WATER_CURTAIN

AIM: Design a MATLAB code that show matrix form of an image file and vice-versa.

Software-
MATLAB R2014b version

Procedure-
: Install MATLAB R2014b version
: Import an image in MATLAB
: Write MATLAB code for image
: Analysis the matrix of image in MATLAB

MATLAB CODE EXPLANATION:

PART A:
CODE FOR IMAGE TO TEXT FILE:

This code has mainly five segments below explanation of each segments

```
a=imread('mon.jpg');
```

In this segment the image mon.jpg read with the help of **imread ()** function the image file must be in current working folder of MATLAB and store in 3-D matrix form in variable a.

```
z=rgb2gray(a);
```

In this segment of code the 3-D matrix (i.e the image in RGB format) is converted into 2-D matrix (i.e the image in white and black format) with the help of **rgb2gray ()** function and store in variable z in form of 2-D matrix.

```matlab
[x,y]=size(z);
```

In this segment of code find the horizontal and the vertical size of 2-D image i.e pixel size

With the help of **size ()** function and store in variable x and y.

```matlab
if(x<=127 && y==28)
fid=fopen('convert.txt','wt');
for ii=1:size(z,1)
fprintf(fid,'%g\t',z(ii,:));
fprintf(fid,'\n');
    end
fclose(fid);
```

In this segment of code first check the image size and if it less or equal to 28X127px then it generate a .txt file (here convert.txt) with the help of **fopen ()** function then it will whole 2-D image matrix in .txt file with the help of **fprintf()** function after that it will close the the .txt file by **fclose()** function.

```matlab
else
    disp('invalid');
    disp('image size as width must be 28 and');
    disp('height less than 127');
end
```

In this segment of code if above condition become false then this segment of code will run and this will print the given message with the help of **disp ()** function.

INPUT: This image will the input-

OUTPUT:

PARTB:

CODE FOR TEXT FILE TO IMAGE:

This code has mainly five segments below explanation of each segments

```
M=dlmread('MakeInIndia_Decode.txt');
```

In this segment of code a txt file is read in variable M with the help of **dlmread()** function and now txt file will store in variable M in matrix form.

```
imshow(M);
```

In this segment of code the stored matrix in variable M will show in form of image with the help of imshow() function.

INPUT: For this code 'MakeInIndia_Decode.txt' will be the input.

OUTPUT: This code will have the following image as output .

Working:

: Since 1byte=8bit similarly consider 8valves or 8led as one byte

: If we want water from all 8valves or 8led ON or OFF then we have to send 00 or 255 to that byte

: similaly for diffrent pattern there will be diffrent value

Precaution

: The width and the height of wall of image should be bounded according to frame size

: For water curtain the width define number of valves in horizontal

: Height should be precisely to avoid gravitional force effect

thanks...