**Lab Assignment – 01 - Part1 - Spring2020**

Signals and systems

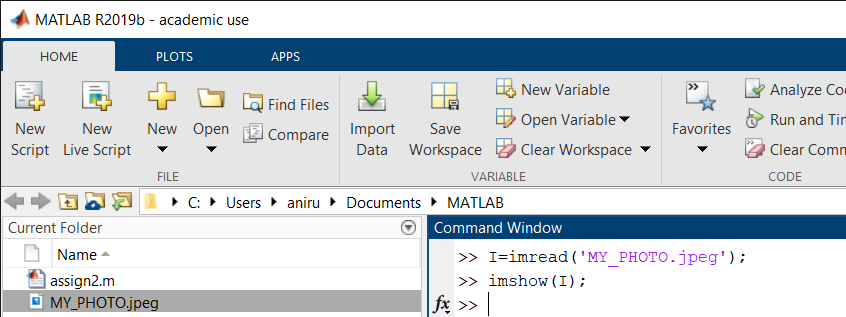
Anirudh Jakhotia , UG -1 , CSE

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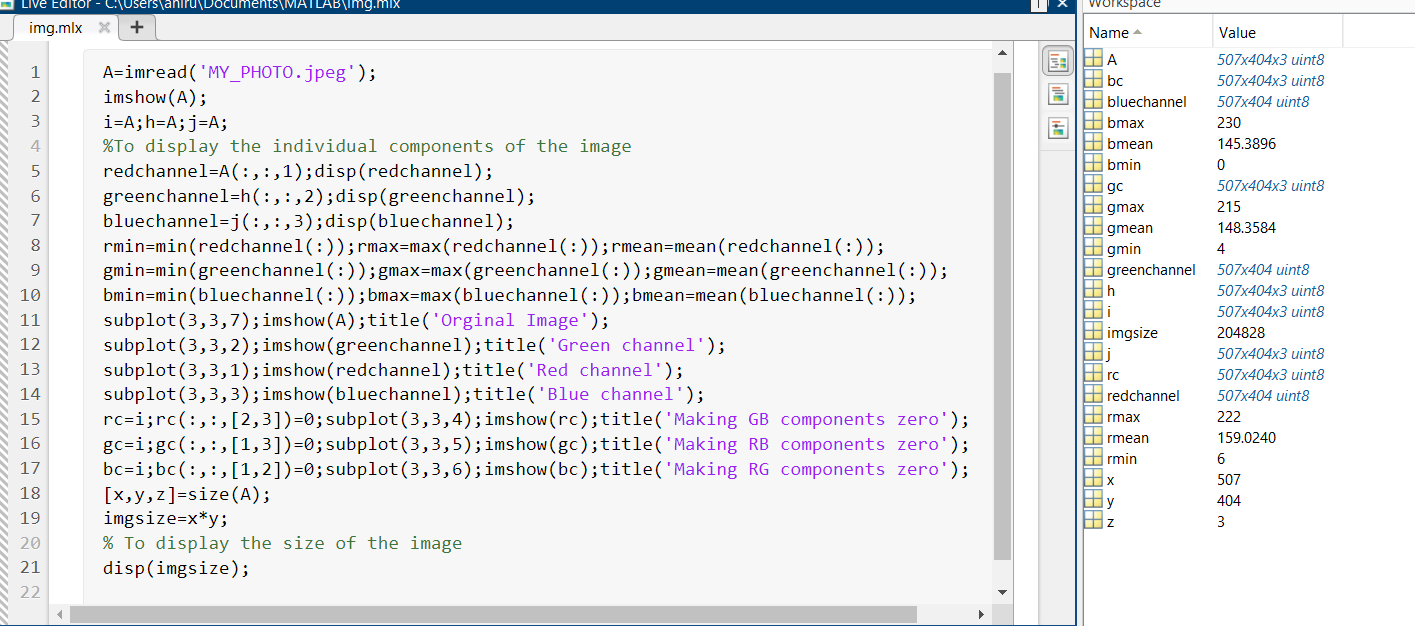
Q1) HANDLING IMAGES IN MATLAB

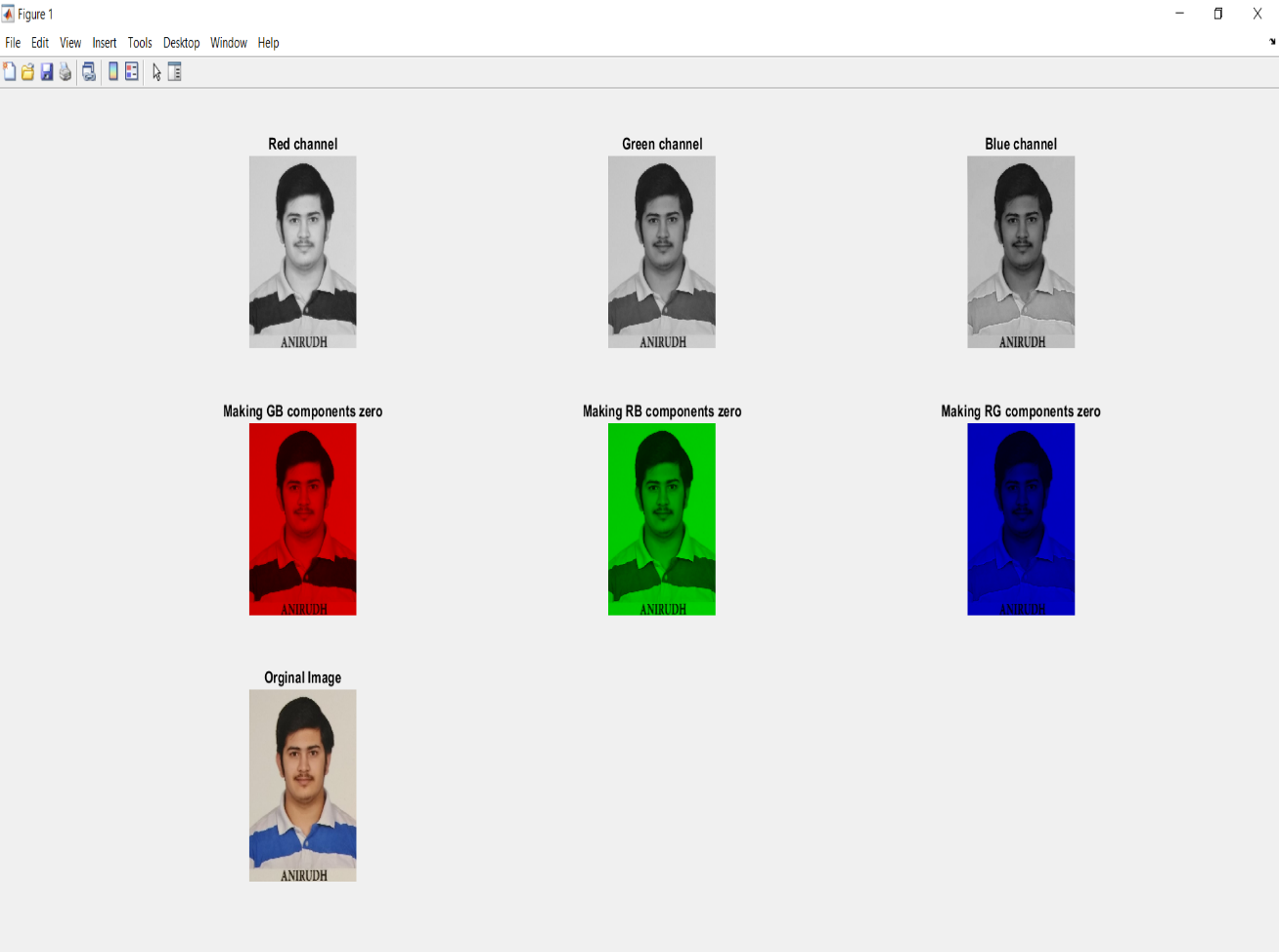
* Firstly, we need to take an picture of our self (passport sized) and upload to the MATLAB software perform the following functions.

