OV7670 ARDUINO CAMERA SENSOR MODULE FRAMECAPTURE TUTORIAL

By mybotic (/member/mybotic/) in Technology (/technology/) > Arduino (/technology/arduino/) 113.831 118 75 Featured

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(/member/mybotic/)
By **mybotic (/member/mybotic/)**
Mybotic (http://www.mybotic.com.my)
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Intro: OV7670 Arduino Camera Sensor Module Framecapture Tutorial

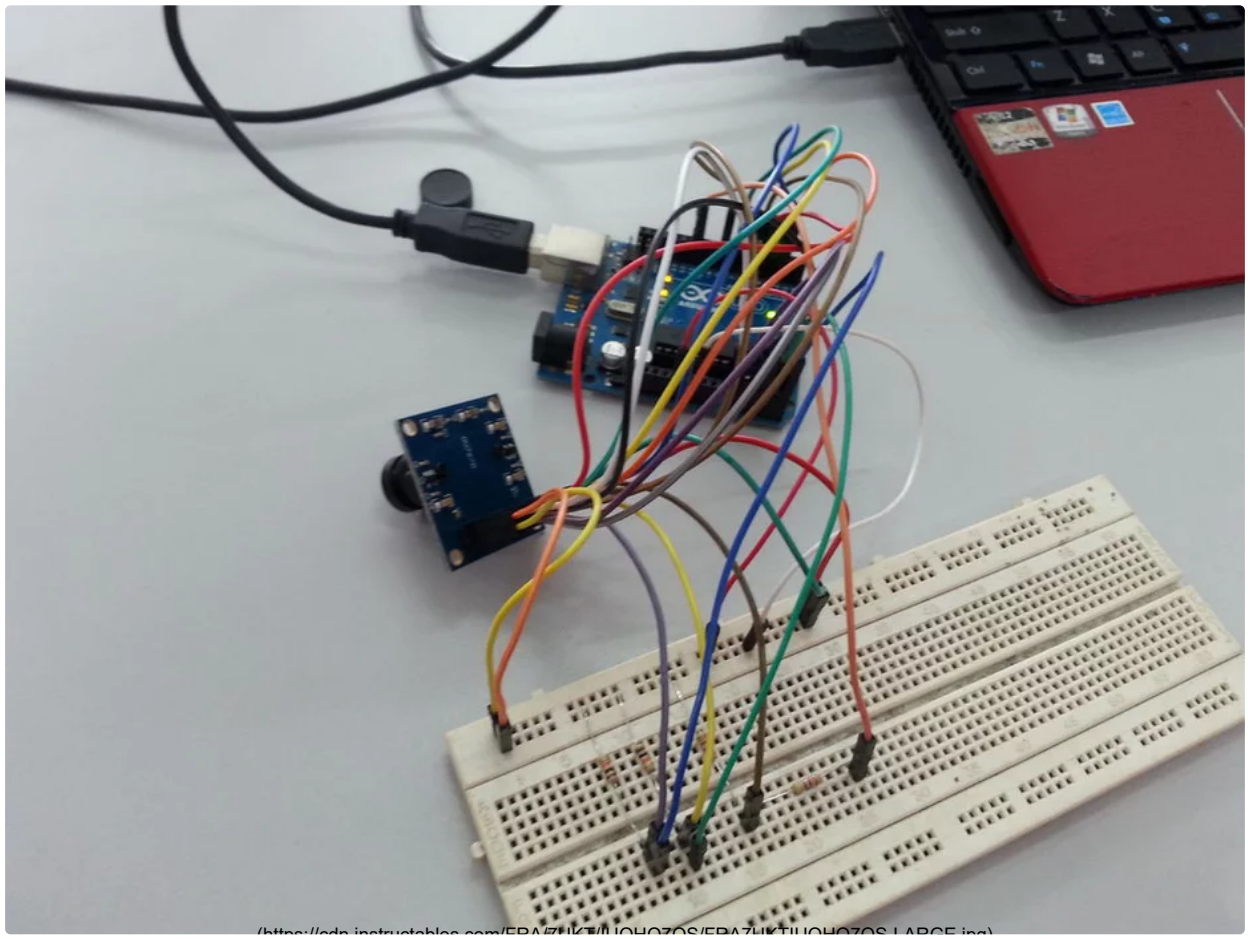
Description

The camera module is powered from a single +3.3V power supply. An external oscillator provide the clock source for camera module XCLK pin. With proper configuration to the camera internal registers via I2C bus, then the camera supply pixel clock (PCLK) and camera data back to the host with synchronize signal like HREF and VSYNC. The OV7670 camera module is a low cost 0.3 mega pixel CMOS color camera module, it can output 640x480 VGA resolution image at 30fps. The OV7670 camera module build in onboard LDO regulator only single 3.3V power needed and can be used in Arduino, STM32,Chipkit, ARM, DSP , FPGA and etc.

Specification

- Optical size 1/6 inch
- Resolution 640x480 VGA
- Onboard regulator, only single 3.3V supply needed
- Mounted with high quality F1.8 / 6mm lens
- High sensitivity for low-light operation
- VarioPixel® method for sub-sampling
- Automatic image control functions including: Automatic
- Exposure Control (AEC), Automatic Gain Control (AGC), Automatic White Balance (AWB), Automatic
- Band Filter (ABF), and Automatic Black-Level Calibration (ABLC)
- Image quality controls including color saturation, hue, gamma, sharpness (edge enhancement), and anti-blooming
- ISP includes noise reduction and defect correction
- Supports LED and flash strobe mode
- Supports scaling
- Lens shading correction
- Flicker (50/60 Hz) auto detection
- Saturation level auto adjust (UV adjust)
- Edge enhancement level auto adjust
- De-noise level auto adjust

Step 1: Material Preparation

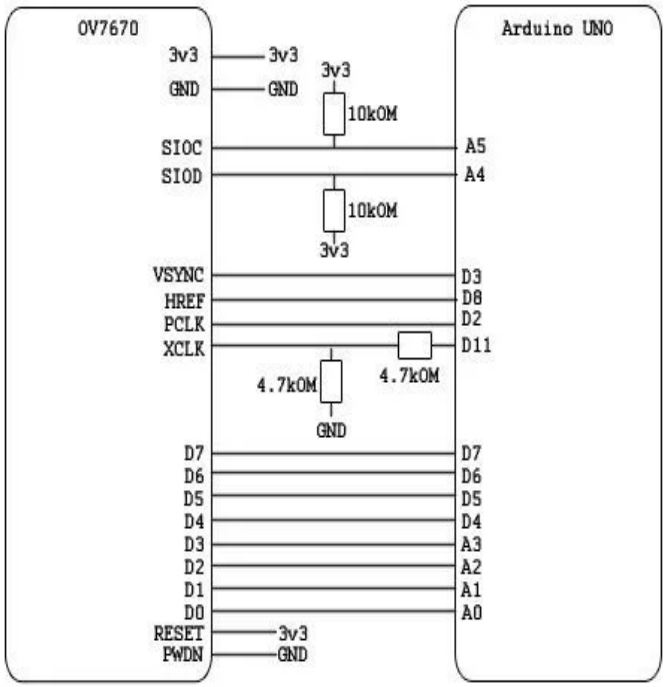


In this tutorial, you will need :

1. Arduino Uno Board and USB
2. OV7670 Arduino Camera Sensor Module STM32
3.10K resistor X 2
4. 4.7K Resistor X2
5. Breadboard

and you will be using Arduino IDE and Java.

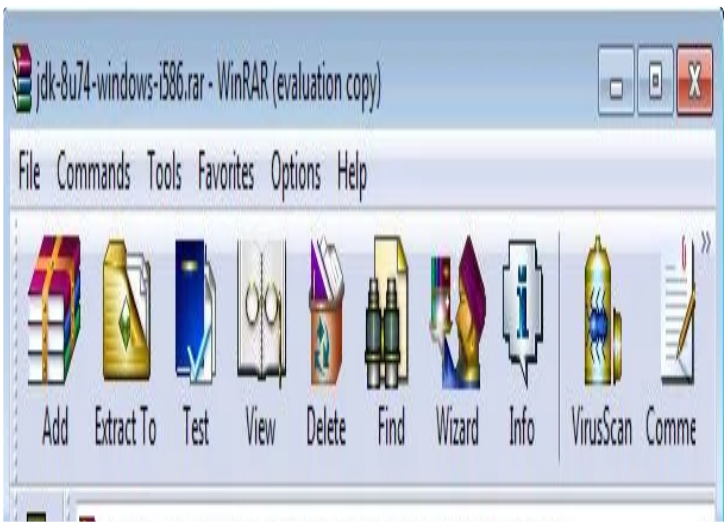
Step 2: Pinout Connection

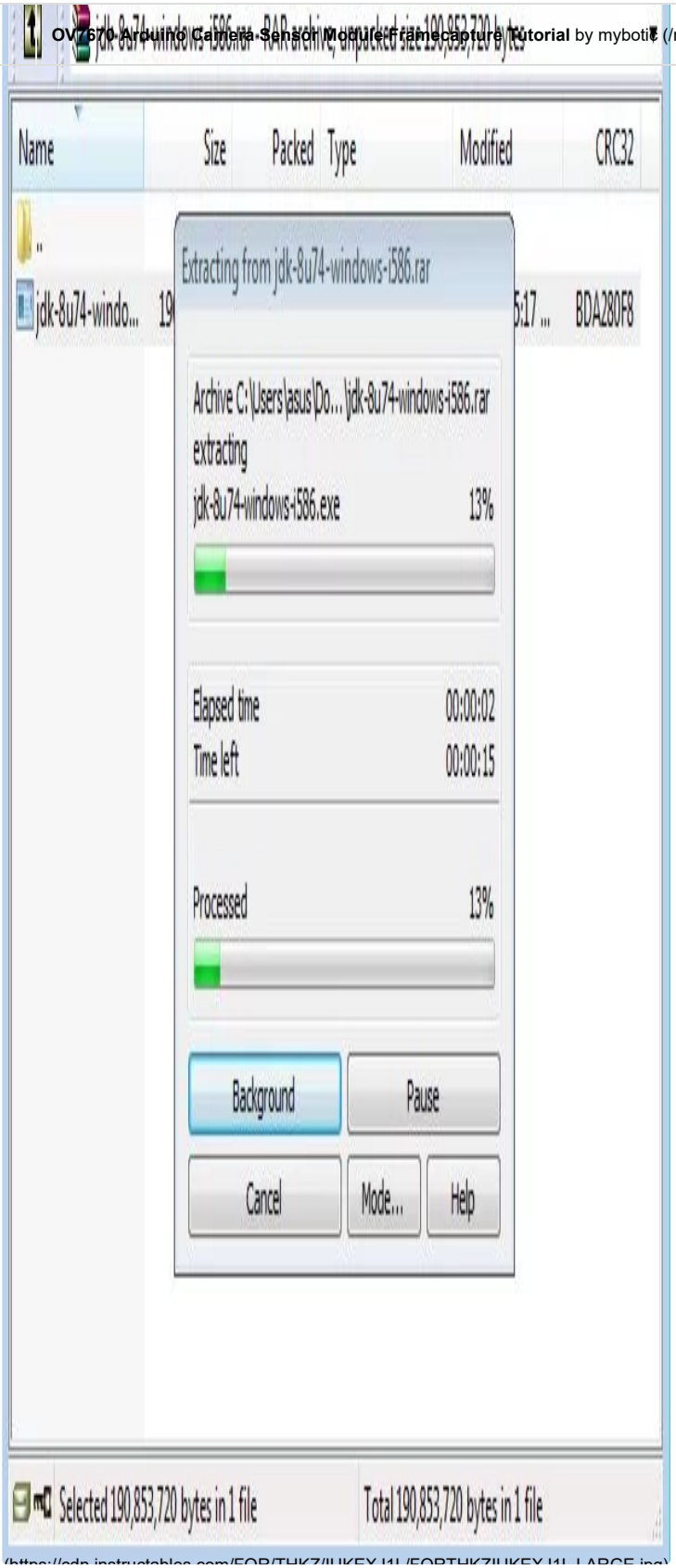


Pin	Type	Description
VDD**	Supply	Power supply
GND	Supply	Ground level
SDIOC	Input	SCCB clock
SDIOD	Input/Output	SCCB data
VSYNC	Output	Vertical synchronization
HREF	Output	Horizontal synchronization
PCLK	Output	Pixel clock
XCLK	Input	System clock
D0-D7	Output	Video parallel output
RESET	Input	Reset (Active low)
PWDN	Input	Power down (Active high)

Connect your circuit as illustrated on the picture above.

Step 3: Java



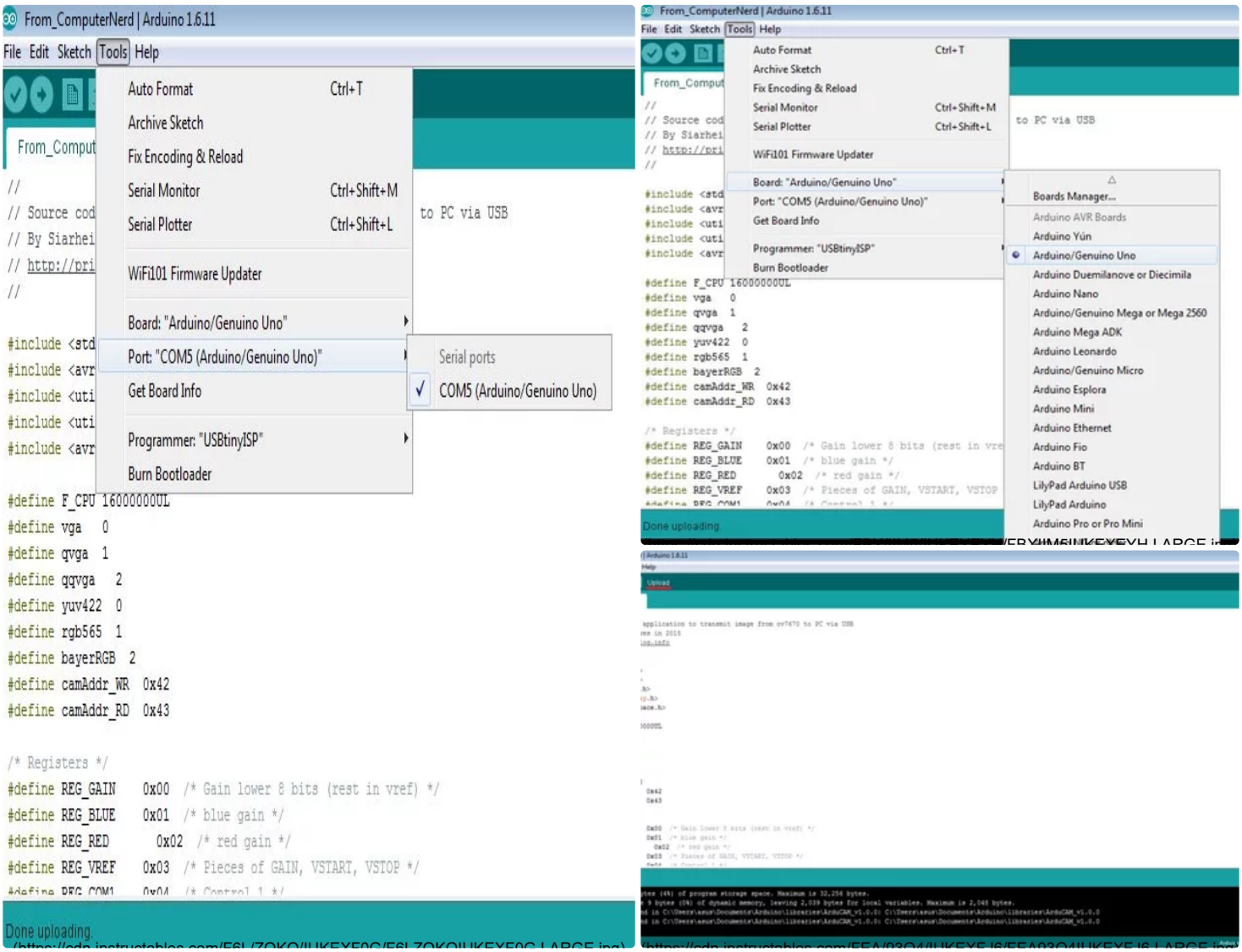


You have to download this to be able to interface this camera sensor module on your pc.Open the zip file and install to your computer. By default, this will be install to your c drive in your program files folder. As for mine, it is stored in C:\Program Files\Java\jdk1.8.0_74. You can refer picture above.

NOTE : This jdk-8u74-windows-i586.rar file is quite big.

jdk-8u74-windows-i586. Download (https://cdn.instructables.com/ORIG/FDI/07P7/IUOHOM44/FDI07P7IUOHOM44.rar)
(https://cdn.instructables.com/ORIG/FDI/07P7/IUOHOM44/FDI07P7IUOHOM44.rar)

Step 4: Sample Source Code



This sample source code is originally from this link (https://github.com/ComputerNerd/ov7670-no-ram-arduino-uno). Download this sample source code, open it on your Arduino IDE, connect your Arduino Uno Board to your computer and upload it. Select the correct board and port before uploading this source code. Refer image above for help.

NOTE : Don't mind that it does not recognize some libraries in the beginning of the file. If it bothers you, comment the whole line out with //

From_ComputerNerd.rar Download (https://cdn.instructables.com/ORIG/FFJ/OFFW/IUKEXDI3/FFJOFFWIUKEXDI3.rar)
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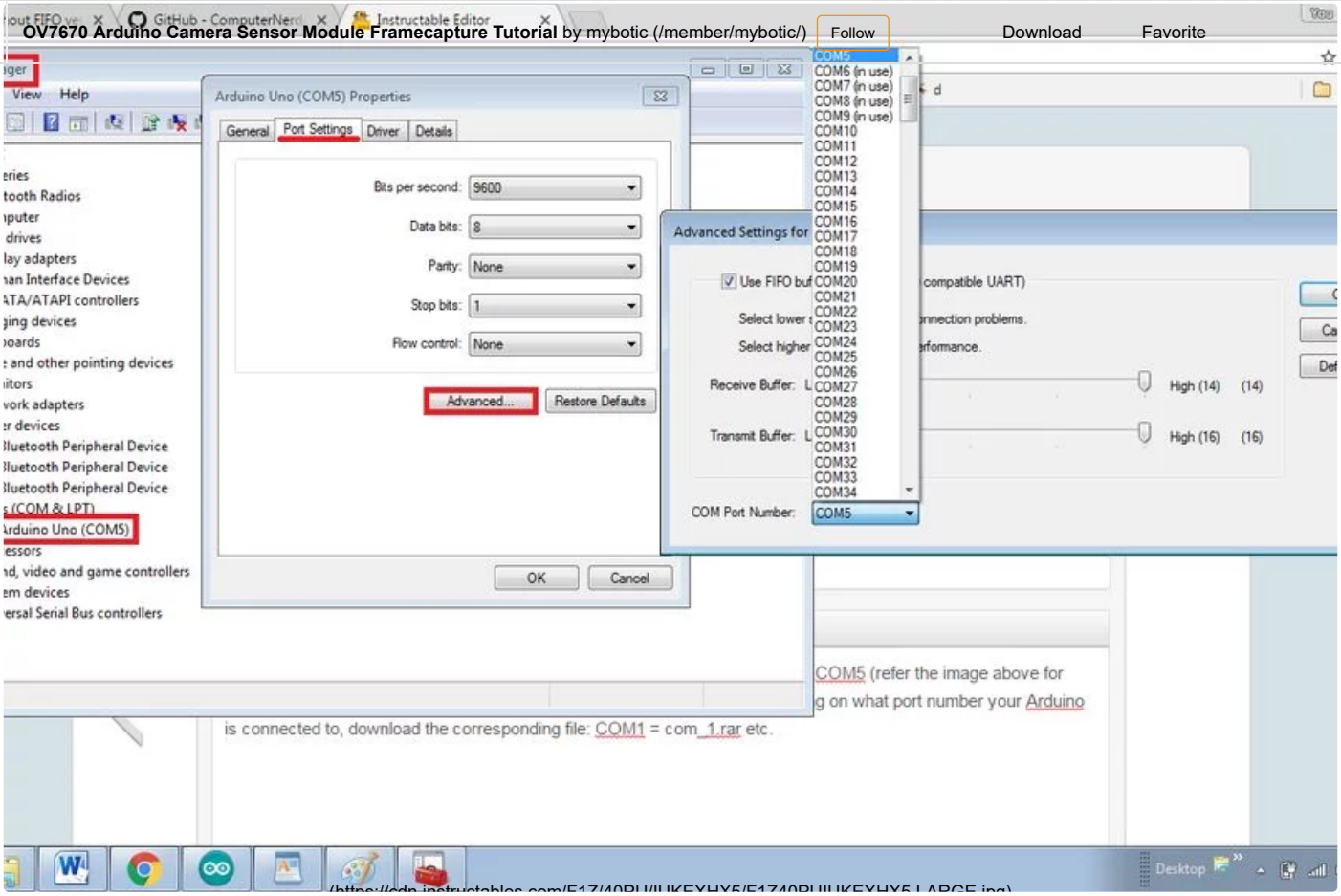
Step 5: Checking Your Port



Find out what USB port your Arduino is connected to, something like COM4 or COM5. You could check it on your Control Panel > Device Manager > Ports (COM & LPT) > right click > Properties > Port Settings > Advanced > COM Port Number > /Select Your Port Number/. You can refer the image above for help. As for mine, it is port COM5.

