```json
{
  "cells": [
    {
      "cell_type": "markdown",
      "metadata": {
        "id": "FbTFFchDHV9T"
      },
      "source": [
        "# IBM Project Name: Real-Time Communication System Powered by AI for Specially Abled \n",
        "# TEAM ID: PNT2022TMID34274\n",
        "# TEAM Member:PARAMESHWARI N\n",
        "\n",
        "# Importing req. lib."
      ]
    },
    {
      "cell_type": "code",
      "execution_count": null,
      "metadata": {
        "id": "j30hHpyrHHGx"
      },
      "outputs": [],
      "source": [
        "import cv2\n",
        "import numpy as np\n",
        "import matplotlib.pyplot as plt"
      ]
    },
    {
      "cell_type": "markdown",
      "metadata": {
        "id": "JCqELHdnIOPI"
      },
      "source": [
        "# Image processiong"
      ]
    },
    {
      "cell_type": "code",
      "execution_count": null,
      "metadata": {
        "colab": {
          "base_uri": "https://localhost:8080/",
          "height": 286
        },
        "id": "NQSQ1rnkICCx",
        "outputId": "dde19263-cc59-4961-9989-073c3831022b"
      },
      "outputs": [
        {
          "data": {
            "text/plain": [
              "<matplotlib.image.AxesImage at 0x7fe002e68d10>"
            ]
          },
          "execution_count": 17,
          "metadata": {},
```

              "output_type": "execute_result"
            },
            {
              "data": {
                "image/png":
"iVBORw0KGgoAAAANSUhEUgAAAW4AAAD8CAYAAABXe05zAAAABHNCSVQICAgIfAhkiAAAAlw
SFlzAAALEgAACxIB0t1+/AAAADh0RVh0U29mdHdhcmUAbWF0cGxvdGxpYiB2ZXJzaW9uMy4yL
jIsIGh0dHA6Ly9tYXRwbG90bGliLm9yZy+WH4yJAAAQgElEQVR4nO3df8ydZX3H8fdnLYJTs/
LLprZ1gNYYZrSQDmskC7KghSwrJoZAttEYsroEE0zMNnDJxCX+YaKyEReyGpllcSDzx2jIFq2
Fxe0PwYIFWiryqJi2KTSTH9qYsLV898e5imdPfzy/+/R6zvuV3/b2v+9zXFQ4fbq7nOjmp
KiRJ/fiN+e6AJGGlqDG5J6ozBLUmdMbgglqTMGGtyiR1xuCWpM7MWXAnWZfkqSRjSSW6eq/tI0qjJX
KzjTrII+BFwWbbAX+D5wXVU9Oes3k6Q90koOes 3k6QRM1dP3JcAT1ziXV1dP3JcAY1X1k6r6H+AeYP0c3c3UuSRsri0iXvf5cCeoe
O9wLuP1ziJX9+UpHGqKkseq21VwTyjRRmDjfN1fkno1V8G9G9j1g5J0g5dLyi5V5VnVVu5YVzB
NcX8fWJXk/CSvAa4Fftqu1JnDG5J6ozBLUmdMbgklqTMGtSZ0xuCWpMwa3JHXG4JakzBjJyR1x
uCWpM5mNG5J6ozBLUmdMbgglqTMGtyR1xuCWpM4Y3JLUmRn95mSSZ4AuSeqMwS1JnTG4JakzBrckdcb
glqTOGNyS1BmDW5I6Y3BLUmcMbknqjMEtSZ0xuCWpMwa3JHXG4Jakzhjckt SZCYM7yZ1JDiTZ
OVQ7K8nWJE+31zNbPUluTzKW5PkF89l5yVpFE3mifvLwLpxtZuBbVW1CtjWLpxtZuBbVW1Ctjj WjgGuBFa1bSNwx
+x0U5J0xITBXVVFbZ4fV14PbG77q4gGWryVJ05/jXlpV+9v+v8s800DStr8DcCd6yVpGFjipjcEtS
PUbm+rHSXJxiTbk2SSQtnukbVFUlqWlctwnYBDCd6yVpVE33ifu5J1SVrgZeGSepMgVSeepUhyN3AZcA7wHPBJ4F
1W9FqkqRZMt3g3ggJsaPsbgbPuG6te31SVrgZeGplQkSbMgVSeepUhyN3AZcA7wHPBJ4F+Be46
1W9FqkqRZMt3g3ggJsaPsbgbPuG6te31SVrgZeGplQkSbMgVSeepUhyN3AZcA7wHPBJ4F+Be46
Az8Drqmq55ME+AKDVSi/Aj5cVRP0YTtVIklHq6ocqz5hcJ8MBrckHe14we03JyWpMwa3JHXG4
Jakzhjckt0ZgluSOmNwS1JnDG5J6Y3BLUmcMbknqjMEtSZ0xuCWpMwa3JHXG4JakzBrckdcb
glqTOGNyS1BmDW5I6Y3BLUmcMbknqjMEtSZ0xuCWpMwa3JHVmMj8WfEaSh5M8lmRXkk+1+vlJHkoyl
uSeqMwS1JnTG4JakzBrckdWbC4E5yZ5IDSXY1W5Nsi/JjrZ/jXlpV+9v+v8s808DStr8DcCd6yV
pGFjipjcEtSPUbm+rHSXJxiTbk2SSQtnukbVFUlqWlctwnYBDCd6yVpVE33ifu5J1SVrgZeGSepMgVSe
epUhyN3AZcA7wHPBJ4F+Be46+yDnh8F9gE9YX4h3PUXXZW+YpW6VramqNMZgluSOmNwS1JnDG5J6
Y3BLUmcMbknqjMEtSZ0xuCWpM5P5seCVSR5M8mMSZ5M8rmavVbk+YrSXXJ0qST0GtyR1xuCWpM4Y
3JLUmcMbknqjMEtSZ0xuCWpMwa3JHVmMj8WfEaSh5M8lmRXkk+1+vlJHkoyl
uSeqMwS1JnTG4JakzBrckdWbC4E5yZ5IDSXY1W5Nsi/JjrZdNXTuliRjSZ5K8oG56rgkjar
J/Fjw7wEHgbuq6h2tditwsKo+O67thcDdwCXAm4DvAG+rqsr9m5NV9V9g+XU98DbwEDBvmq55m
Zz1wT1W9XFU/BcYhLgkaZbMZI77o0keb1MpZ7bacmDfUJu9rXaUJBuTbE+yYJ8K8oG56rgkjar
gN4C7Aa2A98bqpvNVa2ZZh8kaSRNK7ir6rmquAc5LsBT4JXI7gcuAc5LsBT4JXJZJkNVDAM8BHAKp
qV5J7gSeBQ8CNE60okSRNzYTLAU9KJ1wOKElHmfZyQEnSqcXglqTOGNyS1JnDG5J6Y3BLUmcM
bknqjMEtSZ0xuCWpMwa3JHXG4JakzBrckdQZg1uSOmNwS1JnDG5J6Y3BLUmdMbglqTMGtyR1x
uCWpM5MGNxJViZ5MMmmmTSXYluanVz0qyNcNT7fXMVk+S25ycVzPQhjGiWTeeI+Ai8gI3JrkQuBNb
4E1gI3JrkQuBNbnYYubNNbMNRINNVk+S25ycVzPQhjGiWTeeI+Ai8gI3JrkQuBNbnYYubNNbMNR
4E1gI3JrkQuBnYVlWrgG3tGOBKBr/uvgrYCNwx672WpBE26qi4AON02d5WG9x9iSZNms91ySRtSU5riTnAdcBDwELK2q/e3
VZ+7sgUSHs90Or7gJVDl69oNUnSLJjgpIIXwj2V9V9Xnh05tATa0/Q3AfUP169vqkrXAS0NGZgCCNmsmsKgnwJWB3wHeVlWHT3
T7K1X1jwJsZNbVj3AZbwAfAaeM/gVD+2vqkrXAS0NGZgCCNmsmsKgnwJWB3wHeVlWHT3
KkGcpgluMEDZJLgf8EngBeaeVPMjjvhd4M/Az4Jqqer4F/ReAdcCvgA9X1QS0NTKp
KkGcpgluMEDZJLgf8EngBeaeVPMJjnvhd4M/Az4Jqqer4F/ReAdcCvgA9X1QnnsZNMaZpFkkZ
BVeVY9QmD+2QwuCXpaMLbr85KUmdMbglqTMGtyR1xuCWpMyR5P5seCVSR5M8
mSSXUluavVbk+xLsqNtVw1dc0uSsRPJfnAXA5eEbmwS1JnTG4JakzBrckdcbglqTOGNyS1BmDW5I6Y
3JHVmMj8WfEaSh5M8lmRXkk+1+vlJHkoyl
uSeqMwS1JnTG4JakzBrckdWbC4E5yZ5IDSXY1W5Nsi/JjrZ9mRVNsSS5K8oG56rgkjar
J/Fjw7wEHgbuq6h2tditwsKo+O67thcDdwCXAm4DvAG+rqsr9m5NV9V9g+XU98DbwEDBvmq55m
Zz1wT1W9XFU/BcYhLgkaZbMZI77o0keb1MpZ7bacmDfUJu9rXaUJBuTbE+yYJ8K8oG56rgkjar
gN4C7Aa2A98bqpvNVa2ZZh8kaSRNK7ir6rmquAc5LsBT4JXI7gcuAc5LsBT4JXJZJkNVDAM8BHAKp
qV5J7gSeBQ8CNE60okSRNzYTLAU9KJ1wOKElHmfZyQEnSqcXglqTOGNyS1JnDG5J6Y3BLUmcM
bknqjMEtSZ0xuCWpM5P5seCVSR5M8mMSZ5M8rmavVbk+YrSXXJ0qST0GtyR1xuCWpM4Y
GNYS1BmDW5I6Y3BLUmcMbknqjMEtSZ0xuCWpMwa3JHVmMj8WfEaSh5M8lmRXkk+1+vlJHkoyl
uSrSV7T6qe347F2/ry5HYIkjZbJJHG/DFxeVe8CVgPPgPcPVlVvBV4AbmjtbwBeaPVPt3YY+MiBkF/b1X9SzumX+YmD/2
JPHG/DDxeVe8CVgPPgPcPVlVvBV4AbmjtbwBeaPVPt3YY+MiBkF/b1X9SzumX+YmD/2
W1aHWZC+wvO0vB/YYtPMvAWfPZqclaRRNMrir6rmquAc5LsBT4JXJ/fXMVk+S25ycVzPQhjGiWTeeI+Ai
9cVS8nOQP4J+Ai4Hng2qr6YQT3MNglaZyqOubCjgmD+2QwuCVpaMLbr85KUmdMbglqTMGtyR
1xuCWpM4Y3JLUmcMbknqjMEtSZ0xuCWpMwa3JHVmMj8WfEaSh5M8lmRXkk+1+vlJHkoyl
uSeqMwS1JnTG4JakzBrckdcbglqTOGNyS1BmDW5I6Y3BL"

UmcMbknqjMEtSZ0xuCWpM5P5seAzkjyc5LEku5J8qtW/nOSnSXa0bXWrJ8ntScaSPJ7k4rkeh
CSNksWTaPMycHlVHUxyGvBfSf69nfvzqvrauPZXAqva9m7gjvYqSZoFEz5x18DBdnha2070470
7rgbvadd8DliRZNvOuSpJgknPcSRYl2QEcALZW1UPt1KfbdMhtSU5vteXAnqHL97aaJGkWTCq
4q+pwVa0GVgCXJHkHcAvwduB3gbOAv5zKjZNsTLI9yfYp9lmSRtqUVpVU1YvAg8C6qtrfpkNe
Bv4RuKQ12wesHLpsRauNf69NVbWmqtZMr+uSNJoms6rk3CRL2v5rgSuAHx6Zt04S4GpgZ7tkC
3B9W12yFnipqvbPSe8laQRNZlXJMmBzkkUMgv7eqro/yQNJzgUC7AD+rLX/N+AqYAz4FfDh2e
+2JI2uVJ1ogchJ6kQy/52QpFNMVeVYdb85KUmdMbglqTMGtyR1xuCWpM4Y3JLUGYNbkjpjcEt
SZwxuSeqMwS1JnTG4JakzBrckdcbglqTOGNyS1BmDW5I6Y3BLUmcMbknqjMEtSZ0xuCWpMwa3
JHXG4Jakzhjckt0Zg1uSOrN4vjvQHASemu9OzJFzgP+e707MgYU6Lli4Y3Ncffnt4504VYL7q
apaM9+dmAtJti/EsS3UccHCHZvjWjicKpGkzhjcktSZUyW4N813B+bQQh3bQh0XLNyxOa4FIl
U1332QJE3BqfLELUmapHkP7iTrkjyVZCzJzfPdn6lKcmeSA0l2DtXOSrI1ydPt9cxWT5Lb21g
fT3Lx/PX8xJKsTPJgkieT7EpyU6t3PbYkZyR5OMljbVyfavXxkzzU+v/VJK9p9dPb8Vg7f958
9n8iSRYl+UGS+9vxQhnXM0meSLIjyfZW6/qzOBPzGtxJGgF/D1wJDeud0qra3/afBZa2
jOwrapWAdvaMQzGuaptG4E7TlIfp+MQ8PGquhBYC9zY/tn0PraXgcur6l3AamBdkrXAZ4Dbquu
qtwAvADa39DcALrX5ba3cquwnYPXS8UMYF8L6qWj209K/3z+L0VdW8bcB7gG8NHd8C3DKffZr
mOM4Ddg4dPwUsa/vLGKxTB/gH4LpjtTvVN+A+4IqFNDbgN4FHgXcz+ALH4lZ/9XMJfAt4T9tf
3Nplvvt+nPGsYBBglwP3A1kI42p9fAY4Z1xtwXwWp7rN91TJcmDP0PHeVuvd0qra3/afBZa2/
S7H2/43+iLgIRbA2Np0wg7gALAV+DHwYlUdak2G/7quNr5l4CzT26PJ+1vgb8AXmnHZ7Mwxg
VQwLeTPJJky6t1/1mcrlPlv5PfB14GNV9Yskr57rdWDwyr57rdWxVdRhYnWQJ8E3g7fP
cpRlL8gfAgap6JMll892fOXBpVe1L8kZga5IfDp/s9bM4XfP9xL0PWDl0vKLVevdckmUA7fVA
q3c13iSnMQjtr1TVN1p5QYwNoKpeBB5kMIwJMmRB5nhvr86rnb+t4Cfn+SuTsZ7gT9M8gxwD
4Ppkr+j/3EBUFX72usBBv+xvYQF9FmcqvkO7u8Dq9pfvl8DXAtsmec+zYYtwIa2v4HB/PCR+v
Xtr95rgZeG/lfvJLBo/WXgN1V9fmhU12PLcm57UmbJK9lMG+/m0GAf6quic6rnb+t4Cfn+SuT
TU0lV3VJVK6rqPAb/Hj5QVdcxmM72nZV72MD3wHOam3DYBXNj4EngDXz3nZV72MD3gn8o
/t8N7Af+l8Fc2g0M5wHOam3DYBXNj4EngDXz3f8TjOtSBvOKjwM72nZV72MD3gn8o
I1rJ/DXrX4B8DAwBvwLcHqrn9GOx9r5C+Z7DJMY42XA/QtlXG0j7Vt15Gc6P2r5r5C+Z7DJMb05KUm
fme6pEkjRFBrckdcbglqTOGNyS1BmDW5I6Y3BLUmcMbknqjMEtSZ35P4mK2kp3sSRPAAAAAEl
FTkSuQmCC",
                "text/plain": [
                  "<Figure size 432x288 with 1 Axes>"
                ]
            },
            "metadata": {
              "needs_background": "light"
            },
            "output_type": "display_data"
          }
        ],
        "source": [
          "# Create a image\n",
          "\n",
          "img1 = np.zeros((400,600,3),np.uint8)\n",
          "plt.imshow(img1)"
        ]
      },
      {
        "cell_type": "code",
        "execution_count": null,
        "metadata": {
          "id": "FEhOsGzYImaQ"
        },
        "outputs": [],
        "source": [
          "# Drawing Functions"
        ]
      },
      {
        "cell_type": "code",

```
    "execution_count": null,
    "metadata": {
      "colab": {
        "base_uri": "https://localhost:8080/",
        "height": 286
      },
      "id": "CvGTm2mQKB0C",
      "outputId": "bcc132d1-64ae-46f4-a9ce-b5d960b1e0e0"
    },
    "outputs": [
      {
        "data": {
          "text/plain": [
            "<matplotlib.image.AxesImage at 0x7fe002d6ded0>"
          ]
        },
        "execution_count": 19,
        "metadata": {},
        "output_type": "execute_result"
      },
      {
        "data": {
          "image/png":
```
"iVBORw0KGgoAAAANSUhEUgAAAW4AAAD8CAYAAABXe05zAAAABHNCSVQICAgIfAhkiAAAAlw
SFlzAAALEgAACxIB0t1+/AAAADh0RVh0U29mdHdhcmUAbWF0cGxvdGxpYiB2ZXJzaW9uMy4yL
jIsIGh0dHA6Ly9tYXRwbG90bGliLm9yZy+WH4yJAAAUR0lEQVR4nO3df/BldX3f8eer7PPIj6g
QBpevuIjBZ6zCprs4WsJgEaVWkScCMsTBt2TFMNmlhilNrhHQmwWQyqZ1EGjSl3UyMmFiQKCk
7NK1BwNpMC7jq8mNBZI1Y2C5sCT+EUVGWd/84n6W3y+5+f93v3u/nfp+PmTvfcz7n3Hvn+Hu
i3M/93POSVUhSerH35h0AZKKKkTG4JakzBrckdcdcbglqTOGGySM1BmDW5I6s2jBneTsJA8k2
sV6H0labrII89iTHAZ8A3g78AjwZCCqrpv7G8mScvMYh1xnnwrsDwZeECCqrpv7G8mScvMwa3
JHVmjMbknqzMEtSZ3BLUmdMbgnqzY3BLUmcMbknqjMEtSZ0xuCWpMwa3JHVmjMbknqzMEtSZ3
BLUmcMbknqjMEtSZ3BLUmcMbknqzY3BLUmcMbknqjMEtSZ0xuCWpMwa3JHVmxuBO8okku5P2TJ
Kbkzzz/r6ytSfJVUl2JLk7yZsXa5mc8T9SeDsfdouA26pq
nXALW0d4F3AuvbYBFw9njIlSXvNGNxV9SXgiX2aDgK2azwWuacvXAOeNtH+qBcDRydZNa5iJUnzH+
M+vqp2teXHgePb8grg0aH9drY2SdKYHTTfA1RVJan5Pi/JZcBlAMcff8rK9KU3Bg4DtgQ32TJ
JMlqlpLg5aSbbbOYswSJWpZWLQf50vScjXXBR6cwyJNpZWLPfQqbfQx7k1Jdsou5d6TtiiQ7k
2s1tXIxpY1xuCWpMwa3JHVmjMbknqzMEtSZ3BLUmcMbknqzY3BLUmcMbknqjMEtSZ0xuCWpMw
a3JHVmxuCWpM4Y3JLUGYNbkjpjcEtSZwxuSerMjjMGd5BNJdie5d6TtiiQ7k2xrj3NGtl2eZZ
EeSB5K8c7EKl6TlajY3C/5J4FngU1X1463tCuBgWOBV4DfAF4HVVtWeG9/Cek5K0j3nfc7KqvgG
9/Cek5K0j3nfc7KqvgGQ8Mv3ORe4rqqeQ8Mcv3ORe4rqqeQ8Mcv3ORe4rqqeQ6pvATsYQlzqw
lpg5aSLkGawYgHPvSTJhcBW4ANV9DfAF4HVVtWeG9/Cek5K0j3nfc7KqvgQ8Mcv3ORe4rqqeq
6pvATsYQlzqwlpg5aSLkGawYgHPvSTJhcBW4ANV9SSwGrh9ZJ9HWttLJNkEbFrA+0tzdjjjwOi
AMRxQ/t8/2k4GdwHMjbc8A/wb4IfA08L8L8Wv0zpoOYb3FcDvwlU+/u7wC/M5QWqajOwGRwq8
eI7HvinwBuAn2UI7r2Pfb1+n/UCfr4tPwx8EfgT4H8
A312EWqWZzCu4q+qxvctJ/gC4qa3uZPi2udea1iYdcgfeCfwz4JeBVcxvGGYzzGGGUrj5LVK1
LXVwGcZQnxx7Pn4nCG8L4Ef7TU+Bnc6tZrGGYWgajzGGUrj5LVK1LXVwGcZQnxx7Pn4nCG8L4
Ef7TU+Bnc6tZrGGYWgajzGGUrj5LVK1LXVwGcZQnxx7Pn4nCG8L4Ef7TU+Bnc6tZrGGYWgajz
RDeS7E+9cvgVpdWMYxpn87SDsUjgN8G/vmkC9FUMbjVpZ8H3srSDu29jgIuXfzsMmXUhz
JPARhmGajzGMGUrj5LVK1LXVwGcZQnxx7Pn4nCG8L4Ef7TU+Bnc6tZrGI60T2VphfZeK4F/z
RDeS7E+9cvgVpdWMYxpn87SDsUjgN8G/vmkC9FUMbjVpZ8H3srSDu29jgIuXfzsMmXUhz
JPARhmGajzGMGUrj5LVK1LXVwGcZQnxx7Pn4nCG8L4Ef7TU+Bnc6tZrGI60T2VphfZeK4F/z
RDeS7E+9cvgVpdWMYxpn87SDsUjgN8G/vmkC9FUMbjVpZ8H3srSDu29jgIuZfiGII2Ds0rUnX"

cwjGtPasrffH0ReCfwgwnXoX7M++qA0lKykmHYobfQhmEs/pwZ95JmZnCrK2cCPznpIubpRxi
um/KySRei7hnc6sZRDFf46/Foe6+fAN426SLUPYNb3TgNOHvSRSzQkcDFwMsnXYi6ZnCrC0cx
jG0fNelCxuDvszROzVe/DG51YTXw05MuYkxWABdNugh1zeBWF/4h03Xq+KkMt0mT5sPgVhfWM
10f1hOAYyddhLo1Tf8WNKXCdH5Qp+kbhA6tafz3oCnzBoYzDqfNByddgLplcGvJO4Lh5JVpEu
CYSRehbs0Y3EnWJrktyX1Jtie5tLUfk+TmJA+2v69s7UlyVZIdSe5O8ubF7oQkLSezOeJ+Hvh
AVZ3CcBXNi5OcAlwG3FJV64Bb2joM905d1x6bgKvHXrUkLWMzBndV7aqqr7blZ4D7GabVngtc
03a7BjivLZ8LfKoGtwNHJ1k19sq1bEzDSTf7swLvHaj5mdMYd5ITgTcBdwDHV9WutulR4Pi2v
Bp4eORpj7S2fV9rU5KtSbbOsWYtM3930gUsktXAayddhLo06+BO8nLgc8D7q+o7o9tquKj3nK
6pXVWbq2pDVW2Yy/O0/Nwy6QIWybeBb066CHVpVsGdZCVDaH+6qm5ozY/tHQJpf3e39p3A2pG
nr2ltkqQxmM2skgB/CNxfVR8d2bQF2NiWNwI3jrRf2GaXnA48PTKkIklaoNn8NnIG8E+Ae5Js
a22/ynAD6+uTXMTwre+9bdufM9zoYwfwXeB9Y61YkpY57zmpJe9vAv8VeOOkCxmjAv4l8NGZd
tSy5j0n1a1HgQcnXcQi+O+TLkDdMrjVDb+WSQODW124Ctgz6SLG6AvAvZMuQt0yuNWFh4D/M+
kixqSA+4DvTboQdcvgVhceZpiT+sKkCxmDJ4ErJ12EumZwqxtXAY9PuogFKuCPGObPSvNlcKs
bjwMfp+8fKZ/Go20tnMGtbhTw7xmmB/Zob/2eRqyFMrjVlccZhkx6tBv4d0zHOL0my+BWV4rh
4u+9nbzyPeC38WprGg9PeVeX3gb8Z/q5ycKXgDPpe3xeh56nvGuqfJHhSmfPTbiOmRRwN/ALG
NoaH++cpC4V8DGGu6V/BFg52XL2a++JNu/BGyZovDziVrf2MIT3h4AfTLiWfRXDzVl/jum8QJ
Ymy+BW155nmGXyIeD7E65l1L3Au4FvTLoQTSWDW93bwxDel7E0rv9xF8ORtqGtxWJwayq8APw
ecB7wl0zmh8DvAb/WatgxgffX8uF0QE2d1wC/CFwCHMvwA+Zi+h6wleF/HDfg7BGNz7ynAyZZ
m+S2JPcl2Z7k0tZ+RZKdSba1xzkjz7k8yY4kDyR55/i6Ic3sfwO/CfxthhujPs7inK34Q+BWh
jtlvxP4HIa2Do0Zj7iTrAJWVdVXk7wC+ArDt8H3As9W1e/ss/8pwLXAqQwHP18AXldVB7wOvk
fcWiwBVgHvZ7jj9atb23yPwqs9bmOY0XIr8MzCy5T260BH3DPO466qXbTr4lTVM0nuB1Yf5Cn
nAtdV1XPAt5LsYAjx/znnqqUFKoYj8F8BrgZOBP4FQ3CfwHBUPpPvM5zwswfYDvwxw2VZDWxN
ypxOwElyIvAm4A7gDOCSJBcyDPF9oKqeZAj120ee9ggHD3rpkPhWe9zW1lcBr9tnn58Cvsr/H
8o/YPjAe3EoLRWzDu4kL2cYxnt/VX0nydUMQ4nV/v4uw5m9s329TcCmuZZrjc+LXyVH/LddJFC
LN0aymAyZZyRDan66qGwCq6rGq2lNVLwB/wDAcAsMF0NaOPH0N+7koWlVtqqoNVbVhIR2QpOV
mNrNKwnC7v/ur6qMj7atGdns3/++m1VuA85MckeYkYB1w5/hKlqTlbTZDJWcw/CB/T5Jtre1X
gQuSrGcYYknI+CWAqtqe5HQqe5HgdxYw/CB/T5JtKZsqBu4Gfgm8FRVPd92eRY3/DV4JakzZNP
E/RxwVlW9EVgPpnJ3kdOAjwJVV9WPAk8BFbf+LgCdb+5+5VtP0nSmMwY3D5VakzKyZdQPMs8MCki1BmdW5I6M5ubBR+Z5/HGnKyYhb7PAAecVVW9EVgPpnJ3kSOmcMbknajBE//4k
Zyd5IMmJJdNup65SvKKJF9P8liSp5Pcq+r5XfHHnKyYhb7PMcZ5NGGtyaZxuTBR+Z5/HGnKSYhb7PMccZ5NGGtyaZxuTBR+Z5/HGnKSYhb7PMccZ5NGGtyaZxuTBR+Z5/HGnKSYhb7PMccZ5NGGtyaZxuTBR+Z5/HGnKSYhb7PMccZ5NGGtyaZxuTBR+Z5/HGnKSYhb7PMccZ5NGGtyaZxuTB
kzKyZdQPMs8MCki1gkxwGPT7qIRTCt/YLp7Zv96strD7RhqQT3A1W1YdJFLIYkw66exb9jFIYkW6exb9pLAL5j6tPOkCFtG09guntm+2r66NSVSZOuQZI0bUo16xR1xuCOs8MCki1ARLZqRTTt/YLp7Zv96sr

r6qPjmzqum9JXtWOtElyFMO4/f0MAf6ettu+/drb3/cAt1YbOF1KquryqlpTVScy/Du6tar+E
Z33CyDJy5K8Yu8y8A7gXjr/LC7IpAfZgXOAbzCMM/6rSdczj/qvBXYBP2QYS7uIYazwFuBB4A
vAMW3fMMyi+SZwD7Bh0vUfpF9vZRhXvBvY1h7n9N434A3A11q/7gV+rbWfDNwJ7AD+FDiitR/
Z1ne07SdPug+z6OOZwE3T0q/Wh7vaY/venOj9s7iQh2dOSlJnJj1UIkmaI4NbkjpjcEtSZwxu
SeqMwS1JnTG4JakzBrckdcbglqTO/F+U1ouXq9ZEgAAAABJRU5ErkJggg==",
            "text/plain": [
              "<Figure size 432x288 with 1 Axes>"
            ]
          },
          "metadata": {
            "needs_background": "light"
          },
          "output_type": "display_data"
        }
      ],
      "source": [
        "# Draw a circle\n",
        "\n",
        "circle = cv2.circle(img1, (300,200), 50, (255,0,0), -1)   #
(0,0,0)--->(R,G,B)\n",
        "plt.imshow(img1)"
      ]
    },
    {
      "cell_type": "code",
      "execution_count": null,
      "metadata": {
        "colab": {
          "base_uri": "https://localhost:8080/",
          "height": 286
        },
        "id": "eeB3WMD8Lv2t",
        "outputId": "1278384b-864a-428d-fa17-b15d3c61b6be"
      },
      "outputs": [
        {
          "data": {
            "text/plain": [
              "<matplotlib.image.AxesImage at 0x7fe002ce4390>"
            ]
          },
          "execution_count": 20,
          "metadata": {},
          "output_type": "execute_result"
        },
        {
          "data": {
            "image/png":
"iVBORw0KGgoAAAANSUhEUgAAAW4AAAD8CAYAAABXe05zAAAABHNCSVQICAgIfAhkiAAAAlw
SFlzAAALEgAACxIB0t1+/AAAADh0RVh0U29mdHdhcmUAbWF0cGxvdGxpYiB2ZXJzaW9uMy4yL
jIsIGh0dHA6Ly9tYXRwbG90bGliLm9yZy+WH4yJAAAVQUlEQVR4nO3df/BldX3f8ecr7PPIjao
OAks3uKlCxDknMailgMQliVKQ2aMYYSFuoMtmkhRZHxgjJTMSkTDSTSEQNyWYkYkoFoqRQhow
iYBumEVxwgQVE14hhtwsbwg9hRGTh3T/OWXKzfHe/P++7+d+nw/mzD3nc8699/0Z7r6+537u
+ZGGqQQpLUjh8augBJ0uwY3JLUGYNbkjpjcEtSZwxuSeqMwS1JnTG4JakzBrckdcbglqTO+vSa
03GcRx3kr2AbwBbvyMVEQzd2sQ3Ul3Gcdx3kr2AbwBbvyOVEQzd2sQ3Ul3GcRx3kr2AbwBbv
iYBumEVxwgQVE14hhtwsbwg9hRGTh3T/OWXKzfHe/P++e7+d+nw/mzD3nc8699/0Z7r6+537u
+ZGGqQQpLUjh8augBJ0uwY3JLUGYNbkjpjcEtSZwxuSeqMwS1JnTG4JakzBrckdcbglqTO/F+
NxrjGuL8KHJ7k0CR7AycDV4/pvSRpSoyrAHKu6r626r6AXAZcNyY3kuSVOf5ulKTGGaT
SNLz7OrHSc+clKTGGcyS1BmDW5I6Y3BLUmcMbknqjMEtSZ0xuCWpMwa3JHXG4JakzhjcktQZ
g1uSOmNwS1JnDG5J6ozBLUmdMbglqTMGtyR1xuCWpM4Y3JLUGYNbkjpjcEtSZwxuSeqMwS1J
nTG4JakzBrckdcbglqTO/F+U1ouXq9ZEgAAAABJRU5ErkJggg

1uSGmNwS1JjDG5JaozBLUmNMbglqTEGtyQ1xuCWpMYY3JLUmHndczLJfcDjwDPA9qo6MskBwO
XAIcB9wLuq6pH5lSlJ2mEh9rjfUFVrqurIfvkc4PqqOhy4vl+WJC2QcQyVnARc0s9fArx9DO8
hSUvWfIO7gC8muTXJ2r7t4Kra2s8/ABw8z/eQJI2Y1xg38Pqq2pLkpcB1Sb4+urKqKklN9cQ+
6NdOtU6StGupmjJXZ/9CyXnAE8CvAMdV1dYkK4AvV9W/mOa5C1OEJE2QqspU7XMeKknygiQv2
jEPvBnYCFwNnNZvdhpw1VzfQ5L0fHPe405yGPCX/eIy4H9U1flJDgSuAF4GfIfucMCHp3xkt97
glaSe72uNesKGS+TC4Jen5FnyoRJI0DINbkhpjcEtSYwxuSWqMwS1JjTG4JakxBrckNcbglqT
GGNyS1BiDW5IaY3BLUmMMbklqjMEtSY0xuCWpMQa3JDXG4JakxhjcktQYg1uSGmNwS1Jjlk23
QZKLgbcB26rqJ/q2A4DLgUOA++huCPxIkgAfA04Evgf8x6q6bTylazA/BPxz/LPfmoeBvx+6C
C2EaW8WnORngCeAz4wE9+8BD1fVh5OcA7y4qj6Q5ETgv9AF99HAx6rq6GmL8GbB7TgQ+DDwy8
A+A9ei2bkT+Dhw8dCFaKZ2dbNgqmraiW7PeuPI8r3Ain5+BXBvP/8nwClTbTfN65dTI9N7KJ6
m/K/R/26n+FGG/xw5zWjaVWbO9cvuwVW1tZ9/ADi4n18J3D+y3ea+7XmSrE2yPsn6OdagIbyR
GQywadH6SeBHhy5C8zXvf4JVVXMZ6qiqdcA6cKikWQV8GXhs4Dq0e/8SWD10EVpIcw3uB5Osq
KqtSVYA2/r2LfzTj8iqvk2T6n3AhqGL0G5dSvebhCbGXIdKrgZO6+dPA64aaT81nWOAx0aGVC
RJC2AmhwN+FjgOOCjZuCDdcMcVXJHkdOA7wLv6za+lO6JkE93hgO8eQ82StKRNG9xVdcouVr1
xim0LOGO+RUmSds1TKCSpMQa3JDXG4JakxhjcktQYg1uSGmNwS1JjDG5JaozBLUmNMbglqTEG
tyQ1xuCWpMYY3JLUGINbkhpjcEtSYwxuSWqMwS1JjTG4JakxBrckNWba4E5ycZJtSTaOtJ2XZ
EuSDf104si6c5NsSnJvkreMq3JBJWqpmssf9aeCEKdovqKo1/XQtQJIjgJOBH++f80dJ9lqoYi
VJMwjuqvo/wMMzfL2TgMuq6qmq+jbH61Glg+dBHSNKa9y/tunJnkVGA9cHZVPQK
sBL4yss3mvu15kqwF1s7j/aVZ2zt4JRC6PYpf2Gn9YcAW4KmRtseB3wOeBh4D/m78ZUq7Ndfg
vgj4HaD6xz8A3jObF6iqdcA6gCQ1xzqkGTkY+E/Aq4GfpwvuHdPOXrXTcgG/2M/fD3wz+O/A/
wW+N4ZapenMKbir6sEd80n+FLimX9xC921zh1V9m7THBXgx8J+BXwNWMLfDqEYD/uXAacApwB
fo9mBuBL4/32KlWZjT4YBJVowsvgPYccTJ1cDJSfZJcihwOHDL/EqUzu8g4P3P3AncB5dON1C3n
s697AvwX+ArgS+DeAv8JrT5l2jzvJZ4HjgIOSbAY+CByXZA3A1sB86o+qUKZo7/tZvtzmkZ4+
qmfGU7o0tVOB3wZextRDIQvpBcBbgZ+m+3HnVGDrmja4q+qUKZo/tZvtzwfOn09R0lyso
PvR5GeBF+3h934h8h8HN049+fBD4BPLuHa9DSMZ2j+jSqRFYyyVwOXDswHW8EvgI3bDMxwG/b
moc DG
41bxXdWPPRQxfS25cuvEMX3tuHLUcTyGuVqGkrgc/Rhfa4x7NnY2+68D4Tf7TUwjO41awfo9v
TPorFFdo7LAc+TBfei7E+tcvgVpNW0I1pH8PiDsV9gN8F/uvQhWiiGNxq0i8Cr2dxE+PiDsV9g
N8F/uvQhWiiGNxq0i8Cr2dxE2Px+9X9g7-x8F/uvQhWiiGNxq0i8Cr2dxh/YO+wFn
0X1DkBaCwa3mvBn4b0b0MXMUuHApfSjX1L82VwqynL6YYd9vRx2gvhKODEabeSpmdwqynHAT8
BFz9MN01015wdCFqHkGt5qxH90V/lrc297hp4E3DF2EmmdwqxlHM/WtmFHM/WtmFqyL3AG3Sny0lwZ3G
rCfnRj2/sNXcgC+DmGPzVfbTO41YSVwNuGLBLANoOH7oINc3gVhN+ick6dfwoutukSXNhcKs
Ja5isD+vLgAOHLkLNmqR/C5pQYTI/qJP0DUJ71iT+e9Cee TXwlqGLGIP3D12AmmVwa9hHbh+7k
lUkS4IChi1Czpg3uJKut3JJTmrbz8gyrVKuvk/7iR3JTmrbz8gyrVJvtk/vrhvT5ILk2xKckeS
V467cHZVHUF3Fc0zkhwLfDrJGuA9Ddq/YsNcX1WHAVcCfwhOB9qWlcKXTtw4lZ/dFTrrXXTtt
s7cHZVHUF3Fc0zkhwLfDrJmcANwD3AjcANwJ3AjcOcLZVHUF3Fc0zkhwLfDrJmcANwD3AjcAN

+CXAeXXCf1M8DfA74RJL0r6NJ87mhC9C0HBCdODPZ4ybJXsCtwCuATwLfAh6tqu39JpuBlf38
SuB+gKranuQx4EDgoQWsW0P5Ad2f7fTTXsOWo1naDjw7dBGarxn9La6qZ6pqDbAKOAp41XzfO
MnaJOuTrJ/va2kP+n3g+3ThrbY8C/xP4O6hC9F8zWiPe4eqejTJjcDrgP2TLOv3ulcBW/rNtg
Crgc1JlgE/AvzDFK+1DlgHkMQYaMW9dP/3PwDsN3Atmp2/Bj5Lt9etpk0b3EleAjzdh/Z+wJv
ofnC8EXgncBlwGnBV/5Sr++W/6dff4Pj2BNkO3M4//rohaY/LdJma5NV0Pz7uRTe0ckVV/XaS
w+hC+wDga8C/r6qnkuwL/DnwGuBh4OSq+ttp3sNgl6SdVFWmap82uPcEg1uSnm9Xwe2BQpLUG
INbkhpjcEtSYwxuSWqMwS1JjTG4JakxBrckNcbglqTGGNyS1BiDW5IaY3BLUmMMbklqjMEtSY
0xuCWpMQa3JDXG4JakxhjcktQYg1uSGjNtcCfZN8ktSW5PcleSD/Xtn07y7SQb+mlN354kFyb
ZlOSOJK8ddyckaSmZ9i7vwFPA8VX1RJLlwE1J/qpf9/6q+txO278VOLyfjgYu6h8lSQtg2j3u
6jzRLy7vp93d3Pck4DP9874C7J9kxfxLlSTBDMe4k+yVZAOwDbiuqm7uV53fD4dckGSfvm0lc
P/I0zf3bZKkBTCj4K6qZ6pqDbAKOCrJTwDnAq8C/hVwwAPCB2bxxkkrVJ1idZP8uaJWlJm9VRJV
X1KHAjcEJVbe2HQ54C/gw4qt9sC7B65Gmr+radX2tdVR1ZVUfOrXRJWppmclTJS5Ls38/vB7w
J+PqOceskAd4ObOyfcjVwan90yTHAY1W1dSzVS9ISNJOjSlYAlyTZiy7or6iqa5LckOQlQIAN
wK/1218LnAhsAr4HvHvhy5akpStVuztAZA8VkQxfhCQtMlWVqdo9c1KSGmNwS1JjDG5JaozBL
UmNMbglqTEGtyQ1xuCWpMYY3JLUGINbkhpjcEtSYwxuSWqMwS1JjTG4JakxBrckNcbglqTGGN
yS1BiDW5IaY3BLUmMMbklqjMEtSY0xuCWpMQa3JDVm2dAF9J4A7h26iDE5CHho6CLGYFL7BZP
bN/vVlpfvasViCe57q+rIoYsYhyTrJ7Fvk9ovmNy+2a/J4VCJJDXG4JakxiyW4F43dAFjNKl9
m9R+weT2zX5NiFTV0DVIkmZhsexxS5JmaPDgTnJCknuTbEpyztD1zFaSi5NsS7JxpO02AJNcl+
Wb/+OK+PUku7Pt6R5LXDlf57iVZneTGJHcnuSvJWX17031Lsm+SW5Lc3vfrQ337oFu7uu/PM
neffs+/fKmfv0hQ9Y/nSR7Jflakmv65Unp131J7kyyIcn6vq3pz+J8DBrcSfYCPgm8FTgCOCX
JEUPWNAefBk7Yqe0c4PqqOhy4vl+Grp+H99Na4KI9VONcbAfOrqojgGOAM/r/N6337Sng+Kr6
KWANcEKSY4CPABdU1SuAR4DT++1PBx7p2y/ot1vMzgLuGVmelH4BvKGq1owc+tf6Z3HuqmqwC
Xgd8IWR5XOBc4esaY79OATYOLJ8L7Cin19Bd5w6wJ8Ap0y13WKfgKuAN01S34AfBm4DjqY7gW
NZ3/7c5xL4AvC6fn5Zv12Grn0X/VlFF2DHA9cAmYR+9TXeBxy0U9vEfBZNOw09VLISuH9keXP
f1rqDq2prP/8AcHA/32R/+6/RrwFuZgL61g8nbAC2AdcB3wIerart/SajtT/Xr379Y8CBe7bi
GftD4NeBZ/vlA5mMfgEU8MMUktyZZ27c1/1mcq8Vy5uTEqqpK0uyhO0leCHweeG9VfTfJc+ta7
VtVPQOsSbI/8JfAquad6SvA3YVlW3Jjlu6HrG4PVVtSXJS4Hrknx9dGWrn8W5dGWrn8W5GnqPewuwem
R5Vd/WugeTrADoH7f17U31N81yutC+tKqu7Jsnom8AVfUocPdEML+SXbsyIzW/ly/+vU/Avz
DHi51Jo4Ffj7JfcBldMMlH6P9fgFQVVv6x210f2yPYoI+i7M1dHB/FTi8XSbsyKf3q+3Yo8+Of
rOd+7Wjv+8Ebqh+4HQxqapzq2pVVR1C9/+ohqr6dzTeL4AkL0AkL0jyoh3zwJuBjTT+WZyXoQfZgR
OBb9CNM/7PAluBp+nG0k6nGyu8Hvgm8CXggH7c2eTzeueAe+TzeueAewoZ9ObL1vwKuBr/X92gj8CXggH7b0B1F8y3gTuDIoevfTb9e9TzeueAe
woZ9ObL1vwKuBr/X92gj8CXggH7b0B1F8y3gTuDIoevfTb9eTzeueAe
woZ9ObL1vwKuBr/X92gj8Vt9+GHALsAn4C2Cfvn3ffnlTv/2eTzeueAe
Iyda/yzOZ/LMSUlqzNBDJZDZKkWTK4JakxBrckNcbglqTGGNyS1BiDW5IaY3BLUmMMbklqzP8HZ
q+idCpMyhgAAAAASUVORK5CYII=",
            "text/plain": [
              "<Figure size 432x288 with 1 Axes>"
            ]
          },
          "metadata": {
            "needs_background": "light"
          },
          "output_type": "display_data"
        }
      ],
      "source": [
        "# Drawing rectangle\n",
        "\n",
        "rectangle =
cv2.rectangle(img1,(200,100),(400,300),(0,255,0),6)\n",
        "plt.imshow(img1)"
      ]
    },
    {
      "cell_type": "code",
      "execution_count": null,
      "metadata": {
        "colab": {

```
        "base_uri": "https://localhost:8080/",
        "height": 286
      },
      "id": "HznJ5k5jM6Fe",
      "outputId": "ce6c452d-a2f6-483e-b5af-4d5286b5702a"
    },
    "outputs": [
      {
        "data": {
          "text/plain": [
            "<matplotlib.image.AxesImage at 0x7fe002ba21d0>"
          ]
        },
        "execution_count": 22,
        "metadata": {},
        "output_type": "execute_result"
      },
      {
        "data": {
          "image/png":
```
"iVBORw0KGgoAAAANSUhEUgAAAW4AAAD8CAYAAABXe05zAAAABHNCSVQICAgIfAhkiAAAAlw
SFlzAAALEgAACxIB0t1+/AAAADh0RVh0U29mdHdhcmUAbWF0cGxvdGxpYiB2ZXJzaW9uMy4yL
jIsIGh0dHA6Ly9tYXRwbG90bGliLm9yZy+WH4yJAAAeoUlEQVR4nO3dfbRV9X3n8ff3XhREbR
U91RseRKsZx3ZSQijoJDMVFGNsWlNFI0kjIxfpQxQ0aRJt12Ql42pndE2DXJZjRcHYBMXXHLKn
TjCKSJq4KiAYVNUSMqBDkmvgQEGGKK850/fr8Nh8u9nKd97j77nM/L9V2cs8/Tb3sOH/b57/Z
29wdERHRj46sByAiItVRcIuI5IyCW0QkQ0QkXTciI3l5o+AWEckZBbeISM40LLjjN7Tbz7YdE2
ka9johIu7FG9HGbWWSfwU2AqsBl4Epju7i/k/Z8wdERHRl46sBBAwsHj4HAq+ZXIOyAikjMpu
uEVEckbBbeISM4ouEVEckbBLSKSMwpuEZGcUXCLiOSMgltEJGcU3CIiOaPgFhHJGQW3iEjOKLh
FRHJGwS0ikjMKbhGRnFFwi4jkjIJbRCRnFNwiIjmj4BYRyRkFt4hIzii4RURyRsEtIpIzCm4Rk
ZxRcIuI5IyCW0QkZxTcIiI5o+AWEckZBbeISM4ouEVEckbBLSKSMwpuEZGcUXCLiOSMgltEJGc
U3CLiOaPgFhHJGQW3iEjOKLhFRHJGwS0ikjMKbhGRnFFwi4jkzJBBydZvfcXbbARwnZzCxcCng
V53//24bARwnzE4IfDbZmbAfOA8YCfw39z96cYMXTLTAfwu+mc/b94APnHU3obgBfAS8CgwIt7
XgJuAkV7vzMfCeAqsJawr6dXkWccTh0O+yMdbmMGuA9U+WhBsrsMl7j59gJvO6ue+Dnyx3HNKQ
H8JlbDKjtbHAVgKXAZAS+BK8FRQQOeK8CBK8FVjwWE943L88Mv+MYzMsF+CLsuo6ue/Nm+8L+
b94qsY8JQ6ppG7j2vl/mc/b8eCLZ7e/8MG4oue7u vl/6f/2VmN8gK4v4IfBKvSMfMmC8nMI7DU
wUWWCvb7iIhTa7md8zxYAWhC2SzZChZfHzzD1b7JvZQ9DUwUVYO9OiSExM5JdZ4kZQBFJ17vAS
AH7z2mc6YMXTKfEHjA1+Wjm1IFHOvdbH1vVK3fj+wdSJKGsyYdrLTAfwu+mc/b9/MyKHIOEpIS
```

EZgYh3jk7Y0UKtg47e8RwOHNPxVYP8z16xGLX9SjXrmuK8ws0sJmwpfdve3gZGE3eGJzXHZAc
xsNjC7jteXluaE8Db2dZvUv8PyUODD8ZkmErZxS50EbAHeL1m2HbgB+AB4lzTiVWeukfrUGtw
3A9cR/nZdB/wjVX6fdfeFwEIAM/MaxyEtL50z6RwH/BXwEeBP47Mk1depfa47occDwm8Xf0DY
Vv53YGdVo4B9c9pTCNs4Cm2pXk3B7e7bkstmdivwULy6hfBtMzEqLhOpQ9Jt0hMrWXbw8Dbga
OCvgb8EuqjtF2elAX8CMAOYDjxM2IJZCCfy6omdS94iko6ZfTppZV8nVPwOSjpNlwCVmNtTMTg
ROIfz8S6QOSbfJ3Hi9fLfJscBXgOeAbxDm69L8mfChwJ8A9wIPAH8MHHwvfN8z11yEjj0iNXP
3gxbh07aVMMW3mbCX6DuEvxPPEsK6q+T+fwe8DGwAPlXu+eNjXJWTWoLv/a+IM24wX7/DYZbD
ew47HLr7vd+l4JvAi+A+SLUdfDl4V7/jLjg84lB0eNLhhDZ6z1T11ICZWUmwNrqy/p+jqqIyD
wHzEN7bY+0L7y7wfwH/FYMX2H1rA/gc8I694y04PBxvXuUwpg3fM1WtNVBm6peTkjNOf8c2Gc
nt3E2Rj2c1rOjDwPWEaZkFFNijY49IA+jogJJTtwFXE+a5F3ABM5nUJB/nYcDfUOC3uQs4G4W
2pK05PukiNVnEcOZyKMZCFrCYbvY0wUe6lwJfYClvMYUjWEunukckZdl/ykVq9CGgch1nMgnhs
k7nMZzEzKWZ4bJNeClzCUlYymfE8zdNM4wpeb+mjrUgGst4xqZ2TOasm2dHVBf4jQufIbjr8V
rr9MN7z4ezwhcwa1I6SpLZR8LNj98jHeNI3McYdfCf4XL1nqhpKXSWqdKpJQmAO+4fmHswXMs
uHs8MPZ7vfSveghvc2Cj41do9MZNXe0E7qZ+AfavP3TFV9KbhV6VQThMA59N/yVwRfyCw/nO0
+nB1+K92+m45BCe2wpe0+iSf8NUb1e7+V4Ie26Xumqq0U3Kp0KuMQOAT8IQYO0SS8D+M9H8ZO
X8ishob3Ngo+hUcdij6RVf4aowbc0n8P/DNt+J6pai8FtyqdyjgEplL+BzbJtMlQdvlQdvktX
N6Q8N5GwSezwqHoE1jjrzK67GMeAT+8zd4zVe2l4FalUxmGwGHgD1BZqO6mw2/hch/Krr1b3n
uwhoT2eNYeMKc9UO0C/3QbvWeq+krBrUqnMgyBMwkdGl5h7aZj77TJYbyXWrfJQN0jldb3wY9
ok/dMVV8puFXpVEYhUM3Wdmntwfx+fxWuv1wtvvhbK87vPt2j1QyPdK3PgD/ZBu8Z6r6S8GtSqcy
CoGTwX9DbWGbVrdJL8fuDe2DDY9Y9UUve0wXumr8Gykz9clJy4bOUO971wAyYxW3M42oc40oWs
JiZVf08vpcC07mL5UxlIqu5l4sYVcfP2CcSTpMmUgsFt+TCOOr7sBrQzSLmM7fq8E5+xr6Cs5
jAWu7lIkazua6fsY8Bjqnj8dLeFNzS9IIx0PqgdODNZTE88tskcesoe26TvsUfu5SLGpHTmmlq
/QYhkPr+tOe6cVQbzpX8AvoPa5pL7q6TbZBg7D9ptso2Cn8VyT7pHXuGE1MZQBL+/hd8zVTql
OW7JraHA8BSfr5Pi3i1vw7maedzGLLzkPr0U+HO+ywrOZiJreIALGMurqYY3BgBGpPZu0m7LBb
WajzWylmb1gZs+b2dy4fISZLTezl+KfR8flZmY9ZrbRzJ41s/GNXgmRanVSZBa3MT+egPgqbm
RRPJ53LwU+zxKWcwW6n8wT3MS216RGRVFQwjdEFjI+XjwR+CpwG3ABcE5dfA1wfL58HfJ+wUXE
6sFpTJS1UGXztnkjjTvxbemyTw3jPF/DFvdMjSctfo157ZQu/Z6p0KrU+buBBwkn0NhDP7k4I
9w3x8i3A9JL7772fgrsFKoMQ+CMae8b20mObdLDbqzn2SD31I/AhLfqeqdKpVOA4a4zWws8FFgN
XCcu2+NN70BHBcvj4T9vldujsv6PtdsM1trZmurGY00n//c4OfvwPkT/oXf43mKdGN4n2dJXX
3alRgJnNDQV5BWVXFwm9kRwP3AVe7+q9YPGw2ezUv704+PmTHZFPM57/yAsM5X3+PmTHZFPM57
/yAsM5X3+ln9gEd3Vfair9RcwcgOfX1pXRcFtZocQQnuJuz8+r5+r5KZlwIx4eQZh7jtZfmnsLjkdeLdkSkWka
SShvZxzmMQq7mMaJ7KKJWdzGjVwaVWwYSEVuOitb5p70FddvEQt3HuEXuyuAl4BHgR8D76z6a5Yb
Hx/gbcRPgW+BwwQV0lLVQt01VSeuaa/rpHBuNBuitb+D1TpVOopIIjeQV01M/k04/k0R+G1X8N1X8gK
uaFdy5pqk22QYO1M/aYa7K4cZ5HgpTeY0UorL+n8OojIIgePB15F5Fuf6cZ20+G30u3D2ZHKmXQ2
2ge6TclnZfyZ30m2StArWMm3iwvArqofKRJvbWtLe6cVYZbb9eB76H6Le3Lee6cVYZbb9eB76H6Le3SY4+8zsi6tpT
7HtuklMm6TX4Kf0Cbvmaq+UleJKp3KMAK4NuoLrQr6R6ptp2m1QT3kXw/91G75mqvllJwq9p
DEPAwP87lfV014b2eNZWPaddrnbT4bdwuQ9llw9jp99Kt+/Byj7ubfCRbfSeqeoorBcrnco4B
ArgP6d8aDfqzDWlVemZdJIgqqv9P8842e89UtZeCW5VOZ0qqglCoAv8h/Qf2mfziIP76fy7v8aohoZ2UskOy9PZ7sPZ4M1X1
M3wEe34Xumqr0U3KpqglCoAv8h/Qf2mfziIP76fy7v8aohoZ2UskOy9PZ7sPZ4M3fM1X1
peBWpVNNEgIGfhX9l/R+QfsrrhZ64ZqABqNnkG/Hf1nqlqgqIEycwgiOeTAAuBdCvyMpfyYM
xnP09zLRZX4r9vJ09zLRZZZZEgIGfhX9l/R+QfsrrhZ64ZqAbqNnkG/Hf1nqlqgqIEycwgiOeTAAuBdCvyMpfyYM
xnP09zLRZmd2Dc5toljzKGHOfSwEed7LOZlPJMxSWtScEtu7aHA7dwJ8YBR93Nh1b+ITFvyC0
tw5tDDDfTEWxZlOSxpMfrJu+RUAfgucBawhlO5gON5NeMxBZ0UmcRihjGH8N3gRmBWxqOSVqL
glhxKQvscYBUwjaW8xjU0x/E/ngGmUeRdboN4bBOYRwhvnUlH6qfglpwpAHcCUwmhfRGwmSIw
H/gM8DhkMqO8C/h6HMMPGvUtvaA64mBPZ8oBv9tZN6aY5bcqQALAUmA08SQnv/81A/AqwHLgeuI
Jxfr9HbuLuAtYRfoD+/tFYxL7dqQviiBYBxQaPTFpWBa16o4GVhCNFp8g/Mjcu/c8lC
WPuZaw0bEB+KTaAVuoMmstKzg86rDHYa3DmIPev4NwyrN/AH+T6o8qWEn9BnwF+EVUcmztDof
LHXY57HTodrAWf89U9VbNfdxAFzA+/6af+59GmOYbCpxIOGlwp4K7RSqTECg4
48cc1IbRPqPixBv4h8BvAtxICvN8fPAjq1qPJLx3OrznIbxb9T1TpVE193SzVaaY7lc8mgBQ6
7y83cxeBEYe5CHnA0vd/X3gFmOYbCpxIOGlwp4K7RSqTECg4
7y83cxeBEYe5CHnA0vd/X3gFTPbCEwEnij3WiIHKgBLCN0jyfRI5S1/Dvwc+CpwMzAW+BJhsm
IM8J8J8qeI5fAz8A9hC+cn4HeBXXVEoEkX2ZkEkEkK2TZHMJ3SbGGEeXKRyVc1xm9lY4KPAauDjwBVmdil
hiu/L7v42IdRlTxsMwcPepEBHEvoHplK+Hf/s1DHj2teibUyu8CPtznPn8EPM3+ofwbwgc+fwbwgc+
nRnpIrCYENjzYnlc5qm8grS+ioPbzI4A7A7geucvdfmdnNwHWET9t1wD8CM6t4v4j6
R45i33dI1sO+ohq7f0qWeLfUn2FgTj7trJvhL0/0rkd7bCU5lT1l2RmhxBCe4m7PwDg7tvcfY
+7F4FbCdMhEP52jS55+Cj6+Rvn7gvdfYK7T6hnBaQVJd0jpdMj6YZ2c1hE6PM2QrfJTNNqqJU
+7F4FbCdMhEP52jS55+Cj6+Rvn7gvdfYK7T6hnBaQVJd0jpdMj6YZ2c1hE6PM2QrfJTNQqKJU

o+ykxs6R36UV3/1bJ8q6Su/0ZoQsLYBlwiZkNNbMTgVOANekNWVpbEtpnEiYtQp92a0qmSOay
L7wvQz/SkXIqmSr5OPAF4DkzWxeX/S0w3czGET59m4C/AHD3583sHkL74G7gi+6+J+2BSytKp
kcmA08B06hmR2Q+JTssIeyw7EE7LKWsrA/pqnbAnFXDWssKTjxzDaz2cn3arVcdDrMcdjhsj5
eb/T1TNboGykxNqEkTKD32yGrgQlp/S7uvZMtbxzaR8vSTd8lYaffIE7TujshKOGGKxAnTJvP
j8sWo20RKKbglQwXgLmAKoXvks7RvaJdaRNjS7mFfq6DCW/ZRcEtG+useyebMNc1pcfwzOTCV
ox/pSEJz3JKBZEt7MvBj2nNOu5zkF5bJyRh6qOL3bdLiFNwyyJJjjyTTIxdAk5y5pvkkOyx1J
h3Zn4JbBlHSPTKV9u0eqZa6TeRAmuOWQaLukdol3SYQtrrVbdLuFNwyCErPXLMGuBiFdi2SVk
GdSafdaapEGqxv98jFtO6xRwbD7YQ5b9i3w1LTJu1GwS0NVHrsEXWPpKNvt8l81G3SfhTc0iC
lZ65Zi7pH0lTabQJh3rs7u+HIoFNwSwOoe6TxkvCeG68nrYKaNmkH2jkpKUumR85G3SONpm6T
dqXglhSVdo+sRt0jgyUJ7x7UbdIeNFUiKSkN7adQ98hgS3ZYwr5uE/31blV6ZyUFx7Kve+Rp2
uPMNc2mv2ObXJbpiKRxFNxSJ3WPNI++xzaZj7pNWlMlJwseZmZrzOwZM3vezL4Zl59oZqvNbK
OZ3W1mh8blQ+P1jfH2sY1dBcnMmwV4r93PXNNsSrtN4oGpXu2GorpNWkklOyffB6a4+w4zOwR
43My+D3wJmOfuS83snwj/tN8c/3zb3U82s0uA6wlHyJdW0luAz90JL50No1fB8FY+G3velHSb
vH4jXNcDxxrMXAwd2mHZEqo8qe9wwiTmJOAXwJC4/Azg4Xj5YeCMeHlIvJ/pZMEtUktwthWcy
Sscis7EVc6ro5zdqJqxFs5yhu10hu4Klz/o0MmCc1QDZWZF7YBm1kloFTgZuAl4GXjH3XfHu2
wGRsbLI4mnMnH33Wb2LnAMIcAl7978LfjCd2DlZPjYU3DvRTBGW9pNa2Y8k86VC2BODxyyE4p
3ZjsmqVtFwe3ue4BxZnYU8D3g1Hpf2MxmA7PrfR4ZZP+0A/76Pth+JNw1HcbodGNNrbO4L7wX
Xwa/eBxeyHZIUj+LUxWVP8Ds68Au4GvA8XGr+gzgG+7+STN7OF5+wsyGAG8ABT/IC5lZdYOQ7
AwBTu2AvzgaRv0y69FIpfZ0wLKjYfkvYWvWg5FKuXu/e5XLbnGbWQH4wN3fMbPDCAeguB5YSW
jYXQrMAB6MD1kWrz8Rb3/sYKEtObMbWF+EKxXa+VIE9J61irJb3Gb2EeAOoJPQPniPu/8PMzu
JENojCMfs/HN3f9/MhgHfAT4KvAVc4u4/K/MaCnYRkT4G2uKeqqkqERTcIiiIHGii49ctJEZGc
UXCLiOSMgltEJGcU3CIiOaPgFhHJGQW3iEjOKLhFRHJGwS0ikjMKbhGRnFFwi4jkjMKbhGRn
Nwiljmj4BYRyRkFt4hIzii4RURyRsEtIpIzCm4RkZxRcIuI5IyCW4RkZxRcIuI5IyCW4RkZxRn
FFwi4jkjIJbRCRnFNwiIjmj4BYRyRkFt4hIzii4RURyRsEtIpIzCm4RkZxRcIuI5IyCW0QkZx
TcIiI5o+AWEcmZIVkPINoBbMh6EA1yLPCLrAfRhGsW0QkZxTcIiI5o+AWEcmGmW4F6Y9QAaqFXXrVXXC1p33bReLcLcPesxiIhI
FZpli1tERCqUeXCb2blmtsHMprNZVmPp1pmttjMes1sfcmyEWa23MxejX8enuUYy5nZWDN7zsx
MZnN/KDM7yF4wsw7zOzFZrbSZF4wsw7zH5sZG7jZ6J6/XNuPxEM1sdx3Yawm+eHZebmfXEdX3Wz
MZnN/KDM7PRZrbSzF4ws+fNbHrppMes1sfcmyEWa23Mxein8eHZebmfXEdX3Wz41Xn4y8Db3
YXH5uWVHFU62mH4y8Db3YXH5uWVHFU62uX6xq/RHwVW0wLrFqcT1gG9wHLgZeAdd98czY2rjpkdAdw8/8
DbQHe/fDxzJB4O3HbdrgzJ93wW2tmc4EXXm++mdd+OyXH5uWVHFUXRCQUXCLiOSMgltEJGcU3CIiOaP
gFhHJmf8PywBBMiBFmewAA
AAASUVORK5CYII=",
                    "text/plain": [
                        "<Figure size 432x288 with 1 Axes>"
                    ]
                },
                "metadata": {
                    "needs_background": "light"
                },

```
          "output_type": "display_data"
        }
      ],
      "source": [
        "# Drawing line\n",
        "\n",
        "line1 = cv2.line(img1,(200,100),(400,300),(0,0,255),4)\n",
        "line2 = cv2.line(img1,(200,300),(400,100),(0,0,255),4)\n",
        "plt.imshow(img1)"
      ]
    },
    {
      "cell_type": "code",
      "execution_count": null,
      "metadata": {
        "colab": {
          "base_uri": "https://localhost:8080/",
          "height": 286
        },
        "id": "3Ms_lsOeOJm4",
        "outputId": "4bffb527-6b78-4cdc-8fbc-f20349803f0a"
      },
      "outputs": [
        {
          "data": {
            "text/plain": [
              "<matplotlib.image.AxesImage at 0x7fe00293c210>"
            ]
          },
          "execution_count": 27,
          "metadata": {},
          "output_type": "execute_result"
        },
        {
          "data": {
            "image/png":
```
"iVBORw0KGgoAAAANSUhEUgAAAW4AAAD8CAYAAABXe05zAAAABHNCSVQICAgIfAhkiAAAAlw
SFlzAAALEgAACxIB0t1+/AAAADh0RVh0U29mdHdhcmUAbWF0cGxvdGxpYiB2ZXJzaW9uMy4yL
jIsIGh0dHA6Ly9tYXRwbG90bGliLm9yZy+WH4yJAAAcQUlEQVR4nO3df5RU5Z3n8fe3GwSMzi
rSgy0/RFEcrDOTkCyLOjoZMeIPJmdxEH/NTHQVw2xiAiZuVDJzErOZjNFzkFZrTxAwrKDH4K2q
OmGOWIJLJcI6gaFBBg2JEgbSiURECg9L93T+ep6Rsuqnqqq+9dz6vDzP6VtP3ap6rlX94fZz
v3WvuTsiIpKOpqqwHICIivaPgFhFJjIJbRCQxCm4RkcQouEVEIiHgUU3IzmMltEDKbhGRxCi4
RC4tNygFYXQAe919vJkNBe4BxgcvAvc/e3KhikiIgXV2OOe6O7j3H18cHMIPJmdxXRrbRz
K6r1euIiDQDQaq0Udt5k1Ay8Ak4DEnlY2M319U0SkC3e37vprFdwlKOjKxCm4RkcQo
sEtIpIYBbeISGIU3CIiiVFwi4gkRsEtIpIYBbeISGIU3CIiiVFwi4gkRsEtIpIYBbeISGIU3C
IiianompNmtgnYAXQAe919vJkNBe4BxgCbgAvc/e3KhikiIgXV2OOe6O7j3H18cHMIPJmdxXRr
bRzK6r1euIiIWGEamSWEyVTAEWxeVFwLk1eA0RkYZVaXA78AszW25mM8S+4eHpdFZwLk1eA0RE
IiianompNmtgnYAXQAe919vJkNBe4BxgICqXV2OOe6O7j3H18vH0dsNzdxwL
L420REamSWkyVTAEWxeVFwLk1eA0RkYZVaXA78Asze9LMzsS+4e7eHpdfA4ZX+BoiIlKkojlu
4FR332pmfwwsM7PfFN/p7m5m9fFN/p7m5m3t0DY9DP6O4+ERHpmbl3m6u9fyKz64GdwOeA09y
YA4E53/7aZHQHcC4wGXiGUA75V4rm0xy0i0kVPe9xVvm0xy0i0kVPe9xVvm0xy0i0kVPe9xVvm0x
4FR332pmfwwsM7PfFN/p7m5m3t0DY9DP6O4+ERHpmbl3m6u9fyKz64GdwOeA09yY
YA4E53/7aZHQHcC4wGXiGUA75V4rm0xy0i0kVPe9xVmyqphIJbRGR/VZ8qERGRbCi4RUQSo+A
WEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDEKbhGR
xCi4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUnMgFIrmNlC4DPANnf/s9g3FLgHGANsI
lwQ+G0zM2AuMBnYBfwPd3+qNkOXzDQB/xn9s5+at4A3sh6EVPjia4M3sh6EVPEPJiwWb2aeAncCPiwL7JuAtd/
+OmV0HHO7u15rZZMmiwOli28P3u15rZZMmw+YmaHFpaBM4F1wLxc4Di6EVPEPJiwWb2aeAncCPiwL7JuAtd/
+OmV0HHO7u15rZZMliwOniw80NZ4//73e4kxcHt6za/7WOZLsP0dqZZbWeMrOvf+wOd/f2uPwaMMc8CngL7JuAtd
```

1vTxzFIFqbshAvvAzeY2Qa3XRY+YlKftrXAxXfBiolwwnPw+ZVwZNaDkkqVnOMuxd29L1Md7j
4fmA+aKklKcydcvjAsz5ob2jsGx92a7bikGy3w/cXw6Okwfg3cNw1Gv5r1oKQK+hrcr5tZq7u
3m1krsC32bwVGFa03MvZJnjR3wvQFYfnLc+Crc+IdC9Dud71oAX4MTIITV8G9F8DozXp7cqKv
UyVLgEvj8qXAg0X9l1hwErC9aEpF8qTJ4YpbYeyXgUIx0XRUalIPWoA7gTOBx2DmtBDakh9lH
Di8C2gH3ifMWU8n1BYsB14EHgGGxnUN+D7wEvAsML7Mg5+ZHwRQK7MtZt9Br06ccThMd9gV2+
c8pHodjLUhW4vDcodOh1UOI3t4z9RSaD1lZsmpEne/uIe7Pt3Nug5cWeo5JW9uI/ybPQ9oI3z
mFgIqO+tfLcDdwETgSeACwr6W5I3+rpUq6CQE9cx4uw24LLvhNKTC9MhE4ClgGqADkXml4JYq
6SQcnPwSYY+7MOcttdcCLCb8EbwGOA94JdMRSW0puKWKCuE9ixDeNwNXEKZRpDaKqkd4HIV2Y
6i4jlvkwxwo1HTfTNjzBs1510JhT3sS8Bia024cCm6pkUJ4zyXMeRthb1zhXR3FByJXo9BuLA
puqaH4JR1Vm1RZ1+qR81FoNxbNcUsNFYJa1SbVM4zw1Yri6hF9uabRKLilxlRtUj2FOe3TUfV
IY1NwSz/ortpkOqo26Y1C9ciZqHpENMct/aSnapPb0Jx3KcXVI6vQnLYouKWfFVebzCP80adq
k54VH4hUaEug4JYMqNqkPDr3iHRPc9ySgeJqEyeE9+WZjqj+tPDh6pHzUPWIFCi4JSOFA5aF8
C4csJRQ8vdjQvXIk4TQ1gmjZB8Ft2RI1Sb7KxyILFSPTEXVI9KV5rglY8XVJnNo7GoTVY9IeR
TcUie6VpsYjXXAsuu5RxTa0jMFt9SR4mqTQng3QqlgcWivQdUjUkrJOW4zW2hm28xsXVHf9Wa
21czWxja56L7ZZrbRzDaY2Vm1GrjkUddzm8wlnNskz3PeXatHdOUaKa2cg5O3A2d30z/H3cfF
9jCAmZ0AXAT8aXzMD8ysuVqDlUbQ3blN8loq2PXcI1NRaEs5Sga3u/8KeKvM55sC3O3ue9z9Z
WAjMKGC8UlD6qlUsPZ73qNGwcCBNX8ZPnzlmtWo5E96o5I57i+a2SWEXYWr3f1tYAThcHjBlt
i3HzObAcyo4PUl15wQ3sa+apPKD1gedBAcfzyYwYQJMHXqh+8/9ljYuhX27NnXt2MH3HQTvP8
+bN8Or1acr7pyjVTI3Us2YAywruj2cKCZsMf+bWBh7P8e8PdF6y0AppXx/K6WSFuMf/BfJ864
/njdKxz+4LDL4XMOTb1+juHD8euvxx94AN+7F+/owDs7y/r4e2dnWL+jA9+0Cb/9dvyMM/CDD
+7LtrQ4POLQ6fCYw8icvmdq1Wg9ZmZfgrun+4DZwOyi+5YCJyu4c9QyCQHzEN67HHZ7ueFthg
8div/TP+FbtoTgLSeoy2l79uBLluDnnIMPHlzudrQ4LPcQ2o87jMrxe6ZWjVbV4AZai5a/TJj
XhnBQ8mlgEHAM8FugWcGdo5ZZCDR5COzdHgJ8uodA7379YcPwa67Bt24Ne9jVCuyubedO/OGH
8b/+a7y5+UDjH+b79rTXOBzdAO+ZWqWtz8FNqFVqB94nTMRNB+4AngWeAZbw4SD/R+AlYANwT
pn/MGT+P0itzJZpCDT5vmmTnR7Ce//1LrkkTGmUOxVSjbZjZjB75SGd7a2t24Wxx+4SG0n/B+De
3M3zO1SlpFe9y1bln/z1HrRcs8BArTJjti2xfera34Qw/h776b3cd5wwZ85ky8qakw3haHpQ7
usMphdAO+Z2p9bQputeq0ugmBQniHPe8RI5p85crMP8ruju/ejV91Fd7cXNjTdu+3A5F1/Z6p
9bb19CHT2QElUbcSDq8YI0dey333DeEv/iLrMQWDB8ONN8LMmecwYMBp6IRRUm06V4kkbAEjR
rzFffe9yoQJf8Dq6JvxBx0EN954J+6DmTfv53R0KLSlehTckqyjjnJ+8pMHmDCBugrtgoED9/
Kd78zHHHdraIMwKilROUyWSpNZWuOceOOmk+gztgkGD9IYYbYObM0uuKlEvBLUk6/3w49qisRyJ5oeCW5Jx5JvzzP2c9it455hhhYvYDjMfYtUSSEtSRk4MEw7HHpo1iPdj4YvvAF+MhHsh6JpvVQkT
YPLk0uuJlKLglqScdhp86UtZj6I+jB0LX/5y1qOoi60uuBh6l78aTAkChqZPcKdheHfuBbLckY
EchqVNwSzJOPBO7Z+5aTAkZPBHO7u5aTAkZPBiuvBIOOSTrkUjKFNyShCFDwtz2kF6Ry5wbBp5qY5sy9sy9yS9SgkZQ
puScKIEfCZz2Q9iuoYMACmT896FJIyBbck4cIIoTlHl52eMCFcJcFcJk2kLxTckoRx4+CMM7Ie
hiCOyHoWkKke/CpJXZvkK7YI8/QUh/SuHvw6SNx/7GJx1VtajqL6vfjXrEUiqFPxS9S8wYNCdQu
yRMzGDo061FIqkoGt5mNMrMVZvacma03s1mxf6iZLTOzF+PPw2O/mBp6iZLTOzF+PPw2O/mVmbmW00s2ff9Pw2O/mVmbmW00s2ff9
yRMzGDo061FIqkoGt5mNMrMVZvacma03s1mxf6iZLTOzF+PPw2O/mVmbmW00s2fM7JO13ggRk
UZSzh73XuBqdz8BOAm40sxOAK4D2nLYu5vА1wDjА2thnALVVftYhIAysZ3O7e7u5PxeUdwP
PACGAKsCiutgg4Ny5PAX7kwSrgMDNrrfrIpWHk4Us33RkwIDSR3urVHLeZjQE++AawHrt2IEXD00VmPQlJUNbjNbJTZKjN7
8X0eLtXg6V
rNWB4XB4bBc562JbY1/W5ZpjZGjNb08sxS4Opl2tJVtuIEXD00VmPQlJUNbjNbJTZKjN7
8X0eLtXeqwszuft8dx/v7uN78zhpPMuXZz2C2njlFXj6cx/wOx+/XCF
Ej8uS32bwVGFT18ZOwTEZEqKKeqxIAFwPPu/t2iu5YAl8EHi/ovidUlJwWHbi6ZURESkQu
UcGjkF+CzwrJk9HZ/7NvA94GEzuwJ4HbgsvvYocC6wEdgKXF7d4UpEpHoU3CIiBaLgFhEpEAW3
iEiBKLhFRApEwS0iUiAKbhGRAlFwi4gUiIJbRKRAFNwiIgWi4BYRKRAFt4hIgSi4RUQKRMEt
IlIgCm4RkQJRcIuIFIiCW0SkQBTcIiIFouAWESkQBbeISIEouEVECkTBLSJSIApuEZECUXCL
iBSIgltEpEAU3CIiBaLgFhEpEAW3iEiBKLhFRApEwS0iUiAKbhGRAlFwi4gUiIJbRKRAFNwiIgWi4Bb
Ej8uS32bwVGFT18ZOwTEZEqKKeqxIAFwPPu/t2iu5YAl8EHi/ovidUlJwHbi6ZURESkQu
UcGjkF+CzwrJmtjX9blmmNkaM1vTyzFLg6mXa0lW24gRcOiqNbnoGPPdd9WYyB91/1Xnr/BfJ864/njdKxz+4LDL4XMOTb1+
duHD8euvxx94AN+7F+/owDs7y/r4e2dnWL+jA9+0Cb/9dvyMM/CDD+7LtrQ4POLQ6fCYw8icvmdq1Wg9ZmZfgrun+4DZwOyi+5YCJyu4c9QyCQHzEN67HHZ7ueFthg8div/TP+FbtoTgLSeoy2l79uBLluDnnIMPHlzudrQ4LPcQ2o87jMrxe6ZWjVbV4AZai5a/TJjXhnBQ8mlgEHAM8FugWcGdo5ZZCDR5COzdHgJ8uodA7379YcPwa67Bt24Ne9jVCuyubedO/OGH8b/+a7y5+UDjH+b79rTXOBzdAO+ZWqWtz8FNqFVqB94nTMRNB+4AngWeAZbw4SD/R+AlYANwTpn/MGT+P0itzJZpCDT5vmmTnR7Ce//1LrkkTGmUOxVSjbZjZjB75SGd7a2t24Wxx+4SG0n/B+De3M3zO1SlpFe9y1bln/z1HrRcs8BArTJjti2xfera34Qw/h776b3cd5wwZ85ky8qakw3haHpQ7usMphdAO+Z2p9bQputeq0ugmBQniHPe8RI5p85crMP8ruju/ejV91Fd7cXNjTdu+3A5F1/Z6p9bb19CHT2QElUbcSDq8YI0dey333DeEv/iLrMQWDB8ONN8LMmecwYMBp6IRRUm06V4kkbAEjRrzFffe9yoQJf8Dq6JvxBx0EN954J+6DmTfv53R0KLSlehTckqyjjnJ+8pMHmDCBugrtgoED9/Kd78zHHHdraIMwKilROUyWSpNZWuOceOOmk+gztgkGD9IYYbYObM0uuKlEvBLUk6/3w49qisRyJ5oeCW5Jx5JvzzP2c9it455hhhYvYDjMfYtUSSEtSRk4MEw7HHpo1iPdj4YvvAF+MhHsh6JpvVQkTYPLk0uuJlKLglqScdhp86UtZj6I+jB0LX/5y1qOoi60uuBh6l78aTAkChqZPcKdheHfuBbLckYEchqVNwSzJOPBO7Z+5aTAkZPBHO7u5aTAkZPBiuvBIOOSTrkUjKFNyShCFDwtz2kF6Ry5wbBp5qY5sy9sy9yS9SgkZQpuScKIEfCZz2Q9iuoYMACmT896FJIyBbck4cIIoTlHl52eMCFcJcFcJk2kLxTckoRx4+CMM7IehiCOyHoWkKke/CpJXZvkK7YI8/QUh/SuHvw6SNx/7GJx1VtajqL6vfjXrEUiqFPxS9S8wYNCdQuyRMzGDo061FIqkoGt5mNMrMVZvacma03s1mxf6iZLTOzF+PPw2O/mVmbmW00s2fM7JO13ggRkUZSzh73XuBqdz8BOAm40sxOAK4D2nLYu5vА1wDjА2thnALVVftYhIAysZ3O7e7u5PxeUdwPPACGAKsCiutgg4Ny5PAX7kwSrgMDNrrfrIpWHk4Us33RkwIDSR3urVHLeZjQE++AawHrt2IEXD00VmPQlJUNbjNbJTZKjN78X0eLtXg6VrNWB4XB4bBc562JbY1/W5ZpjZGjNb08sxS4Opl2tJVtuIEXD00VmPQlJUNbjNbJTZKjN78X0eLtXeqwszuft8dx/v7uN78zhpPMuXZz2C2njlFXj6cx/wOx+/XCFEj8uS32bwVGFT18ZOwTEZEqKKeqxIAFwPPu/t2iu5YAl8EHi/ovidUlJwWHbi6ZURESkQuUcGjkF+CzwrJmtjX9blmmNkaM1vTyzFLg6mXa0lW24gRcOiqNbnoGPPdd9WYyB91/1Xnr/BfJ864/njdKxz+4LDL4XMOTb1+duHD8euvxx94AN+7F+/owDs7y/r4e2dnWL+jA9+0Cb/9dvyMM/CDD+7LtrQ4POLQ6fCYw8icvmdq1Wg9ZmZfgrun+4DZwOyi+5YCJyu4c9QyCQHzEN67HHZ7ueFthg8div/TP+FbtoTgLSeoy2l79uBLluDnnIMPHlzudrQ4LPcQ2o87jMrxe6ZWjVbV4AZai5a/TJjXhnBQ8mlgEHAM8FugWcGdo5ZZCDR5COzdHgJ8uodA7379YcPwa67Bt24Ne9jVCuyubedO/OGH8b/+a7y5+UDjH+b79rTXOBzdAO+ZWqWtz8FNqFVqB94nTMRNB+4AngWeAZbw4SD/R+AlYANwTpn/MGT+P0itzJZpCDT5vmmTnR7Ce//1LrkkTGmUOxVSjbZjZjB75SGd7a2t24Wxx+4SG0n/B+De3M3zO1SlpFe9y1bln/z1HrRcs8BArTJjti2xfera34Qw/h776b3cd5wwZ85ky8qakw3haHpQ7usMphdAO+Z2p9bQputeq0ugmBQniHPe8RI5p85crMP8ruju/ejV91Fd7cXNjTdu+3A5F1/Z6p9bb19CHT2QElUbcSDq8YI0dey333DeEv/iLrMQWDB8ONN8LMmecwYMBp6IRRUm06V4kkbAEjRrzFffe9yoQJf8Dq6JvxBx0EN954J+6DmTfv53R0KLSlehTckqyjjnJ+8pMHmDCBugrtgoED9/Kd78zHHHdraIMwKilROUyWSpNZWuOceOOmk+gztgkGD9IYYbYObM0uuKlEvBLUk6/3w49qisRyJ5oeCW5Jx5JvzzP2c9it455hhhYvYDjMfYtUSSEtSRk4MEw7HHpo1iPdj4YvvAF+MhHsh6JpvVQkTYPLk0uuJlKLglqScdhp86UtZj6I+jB0LX/5y1qOoi60uuBh6l78aTAkChqZPcKdheHfuBbLckYEchqVNwSzJOPBO7Z+5aTAkZPBHO7u5aTAkZPBiuvBIOOSTrkUjKFNyShCFDwtz2kF6Ry5wbBp5qY5sy9sy9yS9SgkZQpuScKIEfCZz2Q9iuoYMACmT896FJIyBbck4cIIoTlHl52eMCFcJcFcJk2kLxTckoRx4+CMM7IehiCOyHoWkKke/CpJXZvkK7YI8/QUh/SuHvw6SNx/7GJx1VtajqL6vfjXrEUiqFPxS9S8wYNCdQuyRMzGDo061FIqkoGt5mNMrMVZvacma03s1mxf6iZLTOzF+PPw2O/mVmbmW00s2fM7JO13ggRkUZSzh73XuBqdz8BOAm40sxOAK4D2nLYu5vА1wDjА2thnALVVftYhIAysZ3O7e7u5PxeUdwPPACGAKsCiutgg4Ny5PAX7kwSrgMDNrrfrIpWHk4Us33RkwIDSR3urVHLeZjQE++AawHrt2IEXD00VmPQlJUNbjNbJTZKjN78X0eLtXg6VrNWB4XB4bBc562JbY1/W5ZpjZGjNb08sxS4Opl2tJVtuIEXD00VmPQlJUNbjNbJTZKjN78X0eLtXeqwszuft8dx/v7uN78zhpPMuXZz2C2njlFXj6cx/wOx+/XCF
4CWgWcGdk5ZJCLQ4LPOwp73G4eiyH2sW9sBvuglvbEiyH2sW9sBvuglvbEiy
10Of/AQ3nl9z9Sq0Xr6IJZzseB2oD0u7zCz54ERwBeB3+lyn+ERvewP1lX0s3e
J1qZ8gzGm/Wvaj3eF3v4NrroFbboExY+Dqq+HWW7MeWcNRcEuyjjoKfvKTB5gwgboK7YKBA/fyne/Mxxx3a2iDMCopUTlMlkqTWVrjnHjjppJNOoK7YJBg/SGGG2DmzNLripRLwS1JOv98OPaorEchr06pd/3BtigYeu
J1qZ8gzGm/Wvaj3eF3v4NrroFbboExY+Dqq+HWW7MeWcNRcIuIFIiCW0SkQBTcIiIFouAWESkQBbeISIEouEVECkTBLSJSIApuEZECUXCLiBSIgltEpEAU3CIiBaLgFhEpEAW3iEiBKLhFRApEwS0iUiAKbhGRAlFwi4gUiIJbRKRAFNwiIgWi4BYRKRAFt4hIgSi4RUQKRMEtIlIgCm4RkQJRcIuIFIiCW0SkQBTcIiIFouAWESkQBbeISIEouEVECkTBLSJSIApuEZEC+X8fGxEqKHhNMwAAAABJRU5ErkJ

jR2+3pRNYEH/ORdUm0le9Kgc0szHAJ4DVwCnAF83sEmANcLW7v00I9VVFD9vCgYNepAfDCNUj
kwj/7l8IbO7zs738cmgrVoTbra1w/PEfXuev/gqeeurDofzee7B6dbW+rt4JLCQE9pzYPPZ5N
V5AGkDZwW1mhwD3A1e5+7tmdgvwLcKn7VvA/wHK/qaBmc0AZvRuuNI4CtUjn2Zf9Uh1z9DU3r
7/KVb/7d+q+hI9cPbtZd8MFE53eBsh2EUOrKy6JDMbSAjtxe7+AIC7v+7uHe7eCfxfwnQIhN+
uUUUPH0k3v3HuPt/dx7v7+Eo2QPKoBbibD0+P5PG0egsIdd4GzCPs96hUUEor+SkxMyN8wp53
9+8W9bcWrfY3QOGa1UuAi8xskJkdA4wFHq/ekCXfCqF9GvAUhTrtfCpMkcxiX3hfhr6kI6WUM
1VyCvBZ4FkzWxv7vgZcbGbjCJ++TcA/ALj7ejO7l1A+uBe40t07qj1wyaPC9MhE4ElgGr05EJ
mmwgFLCAcs29ABSymp6sWtfWjUQdmNWpmtZqVlLQ5Lfd+Xaw5cp52/1uRwhcNOhx1xud7fM7V
at54yUxNqUgeKzz2yGjiP/O9pd1XY89a5TaQ0nR1QMlZcPfIY+T0QWQ4nTJE4YdpkbuxfiKpN
pJiCWzLUAtwFnE6oHrmQxg3tYgsIe9pt7CsVVHjLPgpuyUh31SN9/3JN/iyMP+fF5uhLOlKgO
W7JQGFPeyLwaxpzTruUwjcsZxLCuo1efL9Nck7BLf2scO6RwvTIVOCVTEdUvwoHLAvhfTPhgK
U0OgW39KNC9cgkGrd6pLdUbSL70xy39BNVj/RdodoEwl63qk0anYJb+kHhQOREwtkPLkCh3Re
FUsHCAcvC2SgU3o1GUyVSY12rRy4gv+ce6Q+3Eea8Yd8BS02bNBoFt9RQ8blHVD1SHV2rTeai
apPGo+CWGim+cs0aVD1STcXVJhDmvadnNxzpdwpuqQFVj9ReIbxnxduFUkFNmzQCHZyUKitMj
5yBqkdqTdUmjUrBLVVUXD2yGlWP9JdCeLehapPGoKkSqZLi0H4SVY/0t8IBS9hXbaJf77zSOy
tVMIx91SNP0RhXrqk33Z3b5LJMRyS1o+CWCq16pH50PbfJXFRtkk/lXCx4sJk9bmZPm9l6M/t
m7D/GzFab2UYzu8fMDor9g+LtjfH+MbXdBMnMGy3wh0a/ck29Ka42iSememU6dKraJE/KOTi5
Bzjd3Xea2UBgpZn9HPgKMMfd7zazHxL+ab8l/nzb3Y8zs4uAGwlnyJc82dYCf3snvHgGjFoFB
+f5auypKao22XwzfKsNhhlcvhCadMAyF3p5Ud+DCZOYJwJvAgNi/8nA0ri8FDg5Lg+I65kuFp
yTthjn9RZn4nKHTmfCKueVkc5e1Oqxzb/CGbzLGbQ7LL/fpIsFJ9R6ysyyygHNrJlQKnAc8H3
gJeAdd98bV9kCjIjLI4iXMnH3vWa2HTiCEOCSujf+CD57B6yYCP/1SfjJ+TBae9p16/J4JZ0v
zYOZbTBwF3Teme2YpGJlBbe7dwDjzOww4KfARyt9YTObAcyo9Hmkn/1wJ3zhPthxKNx1MYzW5
cbqWnPnvvBeeBm8uRKey3ZIUjmLUxXlP8Ds68Bu4FrgyLhXfTJwvbufZWZL4/JjZjYAeA1o8Q
O8kJn1bhCSnQHAR5vgHw6Hkb/PejRSro4mWHI4LPs9tGc9GCmXu3d7VLnkHreZtQDvu/s7Zja
EcAKKG4EVhILdu4FLgQfjQ5bE24/F+x89UGhLYvYC6zrhSwrttHQCes/youQet5l9DFgENBPK
B+919/9tZscSQnso4Zydf+/ue8xsMHAH8AngLeAid/9tiddQsIuIdNHTHnevp0pqQcEtIrK/no
oJb35wUEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJD
EKbhGRxCi4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDElg9vMBpvZ42b2tJm
tN7Nxv7bzexlM1sb27jYb2bWZmYbzewZM/tkrTdCRKSRlf083dd5rZQGC1mf083vdV
d7+vy/rnAGNjOxG4J/4rIiIVKPtRuUD/UEZEpM6U+56yAw+b2RozW1DidT8HrIiIVKPtRuUD/U
EZEpE6U+56yAw+b2RosXPxW7BMRkQUSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJD
EKbhGRxCi4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+A
WEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDEKbhGR
xCi4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMg
ltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDElg8eMBpvZ4
+b2dNmtt7MxsXXB5vZw2b2s5ltMLPbar0RIiKNrOzn6b7Oa6U0WMj6nK57q7vf1+X9c4ExsZ2
InBP/FdERCpQ9qNygf6hjIhInSn3PWUHHjazNWa2oMTrfg5YEREkR9qNyifyiTh7mNmq2NbFf
jOzFWa2ExgX27iEJnDazjWb2jJl9spYbIiLSyMp+nu7rvFZKg4Wsz+m6t7r7fV3WOxMYG9uJw
D3xXxERqUDZj8oF+ocyIiJ1ptxH5Q7sx+ke6O73dVnvTGBsbCcC98R/RUSkAmU/Khfq
H8qIiNSZch+VO7AfpXugu9/XZb0zgbGxnQjcE/8VEZEKlP2oXKB/KCMiUmfKfVTuwH6c7oHuf
l+X9c4ExsZ2InBP/FdERCpQ9qNygf6hjIhInSn3UbkD+3G6B7r7fV3WOxMYG9uJwD3xXxERq
UDZj8oF+ocyIiJ1ptxH5Q7sx+ke6O73dVnvTGBsbCcC98R/RUSkAmU/KhfqH8qIiNSZch+VO7
Afp3uge9/XZb0zgbGxnQjcE/8VEZEKlP2oXKB/KCMiUmfKfVTuwH6c7oHufl+X9c4ExsZ2In
BP/FdERCpQ9qNygf6hjIhInSn3UbkD+3G6B7r7fV3WOxMYG9uJwD3xXxERqUDZj8oF+ocyIiJ
1ptxH5Q7sx+ke6O73dVnvTGBsbCcC98R/RUSkAmU/KhfqH8qIiNSZch+VO7Afp3uge9/XZb0z
gbGxnQjcE/8VEZEKlP2oXKB/KCMiUmfKfVTuwH6c7oHufl+X9c4ExsZ2InBP/FdERCpQ9qNy
gf6hjIhInSn3UbkD+3G6B7r7fV3WOxMYG9uJwD3xXxERqUDZj8oF+ocyIiJ1ptxH5Q7sx+ke6
O73dVnvTGBsbCcC98R/RUSkAmU/KhfqH8qIiNSZch+VO7Afp3uge9/XZb0zgbGxnQjcE/8VEZ
ym4RUQSo+AWEUmMgltEJDEKbhGRxCi4RUQSo+AWEUmMgltEJDH/Hzb/50Do/IG5AAAAAElFTk
SuQmCC",
                "text/plain": [
                    "<Figure size 432x288 with 1 Axes>"

```
            ]
          },
          "metadata": {
            "needs_background": "light"
          },
          "output_type": "display_data"
        }
      ],
      "source": [
        "circle = cv2.circle(img1, (300,200), 50, (255,255,0), -1)   #
(0,0,0)--->(R,G,B)\n",
        "plt.imshow(img1)"
      ]
    },
    {
      "cell_type": "code",
      "execution_count": null,
      "metadata": {
        "colab": {
          "base_uri": "https://localhost:8080/",
          "height": 286
        },
        "id": "c2iw1-0pOaJ1",
        "outputId": "0447ddc2-8327-49e2-d3ac-425405bb89ff"
      },
      "outputs": [
        {
          "data": {
            "text/plain": [
              "<matplotlib.image.AxesImage at 0x7fe002924c90>"
            ]
          },
          "execution_count": 28,
          "metadata": {},
          "output_type": "execute_result"
        },
        {
          "data": {
            "image/png":
```
```
"iVBORw0KGgoAAAANSUhEUgAAAW4AAAD8CAYAAABXe05zAAAABHNCSVQICAgIfAhkiAAAAlw
SFlzAAALEgAACxIB0t1+/AAAADh0RVh0U29mdHdhcmUAbWF0cGxvdGxpYiB2ZXJzaW9uMy4yL
jIsIGh0dHA6Ly9tYXRwbG90bGliLm9yZy+WH4yJAAAgAElEQVR4nO3deXhU9fn38fc9SSCgVA
ikGDbRR6x1Q5GHRRBBgbrVBZdKUfsggvoTXFu39mr7e7RFedoiAcFSAW1FsVhR5GdlE6tcCgg
oCiqLiCwG2ZElJJnM/fxxzgwzSSYzyUw4OZP7xXVVfmTlz5sz3zAyfnHzP95wjqooxxhj/CHjd
EMjdTGOW0SygHXAAGr8BEwWFU/T/uLGWNMA1NXXW9zdgA2qulFVS4EZwNXeRysGW6LubwW6x5t
sCW6LubwW6x5tZROzwTWOMQuBVVparpdRXcYYnICGEV69vjDF+VVfbvjDF+jP+XXVfmTlz5sz
3zAyfnHzP95wjqooxxhj/CHjd... (truncated base64)
```

Sy4Layqsd1xx13xIweeeutt5J+7htvvBF5XmlpqY4aNUoB7datm+7fvz/y2Pr16/WHP/xhwuU
9/vjjkT72UCikzz33nOfvT0OteJlpfdwm7dq3b8/9999PQUFBZFowGOTPf/4zn3/+OaWlpdU+
PxAIcPLJJ3PJPJJZfwxhtvsG/fPs4++2zuu+8+srKyIvNt3ryZ8ePHs3Xr1hq3sXnz5gwdOJBrr
702ZvrChQuZNWsu3f3fvrvb5rVu35qqrrmLRokVChEQUEBEBI0aM4PTTT4/Mp6pMjSJ5c
uXU1xcXOWy8vLyuuOuuu2jUqFFKWmFFhFhYdLr8tRTT9G9/f3+aNm1KaDLli1j6dKlDBg
wAIAOHTrQpk0bduzYEXdZjRRo1onPnzpE+dlWtUVvMMeL11rZtcWdO05eXl6ZgxY3TXxr2VhrGF
QiEtKSnRv//973rOOedUu5x27drp7t27NRgM6rp163T69OlaWlpaaZnl5eX63Xff6R/+8Ac94
YQTkmpjIBDQm2++Wd9//30//30tKyvTioLBoK5cuVIfff31Z2++tuabb2owGNQ9e/boj3
701/3Nb36jmzdvrnI0SGlpqb722mt60UUXVbm8Tp06af1+y4iOmjQIH399dd+boj3
99dd15MiR2rhx48hjo0aNirxvoaNirxvoVBIX375Zc3Kyoq0ZdmyZSmiVvoqbmV6H
tgV3ZlReXp6+/fbb1Y47jg6mM888M+6yxowZo0RywsrLy1VvoqbmV6H
Ycf1kAgUGk5PXr0iOxEDIVCOv14OxEDIVCun///piwi2f79u3au3fvSst79tlnY8J13rx5tfoMosdyh6tNmz
a6Zs2aSBuoHDmiZ599dtxlZkJ9J9KWsrIyHT58uOfrfYZZcasFtVVeVl5enb731VkzfZpy4+vbbbVa6+uuvvzty4bmRUPeDly51Ig+
9NBDlZbTu3fvKtuXzHpPnz49ZosY00eeffz7m+f3390/r5/Piiy/G0/r5790/r5/Piiy/
XGxtm/f3vPvV0OuuJlZ05Cti/L6zbGqfbVs2bTpu3Dg955xxzIjVq1ChdtWpVTi
itW7euym6TqoI73H0RvcyJEydqUVFRTOjNmjWryruDBAu3fv39keb1
69dI5c+bokSNHIvvr1bn3/+ee3cuXPkeb1690/+ee3cuXPkeb1
69dI5c+bokSNHIvn98803lcIrXnDv3r1bn3/+ee3cuXNkmUOGDNG9e/dG5tm/f3+1roeKwd21
a9e0fkY9evSI2fY9+7cKucbOHBgzPpMmz3x6ys3x6r2NXTo0fkY9evSI2fY9+7cKucb
Fu2bNELLrigynlPPfVUXbx4cWQbZ9WrVuqGDRvi8ONNTSo0bNmzu3rr79e5fyBvr389x0ms
n61VdfRR4vLS3VZ3r169e38u3jwVlUdPHhwzDz5+fn67rvvRrwxj5jCkiWR+cr
KyvSBBx6odNd5dd11zzzzTTVtnJkiWR+crKyvSBBx6odNd5dd11zzzzTTVtn
KyvSBBx6Iebyug7ugoEA3b94ceY3du3drly5dKs336quvxrxZmqqqGGbjvL6zbGq
fa1cuTLyNYnz0YDOpjz1W7fx9+vTRw4cPR55rmnYnYnDH26kXieeeeCJmp+AHH3yQ8SJm
/htt90W8xfBzp079zTTz65yho4e9/fqVVddBbd9o0adKkyrsDb4i1ZaZRo0ZxlixYsfmZ
aNip1//PjxMY/XdXXduf/zzz37NktexXzDhg3arrPLp/9+38aNKkyp5lixZErmfnfs
2Gx1dvnnn0+7du2qq9evX6+zZ8/WFStG6Ermfnfsnnn07+7du2qq9evX6+zZ8/WFstG6K
tgV3ZlReXp6+/fbb1Y47jg6mM888M+6yxowZo0RywsrLy1VvoqbmV6H
Ycf1kAgUGk5PXr0iOxEDIVCun///piwi2f79u3au3fvSst79tlnY8J13rx5tfoMosdyh6tNmz
a6Zs2aSBuoHDmiZ599dtxlZkJzJ9KWsrIyHT58uOfrfYZZcasFtVVeVl5enb731VkzfZpy4+vbbbVa6+uuvvzty4bmRUPeDly51Ig+
9NBDlZbTu3fvKtuXzHpPnz49ZosY00eeffz7m+f3390/r5/Piiy/G0/r5790/r5/Piiy/
XGxtm/f3vPvV0OuuJlZ05Cti/L6zbGqfbVs2bTpu3Dg955xxzIjVq1ChdtWpVTi
itW7euym6TqoI73H0RvcyJEydqUVFRTOjNmjWruFzw4cP1wMHDkTmHThwoO7fv1+3bduma9
69dI5c+bokSNHIvn98803lcIrXnDv3r1bn3/+ee3cuXNkmUOGDNG9e/dG5tm/f3+1roeKwd21
a9e0fkY9evSI2fY9+7cKucbOHBgzPpMmz3x6ys3x6r2NXTo0fkY9evSI2fY9+7cKucb
Fu2bNELLrigynlPPfVUXbx4cWQbZ9WrVuqGDRvi8ONNTSo0bNmzu3rr79e5fyBvr389x0ms
n61VdfRR4vLS3VZ3r169e38u3jwVlUdPHhwzDz5+fn67rvvRrwxj5jCkiWR+cr
KyvSBBx6odNd5dd11zzzzTTVtnJkiWR+crKyvSBBx6odNd5dd11zzzzTTVtn
KyvSBBx6Iebyug7ugoEA3b94ceY3du3drly5dKs336quvxrxZmqqqGGbjvL6zbGq
fa1cuTLyNYnz0YDOpjz1W7fx9+vTRw4cPR55rmnYnYnDH26kXieeeeCJmp+AHH3yQ8SJm
/htt90W8xfBzp079zTTz65yho4e9/fqVVddBbd9o0adKkyrsDb4i1ZaZRo0ZxlixYsfmZ
aNip1//PjxMY/XdXXduf/zzz37NktexXz Dhg3arrPLp/9+38aNKkyp5lixZErmfnfs
2Gx1dvnnn0+7du2qq9evX6+zZ8/WFstG6Ermfnfsnnn07+7du2qq9evX6+zZ8/WFstG6K
GTpkE5ePPAgixcvTtj9EvbCCy8wb968pOevjKkbNmyPuSxYsSK0sA3IOnTsUOTkhpeVpfUZ27
typAhQ3j77bd55513KCorqxCsrzLMjE3nnbd55513nlnnTNfQ+PHjo3q3y3+qT8u
uE3a3HzzzUyePDmv7kqI0ak91KjzZsc356abbkpkpq3k3kAgwMJE3nzzzTfT2oZUbnmyhaKiIjp27
AhA586d6d69e8yfcce+8ss4UXXkhqe+8d6dq16zLy+PPuSV4LLy/PPUcVGbTpKa0CfWkAE8Q888
QGDx4c896tW/yXbuW156KfVuW96Kf/sSWVpbZ9+u3zh1/YUT1MW0nXnaN096TTj3r79yst/
MmDEAjzzyCOFw2HPfP9yo79fP05CBIg0aFXGHG6tYzR9+vRxP4r39eFjqcPXNYWs3bt6sOO69
VX59Zkvv43jwnxrXE4sJ4LO7VvaoSZ6xmDxchhhNm+OWRBB0lJr2Pvs3Dv3+qytCzO69LtTz3X
l V59913+dOf/pS4KGZd4/9+bNlBjyrtLk8zGJ2TU3kUYnQQKKbt27bx9+vT09fSxJoexObNm9
1V59913+dOf/pS4KG RD4/9+bNlBjyrtLk8zGJ2TU3kUYnQQKKbt27bx9+vT09fSxJoexObNm9
+rxIGrvvp1YctvtewoOOIbX189x0mshi1VdfRR4vLS3VZ3r169e38u3jwVlUdPHhwzD
z5+fn67rvvRrwxj5jCkiWR+crKyvSBBx6odNd5dd11zzzzTTVtnJkiWR+crKyvSBB
x6odNd5dd11zzzzTTVtnKyvSBBx6Iebyug7ugoEA3b94ceY3du3drly5dKs336quvxr
xZmqqqGGbjvL6zbGqfa1cuTLyNYnz0YDOpjz1W7fx9+vTRw4cPR55rmnYnYnDH26kXieeee
CJmp+AHH3yQ8SJm/htt90W8xfBzp079zTTz65yho4e9/fqVVddBbd9o0adKkyrsDb4i1Za
ZRo0ZxlixYsfmZaNip1//PjxMY/XdXXduf/zzz37Nktex Xz Dhg3arrPLp/9+38aNKkyp5
lixZErmfnfs2Gx1dvnnn0+7du2qq9evX6+zZ8/WFstG6Ermfnfsnnn07+7du2qq9evX6+z
Z8/WFstG6K
DNXnyZN29e7d+8sknSXsCSecoMGGDdO1a9dWel7Xrl11wYIFGg6H41rXVV1ddfVVV13VGD

DPD8+2NVueJlr2iC/sVkicjvgYPAcKCvqhaJSAHwrqr+KMFz09MIUy9kZWVxww03xByNV15ez
owZM9i3b1/C5xcWFjJq1KjI/b59+7J69WpuvPHGyCW1wBlG99prr9WqXzYQCHDmmWfSp0+fmO
nLly/no48+SngYeyAQoFu3bnz88ccxw+uqm7979+6sXLkyqfnDmjZtyuDBgyP9+GGlpaW89NNJ
LCcfMJ2pT165dWb16dcJTFRhvqGrV41ZT2No+DmgWdfsD4FLg/wGPuNMfAcYksSzPf7NZ1Z+q
uMXdp08fz9tkZeVFxcvMVEaVtAZmuQcyZAMvqqerbIvvIR8E8RGQZ8A9yYwmsYY4ypoNbBraobg
c5VTN8NXJJKo4wxxsRnh7wbY4zPWHAbY4zPWHCbeuett96iuLgYgNWrV7NhwwaPW2RM/WKndT
X1znvvvceYMWPo06cP06ZN49tvv/W6ScbUK2kbx51SI2wct6lCs2bN7LqHpkGLN47bgtsYY+q
peMFtfdzGGOMzFtzGGOMzFtzGGOMzFtzGGOMzFtzGGOMzFtzGGOMzFtzGGOMzFtzGGOMzFtzG
GOMzFtzGGOMzFtzGGOMzFtzGGOMzCc/HLSJTgSuBHap6ljstD3gF6AhsAm5U1b3iX
Dl4HHA5cBj4P6q6sm6abjwTAP4X9mvfb/YAO71uhEmHhKd1FZE+wEHg71HBPQbYo6pPisgjQA
tVfVhELgdG4QR3d2CcqnZP2Ag7rat/tAQezIc2fWHwvyAr5HWLTDJ25MP4vvDtv+AF+8z8It5
pXVHVhIWzZb066v5aoMC9XQCsdW//FRhc1XwJlq9WPqnrfqBc8raSe1iZfLsSDCj2r37/+y5f
6bfQ+cwe+rlyIt5/j6ySqniZWds/dlurapF7ezvQ2r3dFtgSNd9Wd1olIjJCRJaLyPJatsF44
eqD8LNXQQXuKYRpQ52vmKmfduTD4JdhUT8443O4azGc6HWjTKpSvuakqmptujpUdTIwGayrxF
eyQnDbVOf2veOc2idw6nPetstUIR+emQ7vXAxdl8Or10OHzV43yqRBbYP7OxEpUNUiESkAdrj
TtwHto+Zr504zmSQrBMOmOLfvHwu/Gus+MAXb/K4v8oEXgQHQfQn880bosMU+ngxR266S2cAv
3Nu/AN6Imn6rOHoA+6O6VEwmCSjc/hx0uh8IDyYahg01qQ/ygZeAgcCHcM/1TmibzJHEjsOXg
SKgDKfPehjO2IKFwHpgAZDnzivAM8BXwGdAyR3fnq+E8AqyZrO0Z1eIZRzURimcNit4eqkej
1oa4OsfIWFCiGFJQrt4nxmVn6oeJmZsKtEVQfHeeiSKuZV4O5EyzSZZhrO7+zxQCHOd24qYMP
Ojq18YAbQDQ1gB3IizrWUUyjf1da9IghBPU97j3C4Gh3jwnQQp3j3/QDVgLXA7YjMlNZCsJs0CeHs
nByFs8Ud7vM2dS8fmI7zR7/By4DrgG09bZOqWBbdJo3B434sT3k8Dt+N0o5i6ETV6hGVYYaDcMK
Y/jNiaWAuEx3U/jbHmD9XnXhfCW9gDgQ6xPu+Gw4DZ1JBze43D6vAVna9zCOz2id0QuxUK7Yb
HgNnXIPUjHRpukWcXRIzdzgod2wWB+3qUPhoLbRJunTCufQiujRI3ZwTUNjwW3qmI02SZ9wn/b
F2OiRhs2C2xwDVY02GYaNNqnqM8OiRgdjoEWN93OYYiTfaZrW551I9OiRJViftrHgNsdY9GiT
8Th/9Nlok/iid0RaaBuHBbfxgI02SY6de8RUzfq4jQeiR5soTnjf5mmL6p98YkePXIeNHjFhFfHF
tzGI+EdluHwDu+wNM6QvxdxRo+swAltO2GUOcqC23jjIR+twIAltO2GUOcqC23jIRptUFt4RGR49MggbPWIqsj5u47Ho0S
ZjadijTWz0iEmOBbepJyqONhEa1g7LiucesdA28Vlwm3okerRJOLwbwlDB6NBejo0eMYkk7OM
WkakiskNEVkdN+72IbBORT9y6POqxR0Vkg4isFZGf1FXDTSaqeG6TcTjnNsnkPu+Ko0fsyjUm
sWR2Tj4PXFrF9LGqeq5bbwGIyBnATcCZ7nMmikhWuhprGoKqzm2SqUMFK557ZBAW2iYZCYNbV
d8D9iS5vKuBGapaoqpfAxuAbim0zzRI8YYK1v2Wd/v2kJNT5y9D7JVrlmJD/kxNpNLHPVJEbs
XZVHhQVfcCbXF2h4dtdadVIiIijgBEpvL7JaIoT3TsLROF7Bs1AhOOw1EoFs3EEfs3GDQo9vFTToF
t26Ck5Oi0AwdgzBgoK4P9+2FzyvlqV64xKVLVhAV0BFZH3H3W8NZOFssf8BmOpOnwDcHXfFOD6
JJavVj6p6pWjkXwjl3GPxurcrHFI4rDBcIVDjZbRujf7+9+hrr6HBIFpejoZCSX39NRRRy5i8vR
zdtQp9/Hu3fH23atDbrkq+wQCk8KFCuwz9zKzSUXEzszbBHe8x4FHg0ajH5gI9LbgzqDwJAV
EnvA8rFGuy4S2C5uWhv/kNunWrE7zJBHUyVVKCzp6NXnYZmpub7HrkKyxUJ7SXKbTP4M/MKh2
V1uAGCqJu34/Trw3OTslVQGPgZGAjkGXBnUHlWQgE1AnsYnUCfJg6gV71/K1aoQ89hG7b5mxh
pyuwK9bBg+hb6FXXIFmZVXX/lZ6dEt7ucJJDeAzs0q1ah3cOGOVioAyni64YcA/gM+AT4HZx
Ab5r4GvgLXAZUn+YvD8DbJKsjwNgYAe7TY5qE54V57v1ludLo1ku0LSUQcOoPPPnowUFVbU7X2
GeOqH9kR7T0Pb8M7NKpVLa4q7r8vrNsapBeR4C4W6TA24dDe+CAvTNN9Hvv/fu67x2LXrPPWg
gEG5vvsJcBVVYYotChAX5mVrUtUtC26r9FS9CYfweDtb3m3bBnTxYs+/yqqKKFhej992HZmWFt7RV
j9mOyHr9mVnVtOJ9yezsgMannsPZvSK0a/cwr77ahAsu8LpuOupuOeey8jO7oudMMqkm
52rxPjYFNq23cOrr26mW7dDSD06Mr5RI3iqqqZdQzwX8+H9TXm6hbdLHgtv4Vps2ysyZr9ysyZr9GtG/
UqtMNycoI8+eRkVKGGwEJxeQWNSZ10lxpcKCuCVV6BHj/oZ2mGNG8coI8+eRkVKGGwEJxeQWNSZ10lxpcKCuCVV6BHj/
oZ2mGNG8Po0XDPPYnnNSZFtzGl26
4AXr3rt+hHdakcYoI8+eRkVKGGwEJxeQWNSZ10lxpcKCuCVV6BHj/oZ2mGNG8Po0XDPPYnnNSZZFtzGl26
4AXr3rt+hHdakCdx7L7Rp43VLTKaw4Da+M3A+PPE63t9vY1IJwW18rk0bu7ZvzMmiIMzStu4yt9vYt9+0KfP67DaYW18rk0bu7ZvzMmiIMzStu4yt9
g678ELo18/rVhi/s+A2vtG9O9x2G7Rt63VLjMksFtzGFztkZ9F/BZZ9NH5jyqIMzStu4yt9
L554LgQz6tnboAC1bet0Ks7L27zc8IcWxn438FkmnPOgZ/8xOtWmGaM+VfuUVC4xfWXCbR9iKySEQ6C8IcWxn438FkmnPOgZ/8xOtWmM
C4xfWXCbeq9xY+fglUwiAnl5XrfC+FXC4BaR9iKySEQ+F5E1InKvOz1PRtzwt3uohIoYhsEJFo
YhsEJFPRaRLXa+EMcYoqQeBB1X1DKAHcLeI9AixEJFPRaRLXa+EMcYoqQeBB1X1DKAHcLeI9A
nAEga3qhap6rgb9krgb+rYwnQXEQKQ0t5y02BkwQeBB1X1DKAHcLeI9AnAEga3qhap6rg9
gHgC6AtcDDXwgjvbC8A17u2rgb+rYwnQXEQKQ0t5y02BkwQeBB1X1DKAHcLeI9A
RH7eIdATOA5YCrVW1yH1oO9Davd0W2BL1tC3utKY+5k9DavD0W2BL1tK3utIrLGiEiy0VkeQ3
Vhg/Sjq4ReR44F/Afar6ffRj6lyqqvUYVW71uR5puFZuNrH1oO9Davd0W2BL1tK3utIrLGiEiy0VkeQ3
5IKbhHJwQnt6ar6mjv5u3e3AXiDnGGGPSSJlrJJQJMAb5Q1b9EPbQ+IV7+x
fAG1HTb3VHTb3VHl/QA9kd1qRhjElRMrtGggG3AJ+IyCp32mPAn4F/isAVgw4Agw4BvgRvext4DLgQ3AYWB
oWltsjDENXMLgVtXFQLxLxsl5SxfwK3J1iu4yJ2LwVfK3J1iu4yJ2LwZPv0UOnf2uiXpowpvvul1K4xf2GTpt7b
vh3Wr/e6Fen3/vtet8D4lQ282Q92Q2t0bglYzKXBfxhcJKC/3uhXps2ABrF7tdSuMX9nAmw28WsuGX16/Yt
Al27vS6FemhCp9/DsXFXrfE+JUNvNnAmw28WvuGX16/YrAl27vS6FemhCp9/DsXFXrfE+JUNvNnAmw28Wv

1IjSpMm+YcNWlMbVlwG9/YtQsmTPD3Tsr9+21r26TOgtv4hio8+6wzPNCPwu0vsuOITYosuI2
v7NrldJn40Y4dMHFiZvTTG29ZcBtfUYUXXvDfwSvFxTB6NGyz062ZNLDgNr5TVAS/+52/htN9
9JHzl4JtbZt0sOA2vvTuu/DYY1BS4nVLqqfqnGflttv8vVPV1C8W3MaXVGH8eHj00RzKyrK8b
k6VnANtGnH99WIXTDBpZcFtfKu8PJ/x42fz8MNPUVpavy7eqApffPFjBg1awvr1t3ndHJNh6t
e33Zik5QMvEgwOoLCwGao5jB4dJDfX63Y5Vq+G668/lXXrTgOexjkz8nMet8pkCtviNj7khDY
MBJZQXn4ThYXFPPJI/dhhuWoVDBoE69a9CdznTh0L3E78U9sbkzwLbuMz+cBLwABgCXADsJVQ
CMaNg2uugcWLvdkRWFwMv/2t04YNG8JTnwPuxwnsccAw7L+dSZmqel44V4i38kNNRyP/QijnH
svXz1dYqBBSWKrQrsr52rRBf/c7dOdONBSq+6/w4cPoe++h112HilTVblEYpnBYoVhhuEKggX
xmVqlU3MxMIlTbA4uAz4E1wL3u9N/jXL39E7cuj3rOozjXnFwL/MSCO4PKsxDIV1igUK6wXKF
DtfMHAuiJJ6J//KMT4OX16Q/s0lJ04UL0hhvQJk0StT+gTmAXqxPgw9QJ9Ez+zKxSrVSCuwDo
4t5uBqwDzsAJ7l9WMf8ZwCqgMXAy8BWQZcGdIeVJCOQrzFdnS3u5wklJP1fE2QIfMwYtKnICP
JWt8FDIWcaCBejVV6PNmtVkPcLhfVjhkDrhnamfmVU6Kt4XMZmLBRcBRe7tAyLyBdC2mqdcDc
xQ1RLgaxHZAHQDPkz0WsZUlg9Mx7ku9Uc4fdqbk362Knz7LTz0EEyaBB07wgMPgAh06ABnn51
4GUeOOAf8lJfDmjXwj384p2U9cKCm6xICprg/x2GjTUxt1Wg4oIh0BM4DlgK9gJEiciuwHHhQ
VffihPqSqKdtpfqgNyaOVjijRwbg/N7/GbCl1kv7+munFi1y7hcUWGmnxc5z0UWwcmVsKJeWw
tKl6TpcPQRMxQnssW6pOO3T8QKmAUg6uEXXkeOBfwH2q+r2ITAIex/m2PQ78GUj6SAMRGQGMqF
lzTcMRHj1yCUdHj6T3DE1FRZVPsfqf/6T1JeJQjm5lPw2ET3c4DSfYjaleUuoOSRCQHJ7Snq+p
rAKr6naqWq2oI+BtOdwg4/1JuvBsAAAsmSURBVLvaRz29HVX8j1PVyaraVVW7prICJhPlAzOI
7R7JxNPqTcEZ5y3AeJztHhsqaBJL+C0REcH5hn2hqn+Jml4QNdu1QPia1bOBm0SksYicDHQCl
qWvySazhUO7L7CS8DjtzBTuIrmXo+E9FDtIxySSTFdJL+AW4DMR+cSd9hgwWETOxfn2bQLuAF
DVNSLyT5zhg0Hgbl0tT3fDTSYKd4/0A1YA11OTHZH+FN5hCc4Oy0sh6h6VJKO2DW2tR1INhN1Z
JVp0NLctXmKtHD66pfpx25lVA4XaFgwoH3Nv1/TOzquuKl5nWoWbqgehzjywFriPzt7QrCm95
27lNTGJ2dkDjsejRIx+SuTsik6E4XSSK020yzp0+FRttYqJZcBsP5QMvAxfjjB75GQ03tKNNw
dnSLuToUEELb3OUBbfxSFWjR2p/cE3mmer+HO+WYgfpmDDr4zYeCG9p9wM+pmH2aScSPsLyHp
ywLqQGGx7eZDGfBbbY6x8LlHwt0jg4BvPG1R/RXeYRkO76dxdliahs6C2xxD4dEjA2i4o0dqyka
bmMqsj9scIzZ6pPbCo03A2eq20SYNnQW3OQbCOyL74Zz94EYstGsjPFQwvMMyfDYKC++GxrpK
TB2rOHrkRjL33CPHwjScPm84usPSuk0aGgtuU4eizz1io0fSo+Jok3HYaJOGx4Lb1JHoK9csx
0aPpFP0aBNw+r2Hedcccc8xZcJs6YKNH6l44vO9l74eHClq3SUNgOydNmoW7R/pjo0fqmo02aa
gsuE0aRY8eWYqNHjlWWuuFdiI02aRisq8SkSXor8BGjxxr4R2WcHS0if33zzlT2yZo0aMXR0SM
raRhXrqlvqjq3yVBPW2TqjgW3SZGNHqk/Kp7bZBw22iQzJZOx4FwRWSYiq0RkYj8tzv9ZBFZ
KiIbROQVEWnkTm/s3t+gPt6xblfBeGZnPhxq6FeuqW+FeuqW+iIR5u4J6b6b6ZhiEbLRJJklm52QJcLGqH
hSRHGCxiPwbeAAYq6ozROQ+4Htk9XJpPsyIefvWr+0P7JdA0k6/G7/jA0k6/G7j
dRo022PA2PF0IrgdumQsB2WGaEGl7UtylOJ2Z3YBeQ7U7vVCcx1b88Ferq3s935xC4WnCE1HeW
7fKXfQoWQ0m2J8k07JYhVfazJtyu5h5XGxc7tsoBdLNhHFFS8zkxoOKCJZOEMFTgWeAb4C9qlq
0J1lK9DWdd0W91ImqhoQkQPuDTdvX84waWvd4wy9gUT84fwXMvAE62JZ2vXWbeyWdUePnkLIO
Qyhl7xtxk01lZUsGtquXAuSLSHgJnJ7qC4vICGBEqssxx9izB+G/XoUDzeDlwdDBLjdWr2WFjo
b31KGwazF87m2TTOrE7apI/gkivwWKgYeBE92t6p7A71X1JyIy1739oYhkA9r4YE92t6p7A71X1JyIy17
39oYhkA9uBfK3mhUSkZo0
w3skGTg/AHS2g3W6vW2OSVR6A2S1g/m4o8roxJlmqWuVe5YRb3CKSD5Sp6j4RaYJzAoqngngEU4
A3ZnAL8A3nCfmtu9/6H7+DvVhbbxmSCwOgSjLLT9JQTYZ5YpEm5xi8g5wAtAFs7wwX+q6v8Vk
VNwQjsP55ydN6tqiYjkAv8AzgP2ADep6sYEr2HBbowxFcTb4q5xV0ldsOA2xpjK4g3HTlpjD
E+Y8FtjDE+Y8FtjDE+Y8FtjDE+Y8FtjDE+Y8FtjDE+Y8FtjDE+Y8FtjDE+kzC4RSRX
RJaaJyCoRWSMi/1Of15YqSV5r8M6ORWd2CS+9Of15YqSV5r8M6ORWd2CS+9MYY0waJEm5xi8jYVzBbwYLRBbowxFcTb4q5xV0ldsOA2xpjK4g3HTlpjDE+Y8FtjDE+Y8FtjDE+Y8FtjDE+Y8FtjDE+Y8FtjDE+Y8FtjDE+Y8FtjDE+Y8FtjDE+Y8Fnsr1ugOsgsNbrRtRBzJ1vSBzJ1vSBzJ1vSBzJ1vSBzJ1vSBzJ1vSBzJ1vSBzJ1vSBzJ1vSBzJ1vSBzJ1vSBzJ1vSBzJ1vSBzJ1vSBznsr1ugOsgsNbrRtSRV
sAurxtRBzJ1vSBz183Wy19OivdAfQnutara1etG1AURWZ6J65ap6wWZu262XpnDukqMMcZnLL
iNMcZn6ktwT/a6AXVQ3uR/a6AXUk9cLMnfdbL09vcB/v6GX7ExELBH5WETmuSSPA9NUEblQRNaS
SPA9NUEblQRNaYY0waJEm5xi8jYVzBbwYLRBbowxFcTb4q5xV0ldsOA2xpjK4g3HTlpjDE+Y8
OASceojbURBB5U1TOAHsDd7mfj93UrAS5W1c7AucClItIDeAoYq6qnAnuBO78w4C97vSx7nz
12b3AF1H3M2W9APqp6rlRQ//8/l2sPVX1rICewNyo+48Cj3rZplquR0dgddT9tUCBe7sAWB+7sAZ5w6
chnIvKJiCx3p/n6u5gKT4NbRLJICCwNyo+48Cj3rZplquR0dgddT9tUCBe7sAZ5w6

wF+BwVXNV98LeAMYkEnrBjQFVgLdcQ7gyHanR76XwFygp3s7251PvG57nPVphxNgFwNzAMmE9
XLbuAloVWFaxnwXa1ped5W0BbZE3d/qTvO71qpa5N7eDrR2b/tyfd0/o88DlpIB6+Z2J3wC7A
DmA18B+1Q16M4S3fbIermP7wdaHtsWJ+1p4CEg5N5vSWasF4AC80RkhYiMcKf5/rtYW/XlyMm
MpaoqIr4duiMixwP/Au5T1e9FJPKYX9dNVcuBc0WkOTALON3jJqVMRK4EdqjqChHp63V76kBv
Vd0mIj8E5ovIl9EP+vW7WFteb3FvA9pH3W/nTvO770SkAMD9ucOd7qv1FZEcnNCerqqvuZMzY
t0AVHUfsAinC6G5iIQ3ZKLbHlkv9/ETgN3HuKnJ6AVcJSKbgBk43SXj8P96AaCq29yfO3B+2X
Yjg76LNeV1cH8EdHL3fDcCbgJme9ymdJgN/MK9/Quc/uHw9Fvdvd49gP1Rf+rVK+JsWk8BvlD
Vv0Q95Ot1E5F8d0sbEWmC02//BU6AX+/OVnG9wut7PfCOuh2n9YmqPqqq7VS1I87/o3dUdQg+
Xy8AETlORJqFbwMDGdX4/LuYEq872YHLgXU4/Yy/9ro9tWj/y0ARUIbTlzYMp69wIbAeWADku
fMKziiar4DPgK5et7+a9eqN06/4KfCJW5f7fd2Ac4CP3fVaDfzWnX4KsAzYAMwEGrvTc937G9
zHT/F6HZJYx77AnExZL3cdVrm1JpwTfv8uplJ25KQxxviM110lxhhjasiC2xhjfMaC2xhjfMa
C2xhjfMaC2xhjfMaC2xhjfMaC2xhjfMaC2xhjfOb/AxmkxW0vp8UvAAAAAElFTkSuQmCC",
            "text/plain": [
              "<Figure size 432x288 with 1 Axes>"
            ]
          },
          "metadata": {
            "needs_background": "light"
          },
          "output_type": "display_data"
        }
      ],
      "source": [
        "# Text on image\n",
        "\n",
        "text = cv2.putText(img1, 'openCV', (200,50),
cv2.FONT_HERSHEY_SIMPLEX, 2, (255,255,255),5)\n",
        "plt.imshow(img1)"
      ]
    },
    {
      "cell_type": "code",
      "execution_count": null,
      "metadata": {
        "id": "FRdBaXm-Phkd"
      },
      "outputs": [],
      "source": [
        "# Reading the image\n",
        "\n",
        "img = cv2.imread('/content/boy.jpg',1)\n",
        "plt.imshow(img)"
      ]
    },
    {
      "cell_type": "code",
      "execution_count": null,
      "metadata": {
        "id": "52mgU4MFRm1B"
      },
      "outputs": [],
      "source": [
        "# Convert BGR to RGB\n",
        "\n",
        "img_rgb = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)\n",
        "plt.imshow(img_rgb)"
      ]
    },
```

```
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "id": "39l-qB_ISwzn"
  },
  "outputs": [],
  "source": [
    "# Convert BGR to Gray\n",
    "\n",
    "img_gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)\n",
    "plt.imshow(img_gray)"
  ]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "colab": {
      "base_uri": "https://localhost:8080/"
    },
    "id": "INwmbSpVXQSa",
    "outputId": "f9320227-5de9-41fc-fe8f-c67d85fa0bd0"
  },
  "outputs": [
    {
      "data": {
        "text/plain": [
          "(983, 736, 3)"
        ]
      },
      "execution_count": 36,
      "metadata": {},
      "output_type": "execute_result"
    }
  ],
  "source": [
    "# Finding shape\n",
    "\n",
    "img_rgb.shape"
  ]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "colab": {
      "base_uri": "https://localhost:8080/"
    },
    "id": "bbzGSiu_aDCi",
    "outputId": "04d60900-479c-4991-a29a-d7a11bbe1414"
  },
  "outputs": [
    {
      "data": {
        "text/plain": [
          "(983, 736)"
        ]
    }
```

```json
      },
      "execution_count": 46,
      "metadata": {},
      "output_type": "execute_result"
    }
  ],
  "source": [
    "img_gray.shape"
  ]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "id": "PVKBRnhZTBeW"
  },
  "outputs": [],
  "source": [
    "# Resize the image\n",
    "\n",
    "resize = cv2.resize(img_rgb,(500,1000))\n",
    "print(resize.shape)\n",
    "plt.imshow(resize)"
  ]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "id": "rkVwvG2VXgSr"
  },
  "outputs": [],
  "source": [
    "# Image crop\n",
    "\n",
    "crop = resize[130:370,150:300]\n",
    "plt.imshow(crop)"
  ]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "id": "ML4ZsM_gY8wH"
  },
  "outputs": [],
  "source": [
    "# Edge Detection\n",
    "\n",
    "edge = cv2.Canny(img_rgb,100,200)\n",
    "plt.imshow(edge)"
  ]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "id": "lFUHj9RpZviO"
```

```
    },
    "outputs": [],
    "source": [
      "# Blur image\n",
      "\n",
      "r = resize[130:370,150:300]\n",
      "blur = cv2.GaussianBlur(r,(13,13),cv2.BORDER_DEFAULT)\n",
      "plt.imshow(resize)\n",
      "plt.imshow(blur)"
    ]
  }
  ],
  "metadata": {
    "colab": {
      "provenance": []
    },
    "kernelspec": {
      "display_name": "Python 3",
      "name": "python3"
    },
    "language_info": {
      "name": "python"
    }
  },
  "nbformat": 4,
  "nbformat_minor": 0
}
```