1. The image “MY\_PHOTO.jpg” was displayed on MATLAB using the command given below.



1. The dimensions of the image were 507x404x3 . ![A person in a blue shirt

   Description automatically generated](data:image/jpeg;base64,/9j/4AAQSkZJRgABAQEAYABgAAD/4SzaRXhpZgAATU0AKgAAAAgABgALAAIAAAAmAAAIYgESAAMAAAABAAEAAAExAAIAAAAmAAAIiAEyAAIAAAAUAAAIrodpAAQAAAABAAAIwuocAAcAAAgMAAAAVgAAEUYc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAFdpbmRvd3MgUGhvdG8gRWRpdG9yIDEwLjAuMTAwMTEuMTYzODQAV2luZG93cyBQaG90byBFZGl0b3IgMTAuMC4xMDAxMS4xNjM4NAAyMDIwOjAxOjI4IDE1OjIxOjQ3AAAGkAMAAgAAABQAABEckAQAAgAAABQAABEwkpEAAgAAAAMyMQAAkpIAAgAAAAMyMQAAoAEAAwAAAAEAAQAA6hwABwAACAwAAAkQAAAAABzqAAAACAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA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DIiiSUhMcjBJ2n8q6a51CaXxLphOm3pgaFt8n2dtqFsYB9OhoAy/8AhE59L8d2+oWKMdPnLNIi9EfHXHoaNPa6j+IOpXj6bfrayxBElNudrFff+VAzn7bw3e6tDq8i6bdWt+Lk3NpLNCUyP7uT3rf1e21XxF4Us7gWEsWpWUyyGCVdu4qeceoNAGpbX974glsY20i9soYGEk73kezJA4CjOTz3rKWa9tviJdX/APY+oSWxgEKvHDkEjvknGP8ACgDQsdHvJtbvPEWo27RyGLy7e2Vgzqvvg4yfQGqnguK9sNN1VLrTLyJ3meZAyDLhuw560IC58PrW9sbC7gvbG4tWadpV80DBDHPY12lABRQAUtACUUAf/9n/4THoaHR0cDovL25zLmFkb2JlLmNvbS94YXAvMS4wLwA8P3hwYWNrZXQgYmVnaW49J++7vycgaWQ9J1c1TTBNcENlaGlIenJlU3pOVGN6a2M5ZCc/Pg0KPHg6eG1wbWV0YSB4bWxuczp4PSJhZG9iZTpuczptZXRhLyI+PHJkZjpSREYgeG1sbnM6cmRmPSJodHRwOi8vd3d3LnczLm9yZy8xOTk5LzAyLzIyLXJkZi1zeW50YXgtbnMjIj48cmRmOkRlc2NyaXB0aW9uIHJkZjphYm91dD0idXVpZDpmYWY1YmRkNS1iYTNkLTExZGEtYWQzMS1kMzNkNzUxODJmMWIiIHhtbG5zOnhtcD0iaHR0cDovL25zLmFkb2JlLmNvbS94YXAvMS4wLyI+PHhtcDpDcmVhdG9yVG9vbD5XaW5kb3dzIFBob3RvIEVkaXRvciAxMC4wLjEwMDExLjE2Mzg0PC94bXA6Q3JlYXRvclRvb2w+PHhtcDpDcmVhdGVEYXRlPjIwMjAtMDEtMjhUMTU6MjA6NTMuMjExPC94bXA6Q3JlYXRlRGF0ZT48L3JkZjpEZXNjcmlwdGlvbj48L3JkZjpSREY+PC94OnhtcG1ldGE+DQogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIC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7SFtqWlILeCaX5kU/IVZgJAPu+inn8OtfTv7TGpHWvgRe3G8L51tljzjPfjjHIr59/bAaPWPjRoVnakSTM4G1TljlgePrjr/snp1Hunx4s3tf2d7pJA6N9jZvlzvxsORx7HqPWl9lCsZf7A+pQSeAZovPTzUldvK3jcoLHnGfb+VdD+27fRSfCu/Tz4yxwAhccsGx9ep/LNfP37MP7MfhP40+H31PX5dQjuI5WVPsEyRDap+6coSMk84I6Vt/tH/sl+DfhP4Pm1nQLjVhLCBtS6uVlUL04BUdcn8q0Yj2/9h0bvhNY7uSqnktk53EHj8M/jX00DxnP6Yr5e/YTmaX4T2eeD8zdT/fPbtx/Svp9TuUd6TYh6t70rd+KbyOlLu4xz+NSUA54