Credential's

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In [8]:
```
# importing libraries

import numpy as np
import pandas as pd
from matplotlib import pyplot as plt
import cv2 as cv
from PIL import Image
```

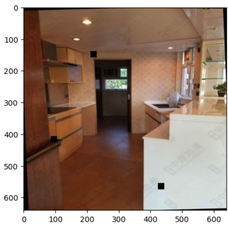
Exploratory data analysis (EDA)

In [9]:
```
# to visualise the first image from the dataset

image1 = cv.imread("Dataset/1.jpg")
image1
```

Out[9]:
```
array([[[5, 7, 7],
        [5, 7, 7],
        [5, 7, 7],
        ...,
        [7, 7, 7],
        [5, 7, 8],
        [5, 7, 8]],

       [[7, 7, 7],
        [5, 7, 7],
        [7, 7, 7],
        ...,
        [7, 7, 7],
        [5, 7, 8],
        [5, 7, 8]],

       [[9, 7, 6],
        [7, 8, 6],
        [9, 7, 6],
        ...,
        [7, 7, 7],
        [7, 7, 7],
        [7, 7, 7]],

       ...,

       [[7, 7, 7],
        [7, 7, 7],
        [7, 7, 7],
        ...,
        [4, 5, 3],
        [4, 5, 3],
        [4, 5, 3]],

       [[7, 7, 7],
        [7, 7, 7],
        [7, 7, 7],
        ...,
        [9, 9, 9],
        [8, 8, 8],
        [8, 8, 8]],

       [[7, 7, 7],
        [7, 7, 7],
        [7, 7, 7],
        ...,
        [6, 6, 6],
        [5, 5, 5],
        [5, 5, 5]]], dtype=uint8)
```

In [10]:
```
# to display the image in RGB Format

image_rgb1 = cv.cvtColor(image1, cv.COLOR_BGR2RGB)
plt.imshow(image_rgb1)
```

Out[10]:
```
<matplotlib.image.AxesImage at 0x22b8f650190>
```

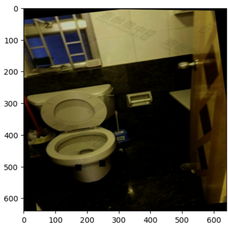


In [11]:
```
# to visualise the last image from the dataset

image20 = cv.imread("Dataset/20.jpg")
image20
```

Out[11]:
```
array([[[0, 0, 0],
        [0, 0, 0],
        [0, 0, 0],
        ...,
        [0, 0, 0],
        [0, 0, 0],
        [0, 0, 0]],

       [[0, 0, 0],
        [0, 0, 0],
        [0, 0, 0],
        ...,
        [0, 0, 0],
        [0, 0, 0],
        [0, 0, 0]],

       [[0, 0, 0],
        [0, 0, 0],
        [0, 0, 0],
        ...,
        [0, 0, 0],
        [0, 0, 0],
        [0, 0, 0]],

       ...,

       [[0, 0, 0],
        [0, 0, 0],
        [0, 0, 0],
        ...,
        [0, 0, 0],
        [0, 0, 0],
        [0, 0, 0]],

       [[0, 0, 0],
        [0, 0, 0],
        [0, 0, 0],
        ...,
        [0, 0, 0],
        [0, 0, 0],
        [0, 0, 0]],

       [[0, 0, 0],
        [0, 0, 0],
        [0, 0, 0],
        ...,
        [0, 0, 0],
        [0, 0, 0],
        [0, 0, 0]]], dtype=uint8)
```

In [12]:
```
# to display the image in RGB Format

image_rgb20 = cv.cvtColor(image20, cv.COLOR_BGR2RGB)
plt.imshow(image_rgb20)
```

Out[12]:
```
<matplotlib.image.AxesImage at 0x22b8f6afdc0>
```



In [13]:
```
# To visualize the image in gray scale

image1gray=cv.cvtColor(image1,cv.COLOR_BGR2GRAY)
Image.fromarray(image1gray)
```

Out[13]:

In [14]:
```
# To visualize the image in gray scale

image20gray=cv.cvtColor(image20,cv.COLOR_BGR2GRAY)
Image.fromarray(image20gray)
```

Out[14]: