--r--
File Type                    : JPEG         File Type                    : JPEG
File Type Extension          : jpg          File Type Extension          : jpg
MIME Type                    : image/jpeg   MIME Type                    : image/jpeg
Exif Byte Order               : Little-endian (Intel, II) JFIF Version : 1.01
Image Description             : DCIM\100MEDIA\0JI_0036.JPG Resolution Unit : None
Camera Model Name             : FC7303      X Resolution          : 1
Orientation                   : Horizontal (normal) Y Resolution      : 1
X Resolution                  : 72          <
Y Resolution                  : 72          <
Resolution Unit               : inches       <
Software                     : v01.43.0055 <
Modify Date                   : 2022:06:11 15:44:25 <
Y Cb Cr Positioning          : Centered    <
Exposure Time                 : 1/2500      <
F Number                      : 2.8         <
Exposure Program              : Program AE  <
ISO                           : 100        <
Exif Version                  : 0230       <
Date/Time Original            : 2022:06:11 15:44:25 <
Create Date                   : 2022:06:11 15:44:25 <
Components Configuration     : Y, Cb, Cr, - <
Compressed Bits Per Pixel     : 3.401756444 <
Shutter Speed Value           : 1/2500     <
Aperture Value                : 2.8        <
Exposure Compensation         : 0          <
Max Aperture Value            : 2.8        <
Subject Distance              : 0 m         <
Metering Mode                 : Center-weighted average <
Light Source                  : Daylight   <
Flash                         : No Flash function <
Focal Length                  : 4.5 mm      <
Warning                       : [minor] Possibly incorrect <
Make                          : DJI        <
Speed X                       : +0.00     <
Speed Y                       : +0.00     <
Speed Z                       : +0.00     <
Pitch                         : +2.50     <
Yaw                           : -88.70    <
Roll                          : +4.40     <
Camera Pitch                  : +0.00     <
Camera Yaw                    : +0.00     <
Camera Roll                   : +0.00     <
Flashpix Version              : 0100      <
Color Space                   : sRGB       <
Exif Image Width              : 4000      <
Exif Image Height             : 2250     <
Interoperability Index        : R09 - DCF basic file (sRGB) <
Interoperability Version      : 0100     <
Exposure Index                : undef     <
File Source                   : Digital Camera <
Scene Type                    : Directly photographed <
Custom Rendered               : Normal    <
Exposure Mode                 : Auto      <
White Balance                 : Auto      <
Digital Zoom Ratio            : 2         <
Focal Length In 35mm Format    : 24 mm    <
Scene Capture Type            : Standard <
Gain Control                  : None      <
Contrast                      : Normal    <
Saturation                    : Normal    <
Sharpness                     : Normal    <
Subject Distance Range        : Unknown   <
Serial Number                 : 15FOK3PA0803VP <
GPS Version ID                : 2.3.0-0   <
GPS Latitude Ref              : North    <
GPS Longitude Ref             : East     <
GPS Altitude Ref              : Above Sea Level <
XP Comment                    : Type=N, Mode=P, DE=None <
XP Keywords                   : v01.43.0055;0.0.1;v1.0.0 <
Compression                   : JPEG (old-style) <
Thumbnail Offset              : 18432    <
Thumbnail Length              : 13219    <
XMP Toolkit                   : Image::Exiftool 12.76 <
About                         : U2tyeX80b3dnhml1Gplc3Qgc3V <
Format                        : Image/jpeg <
Absolute Altitude              : +147.97 <
Can Reverse                   : 0         <
Flight Pitch Degree            : +2.50   <
Flight Roll Degree            : +4.40   <
Flight Yaw Degree             : -88.70  <
Gimbal Pitch Degree           : +0.00   <
Gimbal Reverse                : 0         <
Gimbal Roll Degree            : +0.00   <
Gimbal Yaw Degree             : +0.00   <
Relative Altitude              : +145.50 <
Already Applied                : False    <
Has Crop                      : False    <
Has Settings                   : False    <
Version                       : 7.0      <
MPF Version                   : 0010     <
Number Of Images              : 2       <
MP Image Flags                 : Dependent child image <
MP Image Format                : JPEG      <
MP Image Type                  : Large Thumbnail (VGA equiva <
MP Image Length               : 277176   <
MP Image Start                : 3863111   <
Dependent Image 1 Entry Number : 0       <
Dependent Image 2 Entry Number : 0       <
Image UID List                : (Binary data 66 bytes, use <
Total Frames                  : 1        <
Image Width                   : 4000      Image Width                : 4000
Image Height                   : 2250     Image Height                : 2250
Encoding Process               : Baseline DCT, Huffman codin Encoding Process            : Baseline DCT, Huffman codin
Bits Per Sample                : 8        Bits Per Sample            : 8
Color Components               : 3        Color Components           : 3
Y Cb Cr Sub Sampling           : YCbCr4:2:2 (2 1) | Y Cb Cr Sub Sampling : YCbCr4:2:0 (2 2)
Aperture                       : 2.8       <
Image Size                    : 4000x2250 Image Size                  : 4000x2250
Megapixels                    : 9.0       Megapixels                  : 9.0
Scale Factor To 35 mm Equivalent: 0.3    <
Shutter Speed                  : 1/2500    <
Thumbnail Image                : (Binary data 13219 bytes, u <
GPS Altitude                   : 147.9 m Above Sea Level <
GPS Latitude                   : 51 deg 6' 23.25" N <
GPS Longitude                  : 17 deg 7' 12.34" E <
Preview Image                  : (Binary data 277176 bytes, <
Circle Of Confusion            : 0.006 mm <
Field Of View                  : 73.7 deg <
Focal Length                   : 4.5 mm (35 mm equivalent: 2 <
GPS Position                   : 51 deg 6' 23.25" N, 17 deg <
Hyperfocal Distance           : 1.28 m <
Light Value                    : 14.3    <

```

zad 5