FA+7jNH3eQM0jZLdaBjzjb6Uwt6UvAxzzSfjigkFOaWilzxxQUJnPGc0chuDxQMDr1pc+1AB6Yo46UqtwBR0oATZ74ooZjmigDO3YzxSp35pv8VDVZkK3pihflpV70tAITcN1Lu7UUvpQUA55pep6/hR/DSN96gB1G4fWhRnrQ3egBW+XpxQzbvekbpQvSkAo+6R0o520L94UrUrkkNxOtvC0kjbVXknOAK+QfjB8YvDfiz4uaD4a/ti3+y2tx5ty+9fKLjG2Ise+5s4/wBnB6ivr64hS4VopFDxspBU9682uvgR8O7jU3vpPBeiPelvNNybJPML5zuLYyTxSKRJ8QotJvPh/em7ltxYG3JMknKYUH5j1/qPbtXwb+y98U9M+F/xRvrK4vY4NHvrho7e66xjDEKTweCvfGOnrz+jmpeHdM1DR3sLmxgnsihU27oCmPTH41w8f7P/AMNYdShdPAugq4O4MLCPOcDnOKoDj/2nPilo2jfDK8cajD9puI2W3iB3Mz4yo2gHtzXRfs6+ONB8XfD+wt9O1G3v5IYhHLGjguhAGQ49eldXqfwt8IeKIIINY8NaXqcMQJjju7VJFTkDgEccVN4M+H/hrwa8p0LQrDR9yrn7FAsQPJ67RUgfLf7Z37O76lCfFei2268tk3TxR8eavGTjpuHbPqfWvS/2R7qGx+C+mzyfuYRbqS2cY4Jr3/U7K3vrWSG4hSaJuGR1yDxWTY+G9L0vRZbK0sILe0+YeTGgC49MUwPzp+OXxC8P61+0Np2o2eppPp+nTLHc3UW4op3ncBx2yent7V9k+J/i14Ss/hC2pXOu2f2J7RdsyuCZCRwoHVifoenSuok+B3w8vYZJZ/BOgzS8Sb30+IncTyfu9a0Jvhj4Sl0f+zX8N6W+nqBi1a1Qxf8AfOMU9xnwZ+yP4y0K1+J+tW+rXkMJ1WVng3A4ZjvyMdjjb1zkk/Wp/wBoDwLqnwR+LFj430i3f+zJJw7TIQFBOcqTjgOCR9R6ivuPRvgv4B0+T7daeDNCtbyHHlzQafEjL8w5BC+w/Kuo1jwzpWraTNaXun295aMpBgnjDxkZxgqeCPago84+HHxA0r43fDVZdOlWVnh2SxngqwGCpHrn+lfFui+Ir39lv47ahJqtpO2jXkrM3lruyWkJG1f4tvzE4ycD8/0L8KeCfD/hKSWLRNGsdJiKhvLs4FiXP0UYp3ibwN4e8ZYt9d0Sx1eBwFaO8t1kBG4eopdQPB/F37X3hLxJoceleD5LzX9cvgFisorSRDHnjLswACjIyc9uvevSPhH4df4f/D+J9YmVbl1864kcgZZiS3bjkniuh8PfCHwV4RK3ei+F9L0y4k3FpLW2VCcMQOg9BXV3FrDd2TxzRJJGx2lWHBHoRSA/Mj43/FDQtQ/aCtNdsbpb7T9NlUTzR5PTduA45xnt1/KvrO6/a48AWPg2BtL1r+2NSkiCx2NlbSvMWYYC4xjPPTOOOCa9Lk+Evgi+1Qm48HaDMxy+99MhLZHQ7tua2dG8HaBoNqraZoWmac24nNpZxxc5HPyqOafSwHyn8GPgf4h+JnxHm+IvjOyl01JCPsOn3A+eNBnaWA6NjPrjJ9a7j9sjxpofh34b3Gi3F4lveXMZht4CCxJII54xwOTmvpyCNVVAFAB5OPxrnvEfhfR9eVTqelWWo7VJH2u3SXByP7wNFtLAfIH7BfxG8P2Om3Ph2S+SDVDI8kcLIRvUnPDD5WxnFdV+298SvD1r4Pfw/Jds2pXXyxwxqeACMsT0GAa+kNO8C+HNOMl5aaFp1pdD/lrb2qRtxjA+UDjk1d1HwjomtTebqGk2d7IrHDXECuenuKYrHyt+wT8SNBvPCP8Awj0dzGNVtWYSQheT82QykcEYI6fjX2auPxxXO6Z4X0fTboy2mmWltL/fhhVT0HcCt9TuwT1PJpMRKOlGR3pGGMUL0pCDknjpS44OaRqBz1oGJ9M5pcFVzRjA4ojpDsHPBz1pwP4Ud6WmMOO5zQf0obtS+lADePwpd2OKP4qRqAEaMscgZopy9KKAP//Z)
2. We just stored the information of the image in the vector ‘I’ using the function imshow(filename).
3. Now ,we extract the red, blue and green channels exploring the given image with its colour gradient.
4. Here is the code….