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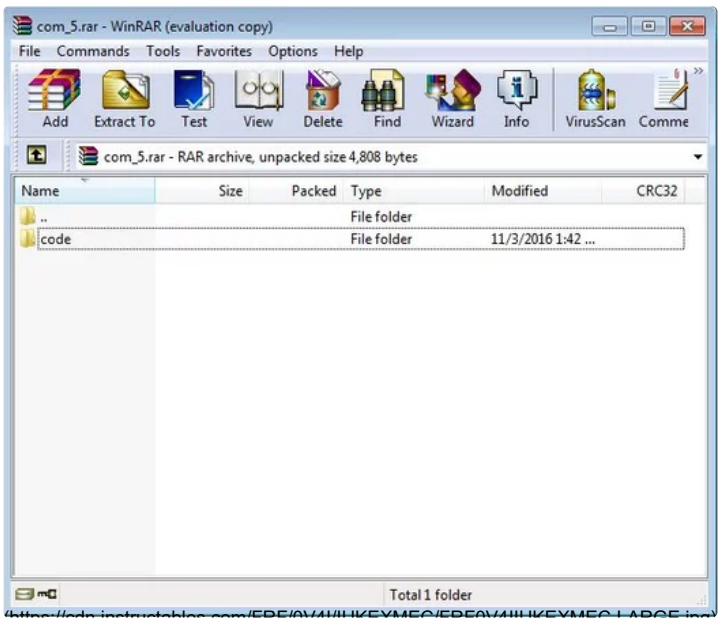
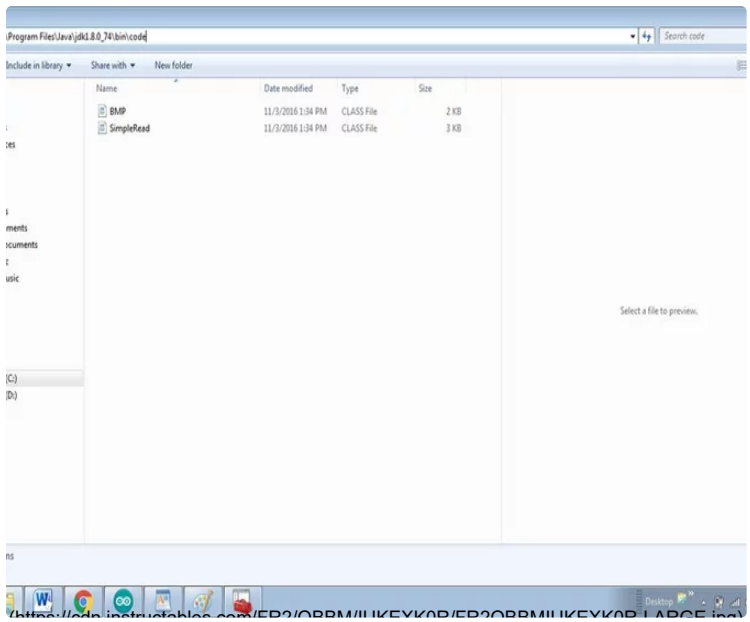
Step 6: Com_#.rar





Depending on what port number your Arduino is connected to, download the corresponding file. COM1 = com_1.rar , COM2 = com_2.rar and etc. Open your com#.rar on WinRaR, extract/copy the 'code' folder