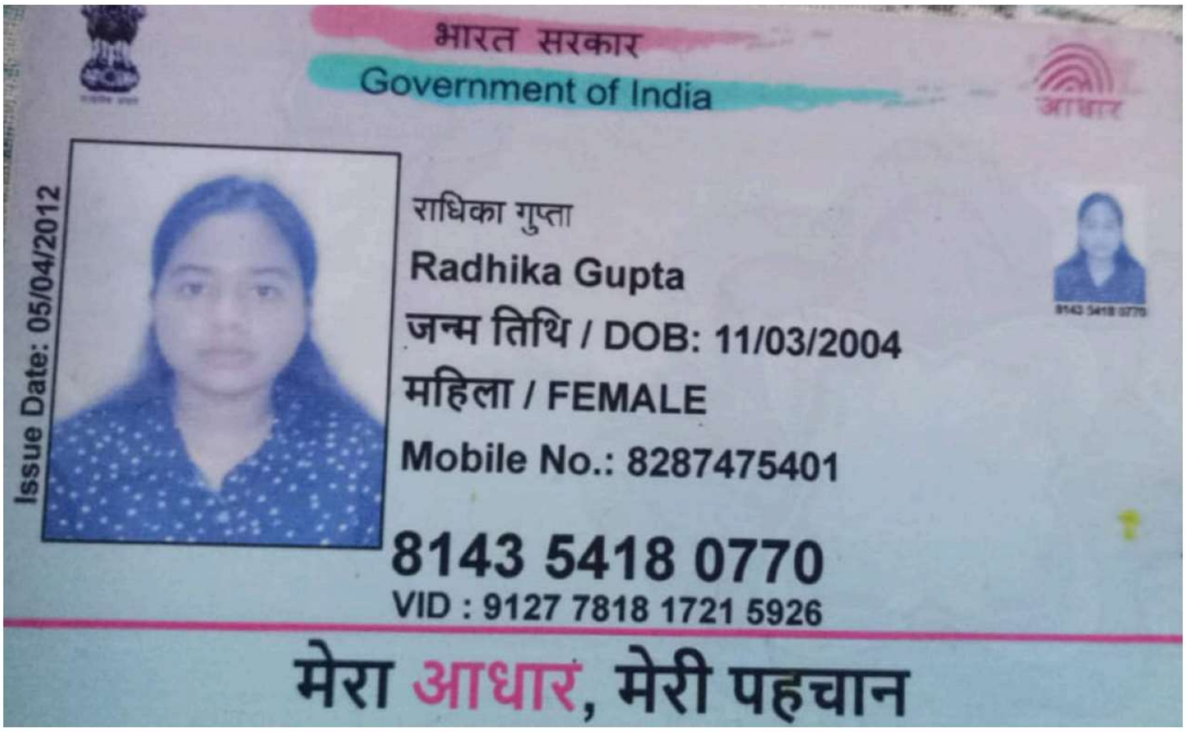
In [1]:

```
import cv2
import re
from matplotlib import pyplot as plt
import numpy as np
import pytesseract
import pymongo
from PIL import Image
im_file = "C:/Users/neeta/temp/raducky aadhaar.jpg"
img = cv2.imread(im_file)
```

In [2]:

```
def display(im_path):
    dpi = 80
    im_data = plt.imread(im_path)
    height, width = im_data.shape[:2]
    figsize = width / float(dpi), height / float(dpi)
    fig = plt.figure(figsize=figsize)
    ax = fig.add_axes([0, 0, 1, 1])
    ax.axis('off')
    ax.imshow(im_data, cmap='gray')
    plt.show()
display(im_file)
```



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Government of India

आधार

Issue Date: 05/04/2012

राधिका गुप्ता

Radhika Gupta

जन्म तिथि / DOB: 11/03/2004

महिला / FEMALE

Mobile No.: 8287475401

8143 5418 0770

8143 5418 0770

VID : 9127 7818 1721 5926

मेरा आधार, मेरी पहचान

In [3]:

```
def grayscale(image):
    return cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)
```

In [4]:

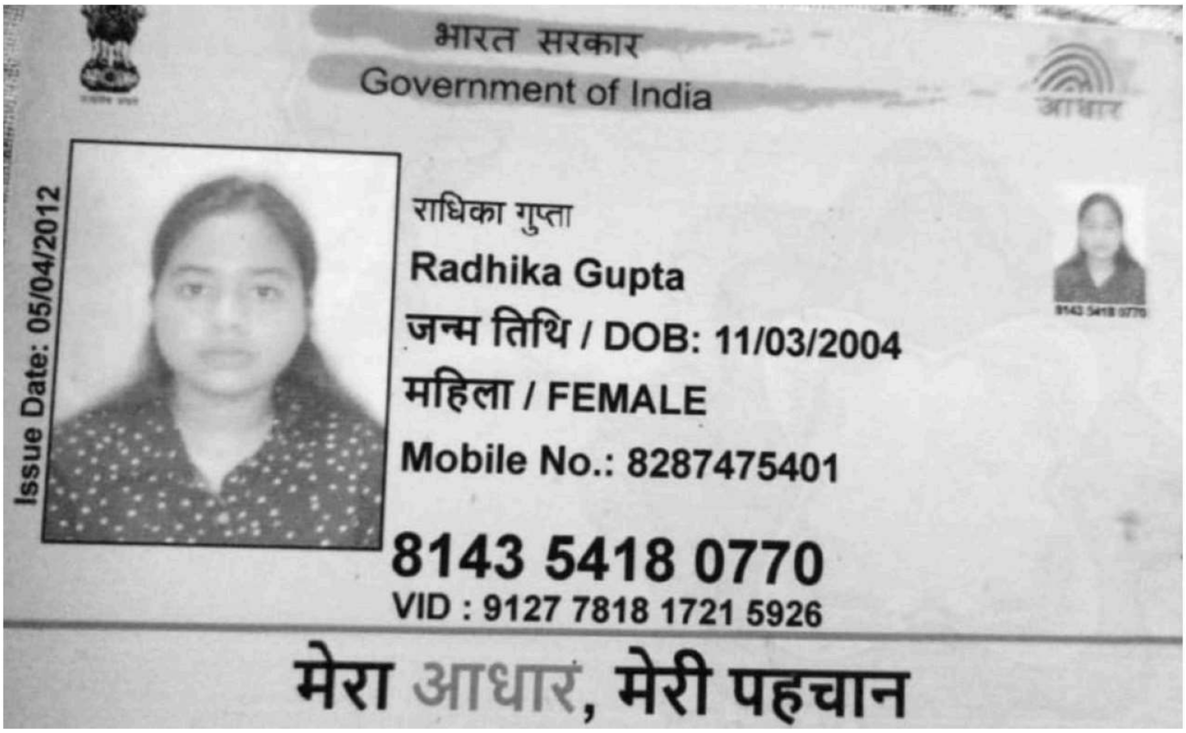
```
gray_image = grayscale(img)
cv2.imwrite("C:/Users/neeta/temp/graya1.jpg", gray_image)
```

Out[4]:

```
True
```

In [5]:

```
display("C:/Users/neeta/temp/graya1.jpg")
```



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मेरा आधार, मेरी पहचान

In [1]:

```
def getSkewAngle(cvImage) -> float:
    newImage = cvImage.copy()
    blur = cv2.GaussianBlur(newImage, (9, 9), 0)
    thresh = cv2.threshold(blur, 0, 255, cv2.THRESH_BINARY_INV + cv2.THRESH_OTSU)[1

    kernel = cv2.getStructuringElement(cv2.MORPH_RECT, (30, 5))
    dilate = cv2.dilate(thresh, kernel, iterations=5)

    contours, hierarchy = cv2.findContours(dilate, cv2.RETR_LIST, cv2.CHAIN_APPROX_
    contours = sorted(contours, key = cv2.contourArea, reverse = True)


    largestContour = contours[0]
    minAreaRect = cv2.minAreaRect(largestContour)

    angle = minAreaRect[-1]
    if angle < -45:
        angle = 90 + angle
    return -4.023 * angle
```