* Here’s the output..
* Before, detailing the code and its output we first answer the questions given in the assignment.

**a)** **What is the number of independent variables?**

Ans. Two. There are 2 independent variables which are basically the x & y co-ordinates of the image.

**b) What is the number of components?**

Ans. Three. There are 3 components which are Red, Green and Blue (RGB).

**c) Display the individual components of the image.**

Ans. They are (R,G,B) which means (Red,Green,Blue).Here,5th, 6th and 7th lines of the above code display the components of the image.

**d) Determine the minimum, mean and maximum of each component.**

Ans. As we can see in the workspace of the above code displays the minimum, mean and maximum of each component.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Red channel | Blue channel | Green channel |
| Minimum | 6 | 0 | 4 |
| Maximum | 222 | 230 | 215 |
| Mean | 159.02 | 145.38 | 148.35 |

e) Determine the size of the image.

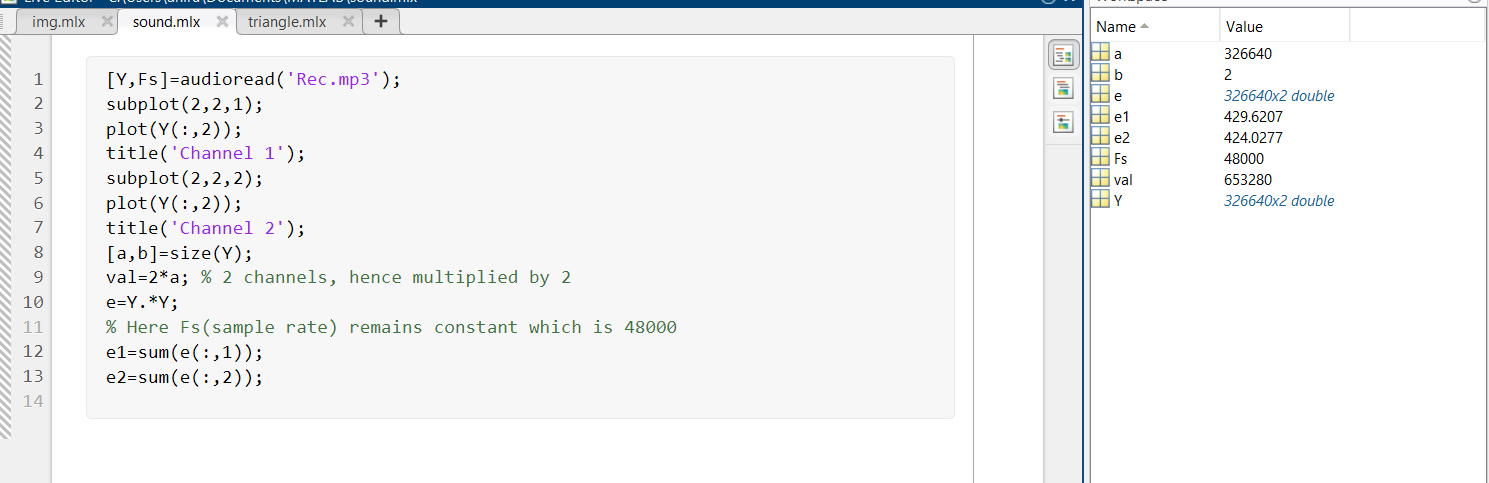
Ans. The size of the image is given by the variable named as ‘imgsize’ in the workspace and it displays the size as 204828.

(204828=507 x 404)