from com_#.rar, go to Local Disk > Program Files > Java > jdk1.8.0_74 > bin and paste it there. you can refer the picture above for a better understanding.

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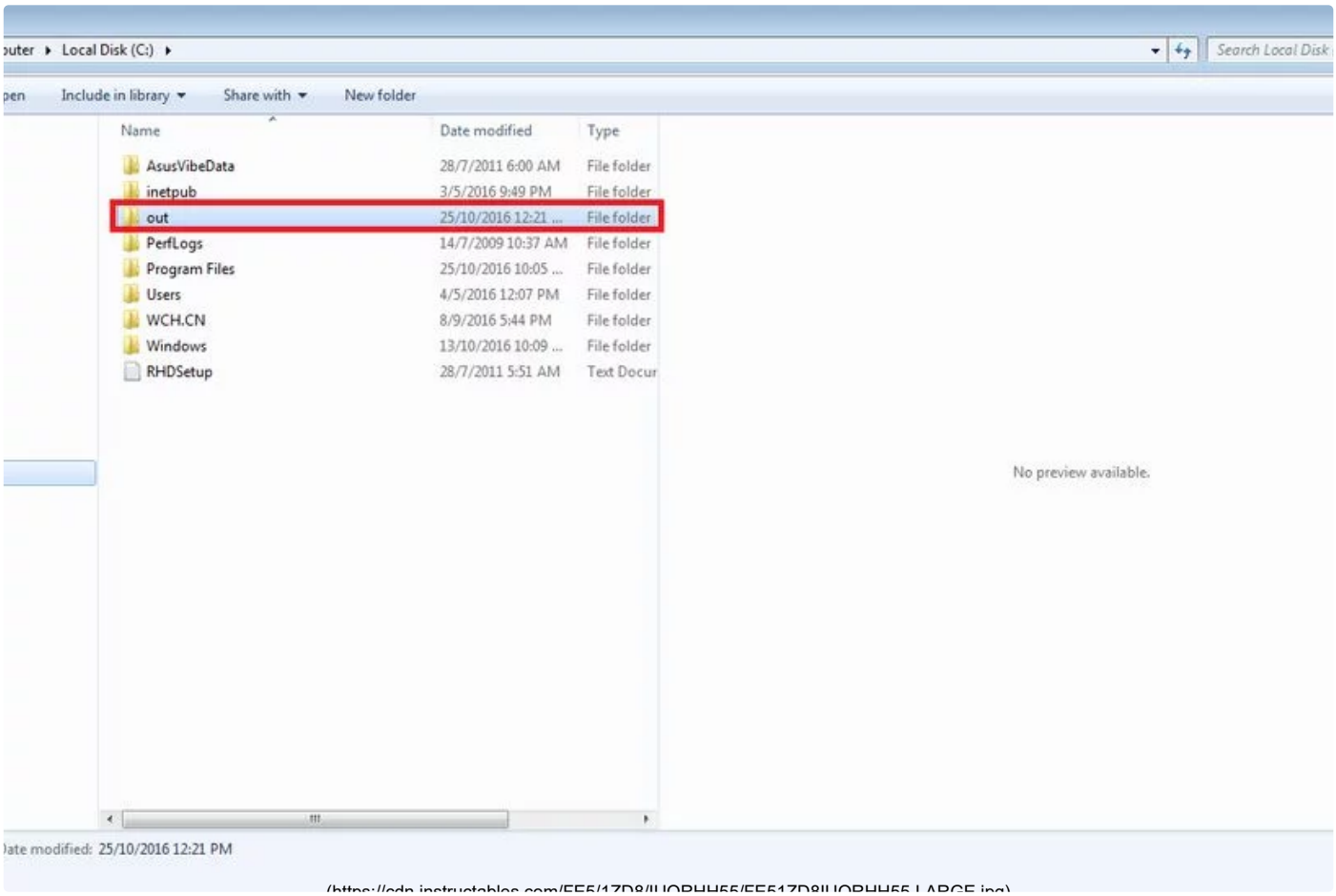
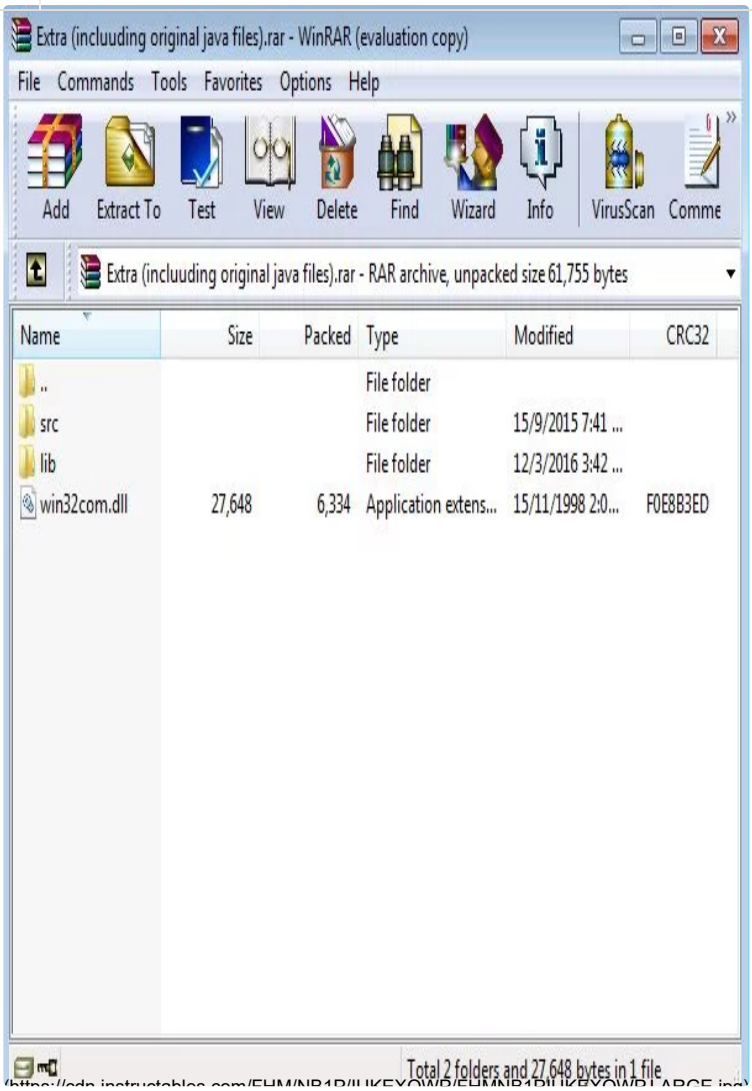
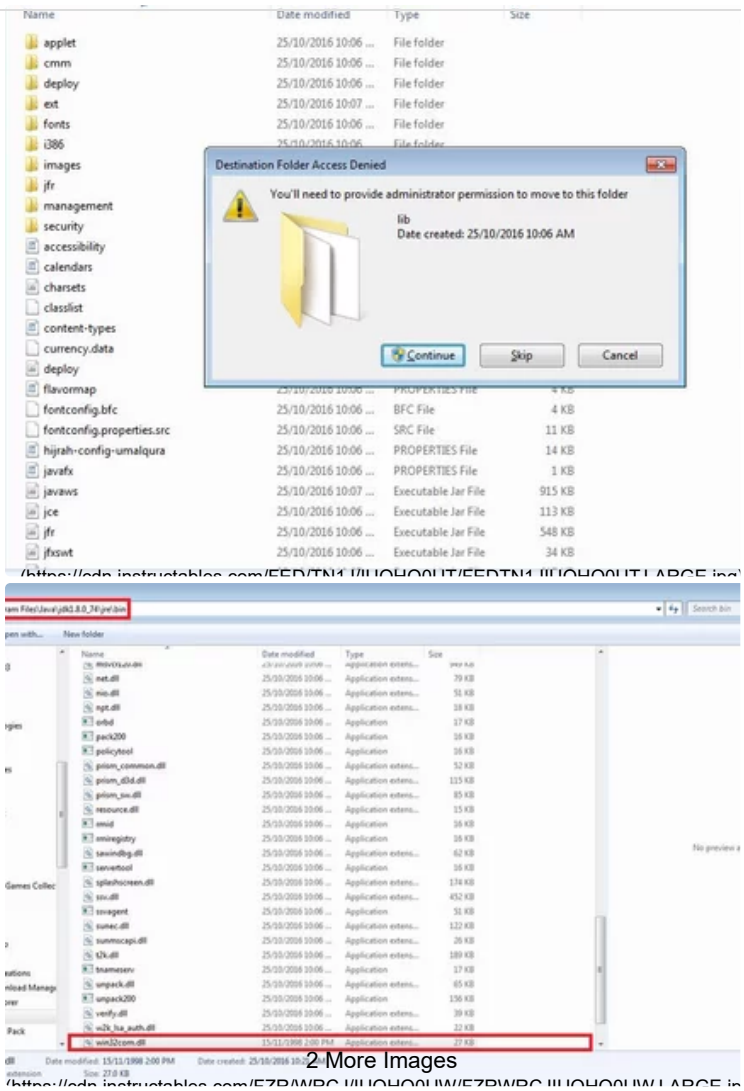
Step 7: C:\out



You have to create a new folder on your c drive / Local Disk (C:). This will be your camera module sensor's taken picture's destination. Name this folder as out (it could be anything though).

Step 8: Extra.rar





2 More Images

1. Download and extract the Extra.rar file below and open it. As you could see, there is src folder, lib folder and "win32com.dll". You have to copy and placed "win32com.dll" in the "C:\Program Files\Java\jdk1.8.0_74\jre\bin" directory.

2. Then, open the lib and you could see the "comm.jar" and "javax.comm.properties" in it. Copy and paste the "comm.jar" in "C:\Program Files\Java\jdk1.8.0_74\jre\lib\ext" and "javax.comm.properties" in the "C:\Program Files\Java\jdk1.8.0_74\jre\lib" directory.

NOTE : it may ask for administrator permission, just proceed anyway.

Extra (incluuding origi... Download (https://cdn.instructables.com/ORIG/FU2/GNYS/IUKEXML7/FU2GNYSIUKEXML7.rar)

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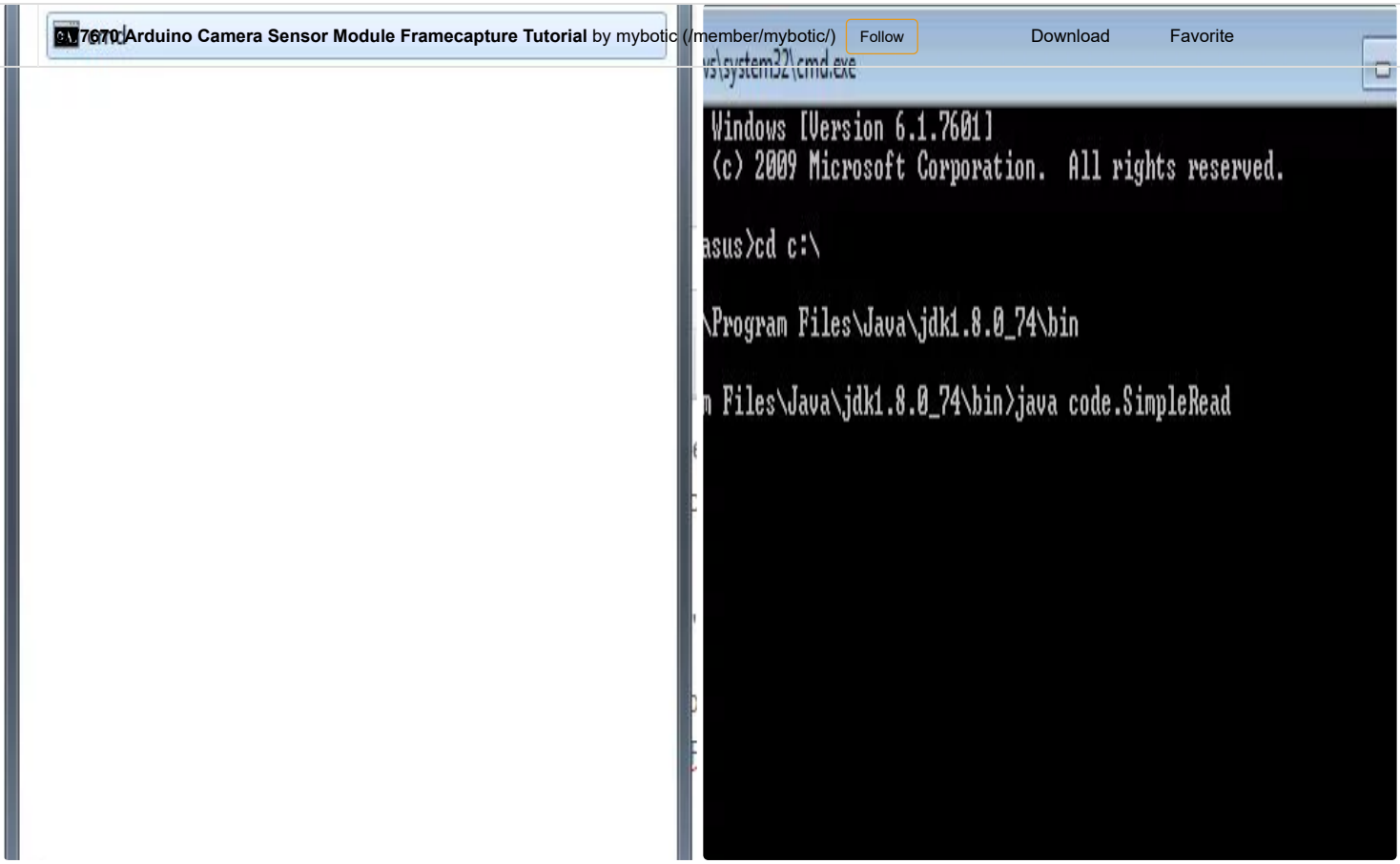
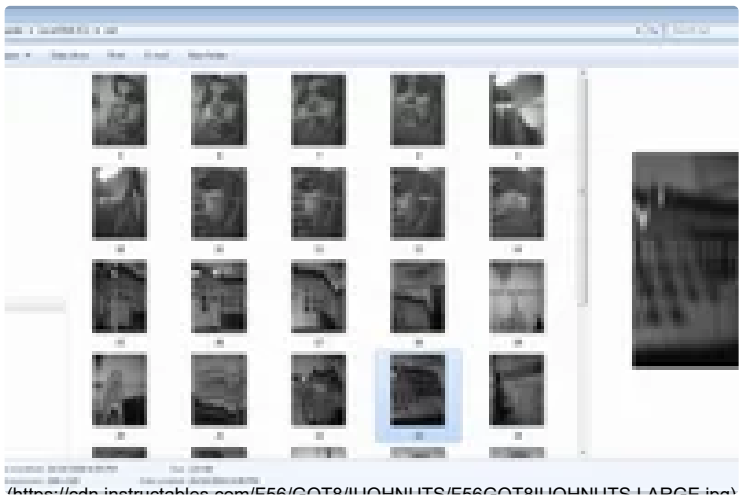
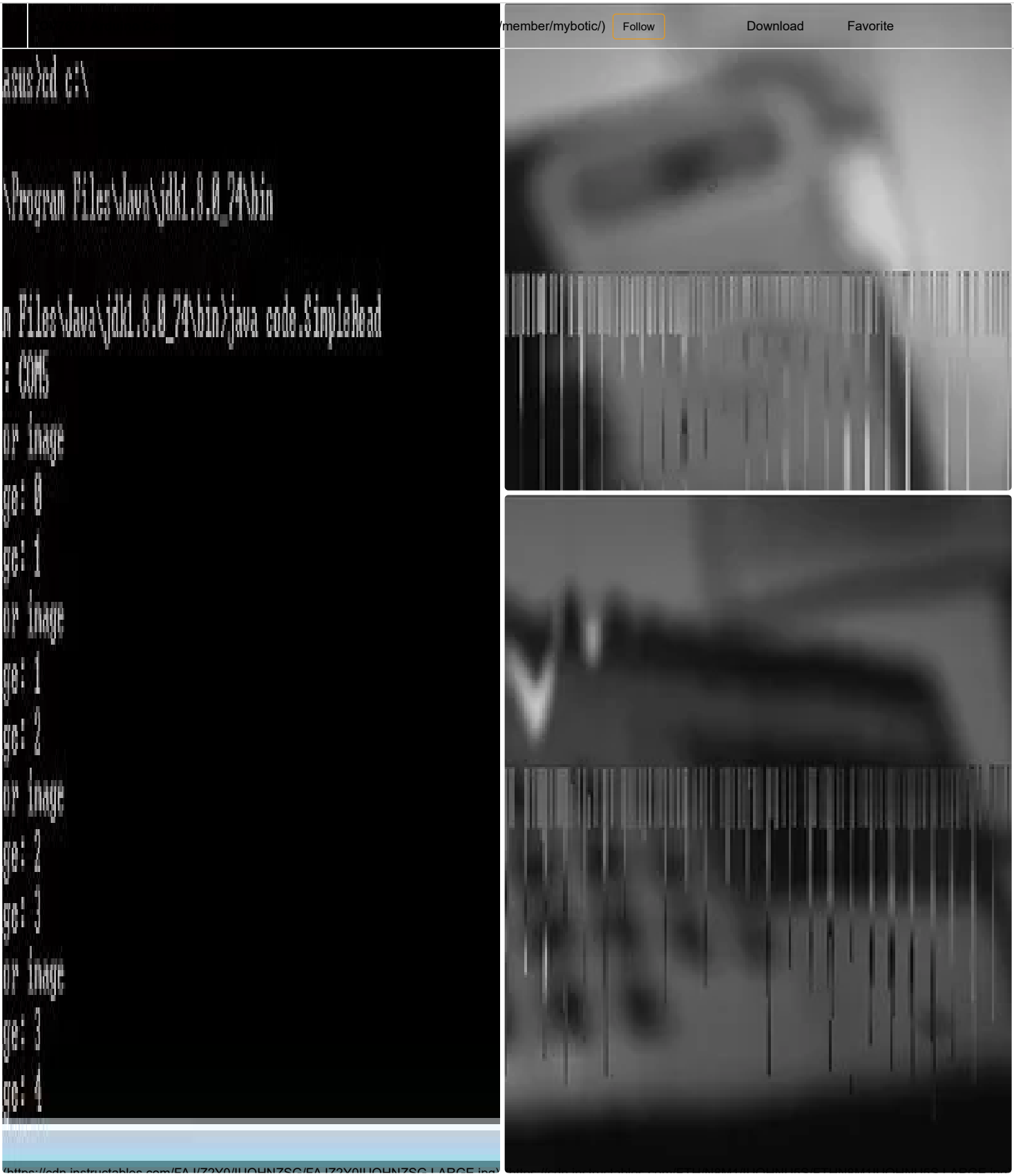
Step 9: CMD



Open cmd and open the folder wherein the code folder is by writing its address. mine is "C:\Program Files\Java\jdk1.8.0_74\bin". Click enter and it will give u "C:\Program Files\Java\jdk1.8.0_74\bin>". Now, write "java code.SimpleRead". It supposed to be like this---> C:\Program Files\Java\jdk1.8.0_74\bin>java code. SimpleRead. You can refer image for help.

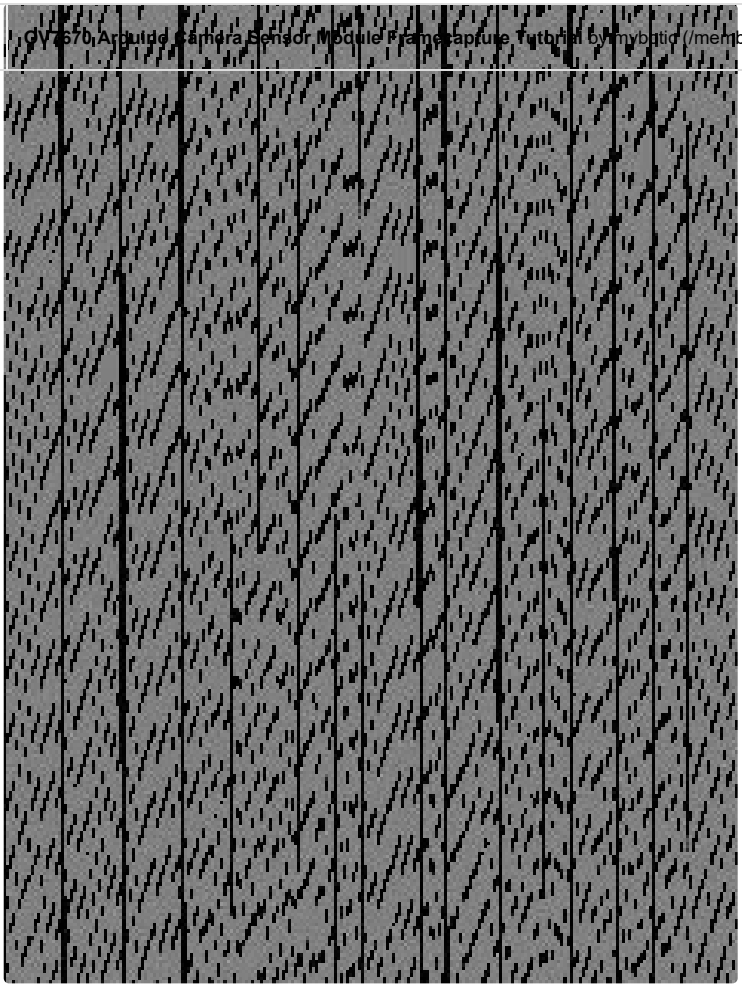
Step 10: Result

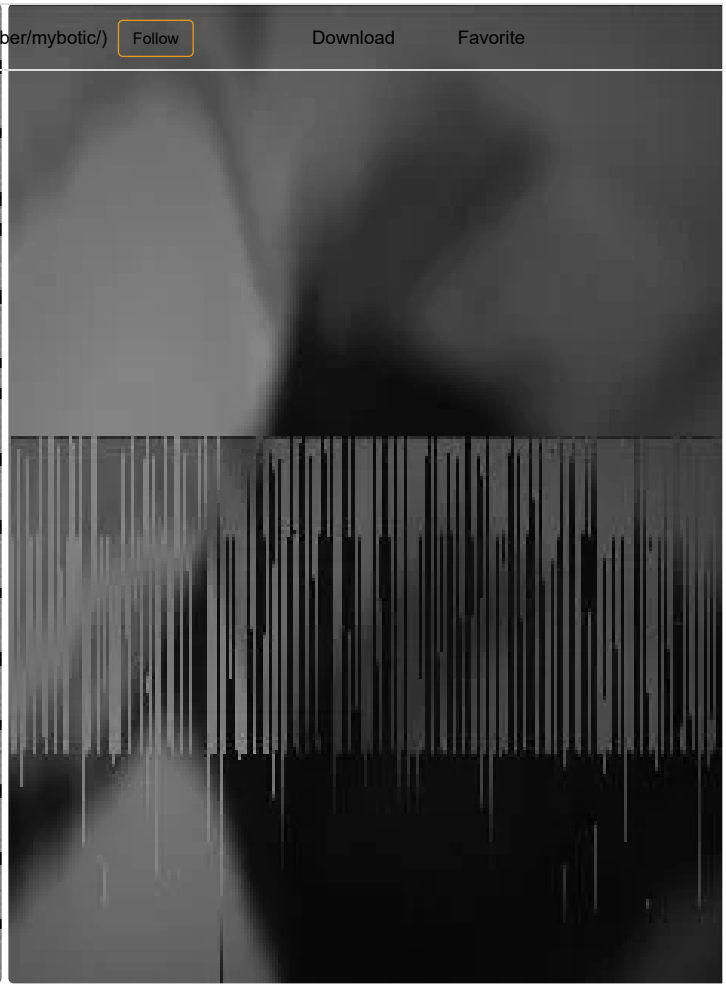




You can see the picture taken from your OV7670 Camera Module Sensor in your our folder in c drive.

Step 11: Troubleshooting





1. If your cmd cannot find images, try switching the USB of the arduino from a USB2.0 to a USB3.0 (blue socket) or vice versa.

2 If you receive scrambles pictures, you need to edit the sample source code. Edit line: wrReg(0x11, **12**); try changing the 12 to 11/10/9/13. Upload it to the arduino and run the cmd code again.

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Billd39ET (/member/Billd39ET/) made it!

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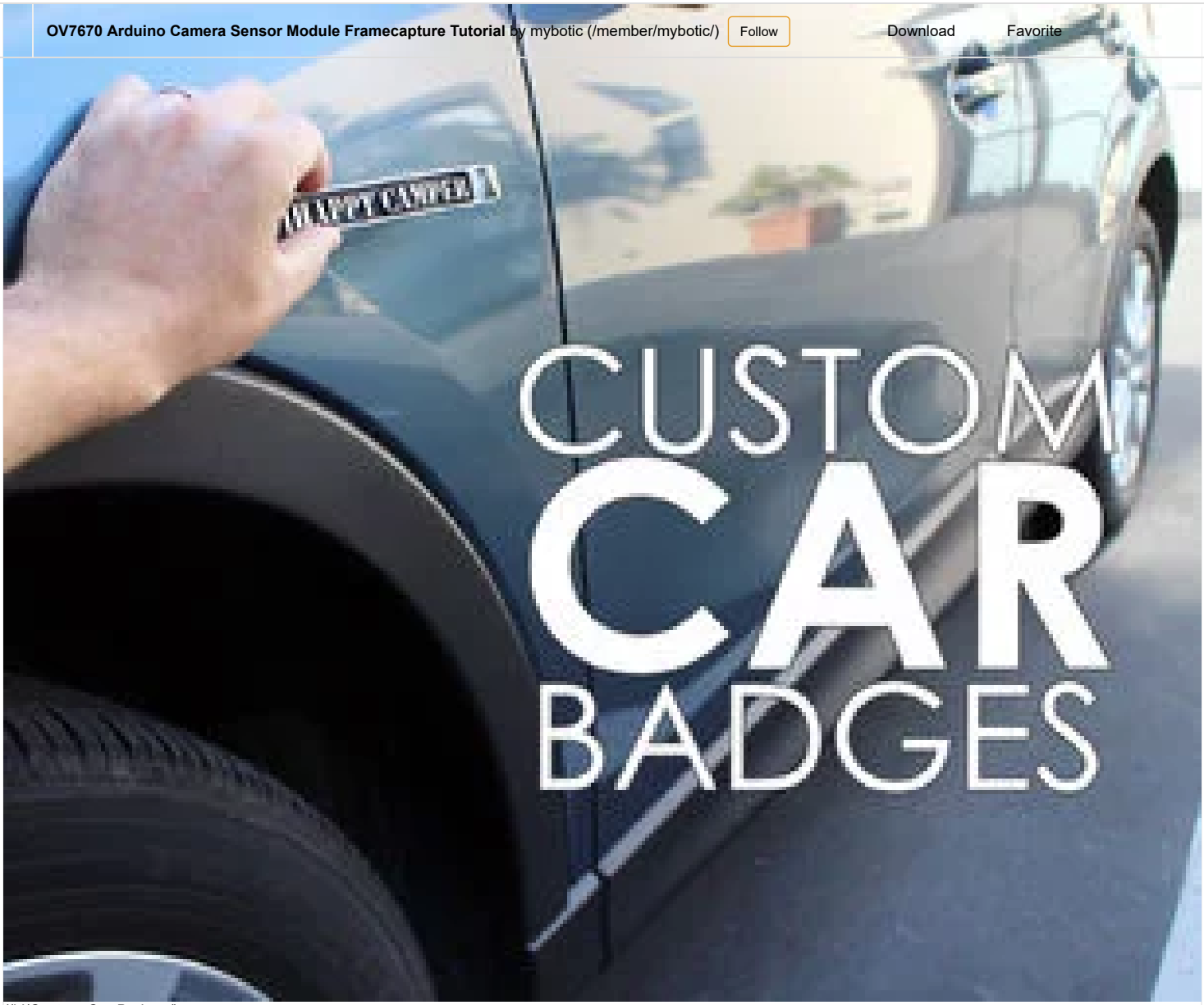
Recommendations