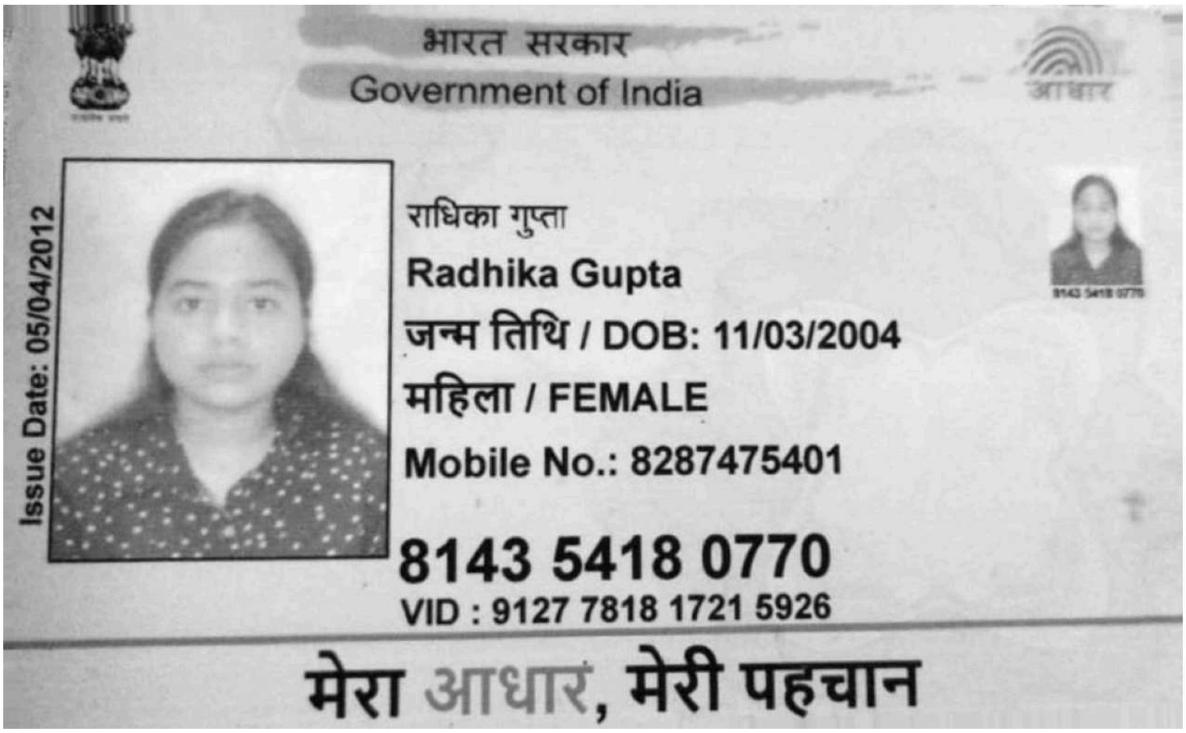
In [2]:

```
def rotateImage(cvImage, angle: float):
    newImage = cvImage.copy()
    (h, w) = newImage.shape[:2]
    center = (w // 2, h // 2)
    M = cv2.getRotationMatrix2D(center, angle, 1.0)
    newImage = cv2.warpAffine(newImage, M, (w, h), flags=cv2.INTER_CUBIC, borderMod
    return newImage

def deskew(cvImage):
    angle = getSkewAngle(cvImage)
    return rotateImage(cvImage, -1.0 * angle)
```

In [8]:

```
fixim = deskew(gray_image)
cv2.imwrite("C:/Users/neeta/temp/rotfix.jpg", fixim)
display("C:/Users/neeta/temp/rotfix.jpg")
```



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मेरा आधार, मेरी पहचान

In [9]:

```
print(img.shape)
```

```
(626, 1020, 3)
```

In [10]:

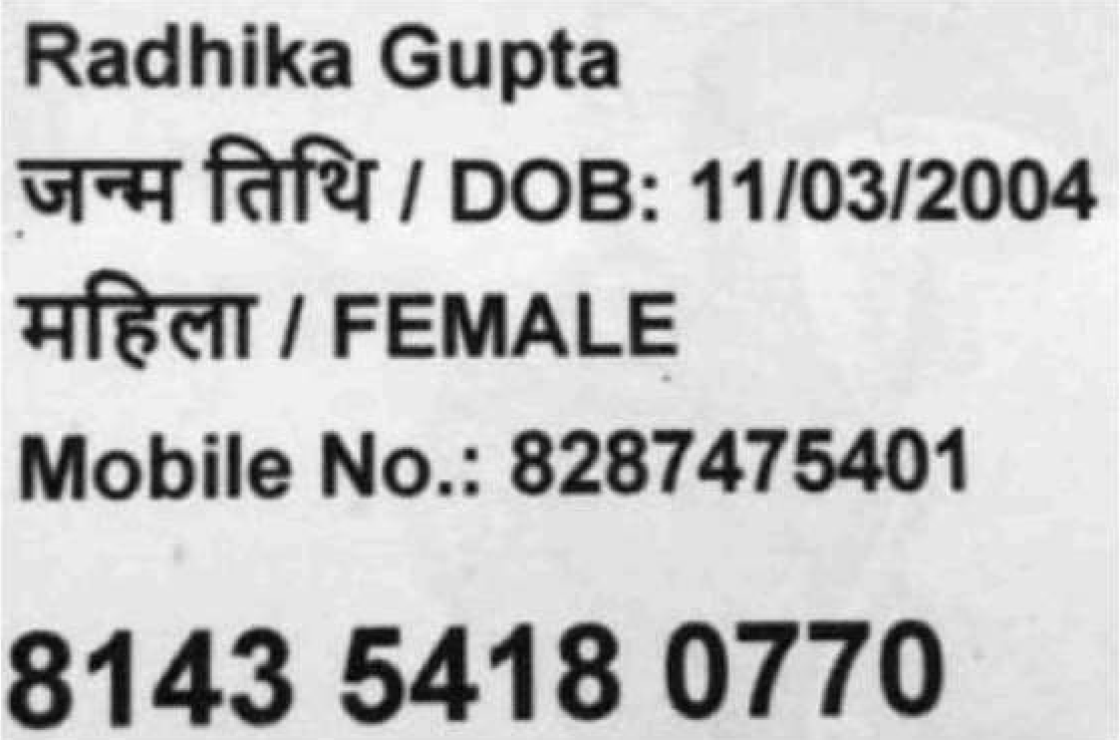
```
cropped_image = fixim[210:505, 340:785]
cv2.imwrite("C:/Users/neeta/temp/CropAd.jpg", cropped_image)
```

Out[10]:

```
True
```

In [11]:

```
display("C:/Users/neeta/temp/CropAd.jpg")
```



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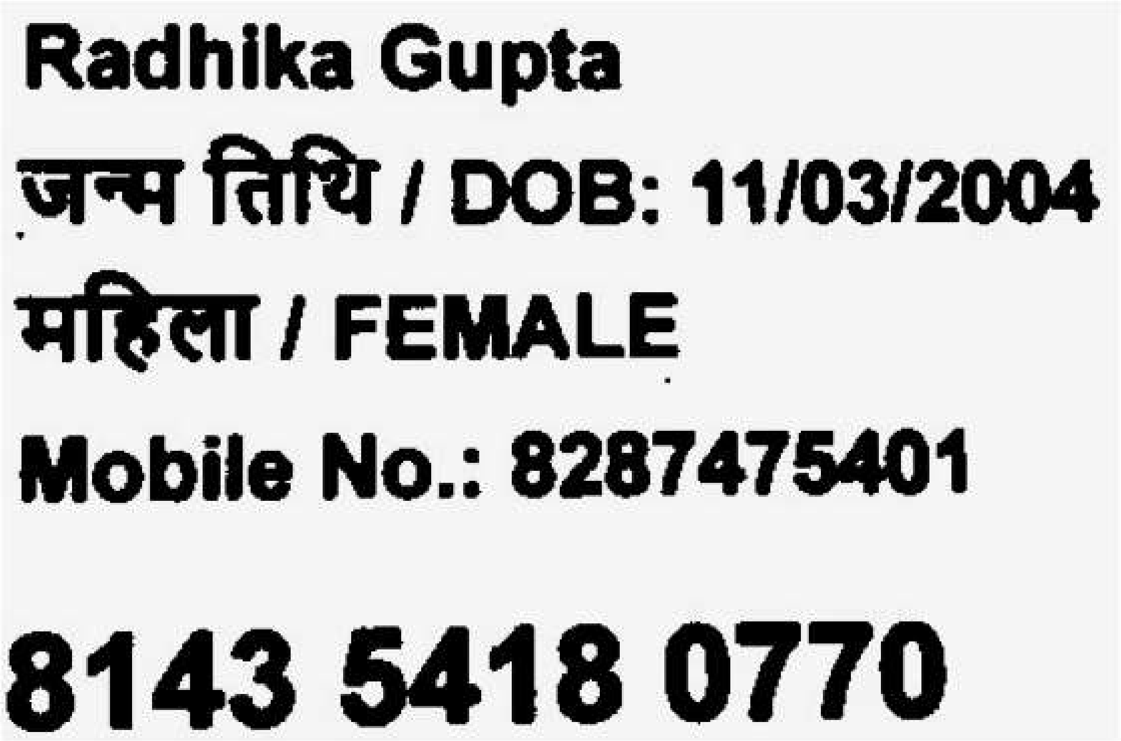
In [12]:

```
thresh, im_bww = cv2.threshold(cropped_image, 140, 190, cv2.THRESH_BINARY)
cv2.imwrite("C:/Users/neeta/temp/bww.jpg", im_bww)
```

```
Out[12]: True
```

```
In [13]: display("C:/Users/neeta/temp/bww.jpg")
```



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महिला / FEMALE

Mobile No.: 8287475401

8143 5418 0770

```
In [14]: im_file = "C:/Users/neeta/temp/bww.jpg"
```

```
In [15]: img = Image.open(im_file)
         ocr_resultf = pytesseract.image_to_string(img)
```

```
In [16]: print(ocr_resultf)

         Radhika Gupta
         wa fafer / DOB: 11/03/2004

         after) FEMALE

         Mobile No.: 8287475401
         8143 5418 0770
```

```
In [78]: pattern = re.compile('\d.*\d')
         matches = pattern.finditer(ocr_resultf)
```

```
In [79]: pattern2 = re.compile('\D.*\D')
         matchesnam = pattern2.finditer(ocr_resultf)
```

```
In [80]: pattern3 = re.compile('(MALE|..MALE)\s')
         matchesgen = pattern3.finditer(ocr_resultf)
```

```
In [81]: for match in matches:
             print(match)

         <re.Match object; span=(30, 40), match='11/03/2004'>
         <re.Match object; span=(69, 79), match='8287475401'>
         <re.Match object; span=(80, 94), match='8143 5418 0770'>
```

In [82]:

```
for matche in matchesnam:
    print(matche)
```

```
<re.Match object; span=(0, 14), match='Radhika Gupta\n'>
<re.Match object; span=(14, 41), match='wa fafer / DOB: 11/03/2004\n'>
<re.Match object; span=(41, 56), match='\nafter) FEMALE\n'>
<re.Match object; span=(56, 80), match='\nMobile No.: 8287475401\n'>
<re.Match object; span=(84, 95), match=' 5418 0770\n'>
```

In [83]:

```
for matchee in matchesgen:
    print(matchee)
```

```
<re.Match object; span=(49, 56), match='FEMALE\n'>
```

In [95]:

```
f1 = ocr_resultf[0:13]
f2 = ocr_resultf[30:40]
f3 = ocr_resultf[49:55]
f4 = ocr_resultf[69:79]
f5 = ocr_resultf[80:94]
```

In [96]:

```
print(f1)
print(f2)
print(f3)
print(f4)
print(f5)
```

```
Radhika Gupta
11/03/2004
FEMALE
8287475401
8143 5418 0770
```

In [97]:

```
if __name__ == "__main__":
    client = pymongo.MongoClient("mongodb://localhost:27017")
    print(client)
    print(client.list_database_names())
```

```
MongoClient(host=['localhost:27017'], document_class=dict, tz_aware=False, connect
=True)
['OCR', 'admin', 'config', 'local', 'sample']
```

In [98]:

```
    db = client['OCR']
    collection = db['Aadhaar']
```

In [101…

```
    dic1 = {'Name': f1,'D.O.B.' : f2, "Sex" : f3,'Mobile' : f4, 'Aadhaar Number' :
    print(dic1)
```

```
{'Name': 'Radhika Gupta', 'D.O.B.': '11/03/2004', 'Sex': 'FEMALE', 'Mobile': '8287
475401', 'Aadhaar Number': '8143 5418 0770'}
```