```
$ strings widok.JPG | grep "Altitude"
<drone-dji:AbsoluteAltitude>+147.97</drone-dji:AbsoluteAltitude>
<drone-dji:RelativeAltitude>+101.50</drone-dji:RelativeAltitude>
```

zad 6

Wykorzystałem komendy exiv2, file, strings

```
kali@kali: ~/lab11
$ exiv2 widok.JPG
File name      : widok.JPG
File size      : 4140207 Bytes
MIME type      : image/jpeg
Image size     : 4000 x 2250
Thumbnail      : image/jpeg, 13219 Bytes
Camera make    : DJI
Camera model   : FC7303
Image timestamp: 2022:06:11 15:44:25
File number    :
Exposure time  : 1/2500 s
Aperture       : F2.8
Exposure bias  : 0 EV
Flash          : No flash function
Flash bias     :
Focal length   : 4.5 mm
Subject distance: Unknown
ISO speed      : 100
Exposure mode  : Auto
Metering mode  : Center weighted average
Macro mode     :
Image quality   :
White balance  : Auto
Copyright      :
Exif comment    :

kali@kali:~/lab11
$ file widok.JPG
widok.JPG: JPEG image data, Exif standard [TIFF image data, little-endian, direntries=14, description=DJI_0036.JPG, manufacturer=DJI, model=FC7303, orientation=upper-left, xresolution=1099, yresolution=1107, resolutionunit=2, software=0143:0055, datetime=2022:06:11 15:44:25, GPS-data], baseline, precision 8, 4000x2250, components 3

kali@kali:~/lab11
$ strings widok.JPG
Exif
0230
0100
0100
DJI\100MEDIA\036.JPG
FC7303
0143:0055
2022:06:11 15:44:25
2022:06:11 15:44:25
2022:06:11 15:44:25
2016-01-01-00:00:00
2022-06-11-15:44:20
/
l
B  Y
+ / P l
3  b
)  0
+ 4
c  S
+ ~ h 9 $
R  Z
+ ~ L
```

xpmmeta:

```
<?xpacket begin=
' id='W5M0MpCehiHzreSzNTczkc9d'?>
<x:xmpmeta xmlns:x='adobe:ns:meta/' x:xmptk='Image::ExifTool 12.76'>
<rdf:RDF xmlns:rdf='http://www.w3.org/1999/02/22-rdf-syntax-ns#'>
  <rdf:Description rdf:about='U2tyeXB0b3dhbmllIGplc3Qgc3VwZXI='
    xmlns:dc='http://purl.org/dc/elements/1.1/'>
    <dc:format>image/jpeg</dc:format>
  </rdf:Description>
  <rdf:Description rdf:about='U2tyeXB0b3dhbmllIGplc3Qgc3VwZXI='
    xmlns:drone-dji='http://www.dji.com/drone-dji/1.0/'>
    <drone-dji:AbsoluteAltitude>+147.97</drone-dji:AbsoluteAltitude>
    <drone-dji:CamReverse>0</drone-dji:CamReverse>
    <drone-dji:FlightPitchDegree>+2.50</drone-dji:FlightPitchDegree>
    <drone-dji:FlightRollDegree>+4.40</drone-dji:FlightRollDegree>
    <drone-dji:FlightYawDegree>-80.70</drone-dji:FlightYawDegree>
    <drone-dji:GimbalPitchDegree>+0.00</drone-dji:GimbalPitchDegree>
    <drone-dji:GimbalReverse>0</drone-dji:GimbalReverse>
    <drone-dji:GimbalRollDegree>+0.00</drone-dji:GimbalRollDegree>
    <drone-dji:GimbalYawDegree>+0.00</drone-dji:GimbalYawDegree>
    <drone-dji:RelativeAltitude>+101.50</drone-dji:RelativeAltitude>
  </rdf:Description>
  <rdf:Description rdf:about='U2tyeXB0b3dhbmllIGplc3Qgc3VwZXI='
    xmlns:tiff='http://ns.adobe.com/tiff/1.0/'>
    <tiff:Make>DJI</tiff:Make>
    <tiff:Model>FC7303</tiff:Model>
  </rdf:Description>
  <rdf:Description rdf:about='U2tyeXB0b3dhbmllIGplc3Qgc3VwZXI='
    xmlns:xmp='http://ns.adobe.com/xap/1.0/'>
    <xmp:CreateDate>2022-06-11</xmp:CreateDate>
    <xmp:ModifyDate>2022-06-11</xmp:ModifyDate>
  </rdf:Description>
  <rdf:Description rdf:about='U2tyeXB0b3dhbmllIGplc3Qgc3VwZXI='
    xmlns:crs='http://ns.adobe.com/camera-raw-settings/1.0/'>
    <crs:AlreadyApplied>False</crs:AlreadyApplied>
    <crs:HasCrop>False</crs:HasCrop>
    <crs:HasSettings>False</crs:HasSettings>
    <crs:Version>7.0</crs:Version>
  </rdf:Description>
</rdf:RDF>
</x:xmpmeta>
```