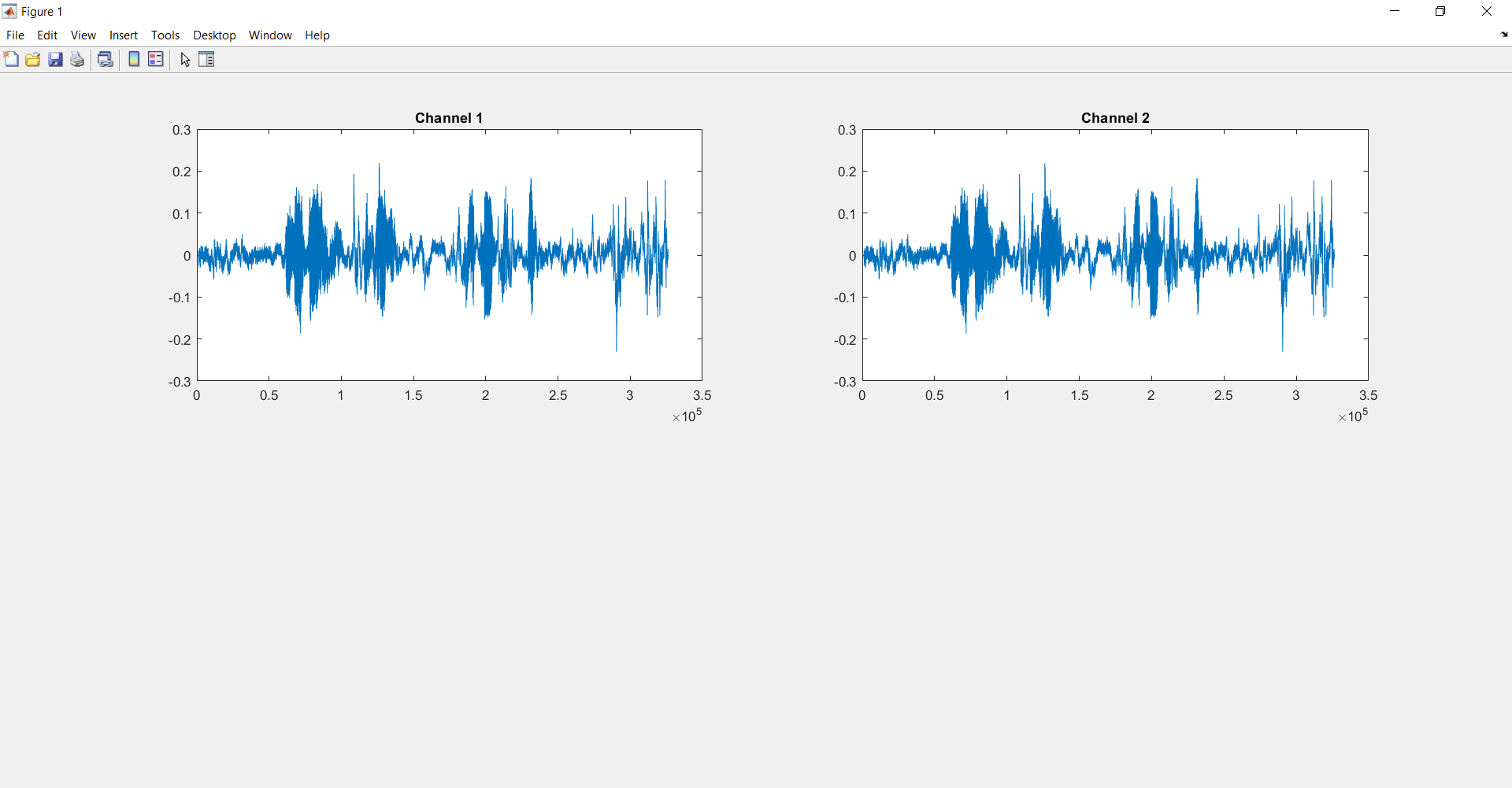
* Since, we did not wish any overlapping of extracting the individual components, it’s better to take the copies of image and perform the operations with and every individual component. Hence, variables h, i & j were chosen.
* Then as we can see in the output that the darkness of the face of the person in the picture varies significantly in each and every channel.
* We went one step ahead and tried to find out a way to keep one component in active mode by keeping other two as zero. Lines 15, 16 & 17 of the code helped in making this happen.

Q2) ANALYZING AUDIO SIGNALS IN MATLAB

* Firstly, we need to record a sound of length(>=5sec) and upload it in MATLAB using appropriate function.
* The audio “REC.mp3” was recorded from my laptop and its length is reported as 6 seconds.
* Now, we start coding and use the function ***audioread(filename)*** to extract all the information from the audio clip and store it in a variable ‘Y’. The variable ‘Fs’ here, stores the sample rate of the audio clip.
* Here’s the code..



* Here’s the output ..



Before, detailing the code and its output, we first answer the questions in the given assignment.

Before, detailing the code and its output we first answer

the questions given in the assignment.

a)  **How many channels are present in the signal?**

Ans. Two.

b)  **Is this signal Digital or Analog?**

Ans. The given signal is Digital.

c) **What is the number of values in the sequence?** Ans. The total number of values in both the channels is 653280, as shown in the workspace for variable ‘val’.

d)  **What is the energy of the signal in both the channels?**

Ans. Energy of the signal = e1 = 4.2962 x 10^3 in channel 1 .

Energy of the signal = e2 = 4.2402 x 10^3 in channel 2.

e)  **What is the sample rate?**

Ans. Sample rate is the total number of samples divided by the total time taken by a signal.

Here Fs is the sample rate which is coming out to be 48000.

***EXPLAINATION:***

Here, channel 1 and channel 2 are having almost the same readings at different indices but at one instance we can see a significant difference between the two and the same has been represented in the previous image. Also, their energies are almost the same.