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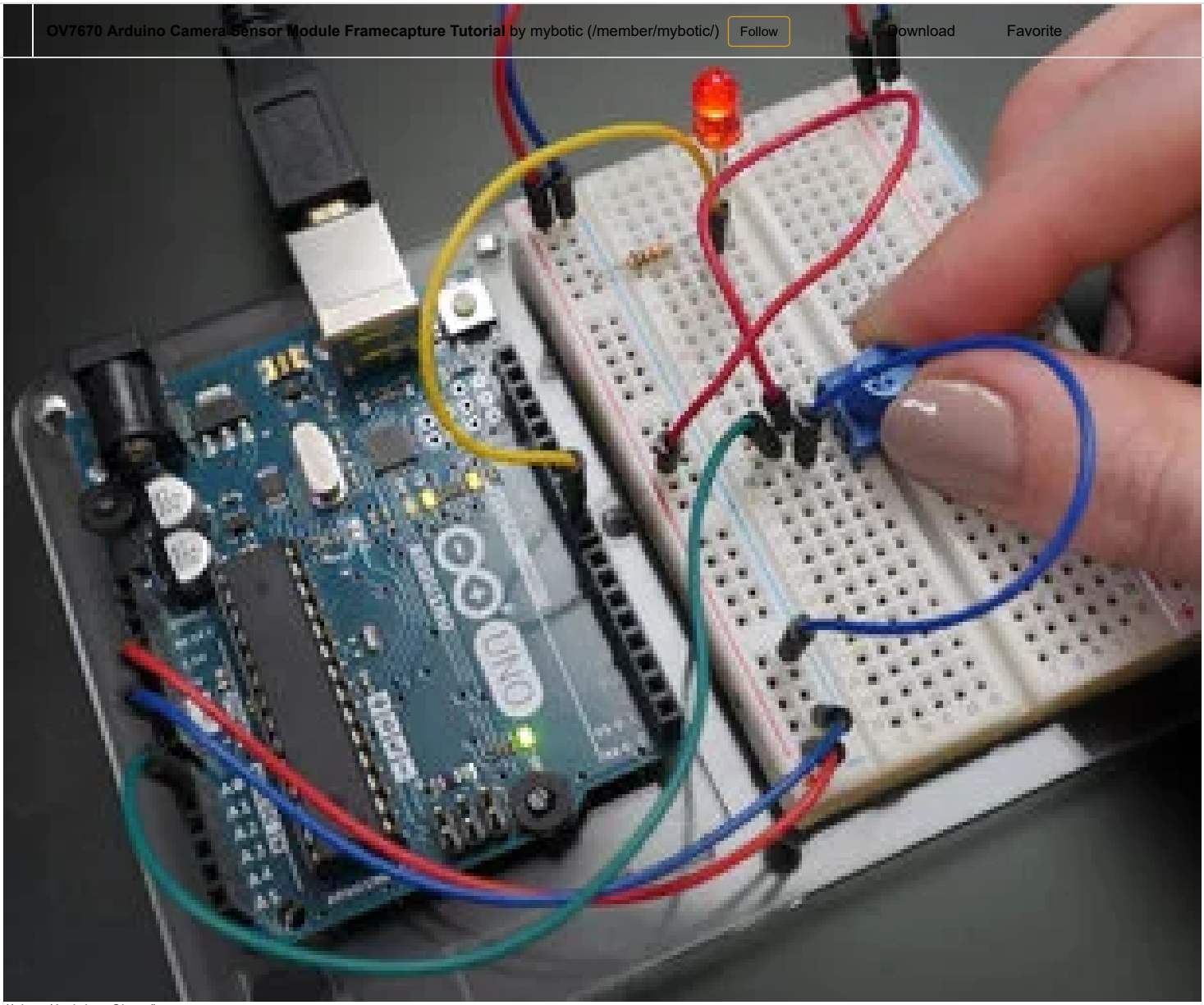

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Please be positive and constructive.

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(/member/ryan.avery.dev/) ryan.avery.dev (/member/ryan.avery.dev/)8 months ago Reply Upvote

I made it last night. I already had JDK installed b/c im a software developer but I had the 64bit JDK so when I did the instructions step by step and then tried to run the jar, it said something like "cannot run 32bit dll in 64 bit environment" so I got the 32 bit version of the latest jdk (just google "jdk 32 bit download" and then click first link. Then download the first one that says windows x86 and install that when it finishes downloading. Then you need to re-do this tutorial and any time he says "Program Files" you need to replace that with "Program Files (x86)" and then it should work.

(https://cdn.instructables.com/FYF/S90C/JCUUH1W2/FYFS90CJCUUH1W2.LARGE.jpg)

4 replies

1

(/member/AgusA12/) AgusA12 (/member/AgusA12/) Tip 7 weeks ago Reply Upvote

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(https://www.instructables.com/id/How-to-use-OV7670-Camera-Module-with-Arduino/#)
if you want OV7670
https://www.youtube.com/watch?v=y2myh6Mptt0 (https://www.youtube.com/watch?v=y2myh6Mptt0)
I got new video about OV7670,, and it's work

(/member/Sadek-313-/) Sadek-313- (/member/Sadek-313-/)2 months ago Reply Upvote

In my project, I want to save the arduino data into Virtuabotix SD Card Reader/Writer, and that is easy as I know
But then connect the SD Card to my laptop to take out the pictures
Is there a way to take the pictures from data stored in the SD Card?
PLEASE HELP
THANK YOU

(/member/Tareq007/) Tareq007 (/member/Tareq007/) Question 2 months ago on Step 10

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How to save previous pictures?
whenever camera reworks, previous pictures are gone.they're rewriting the previous picture name.

(/member/Alfonsoff/) Alfonsoff (/member/Alfonsoff/) Question 2 months ago Answer Upvote

Please, can anyone help me?
The Java code is giving error for windows 10 64bit. Look:
C: \ Program Files \ Java \ jre1.8.0_171 \ bin> java code.SimpleRead

Error loading win32com: java.lang.UnsatisfiedLinkError: C: \ Program Files \ Java \ jre1.8.0_171 \ bin \ win32com.dll: Can not load IA 32-bit .dll on a AMD 64-bit platform

2 (/member/rennythomas260394/) rennythomas260394 (/member/rennythomas260394/)1 year ago

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the image will not be found
searching for image in cmd

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4 replies

(/member/darshan.lad/) darshan.lad (/member/darshan.lad/) Question 4 months ago on Step 6

Answer Upvote

my Arduino Is connected with com 6 here here the code is not avaible

(/member/GsR3/) GsR3 (/member/GsR3/) Question 4 months ago

Answer Upvote

how can I find address of file to write in cmd

(/member/GsR3/) GsR3 (/member/GsR3/) Question 4 months ago on Step 6

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what is bin and paste

(/member/GsR3/) GsR3 (/member/GsR3/) Question 4 months ago

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what does that 8 to 10 from the above mean please any one send a video for help

3 (/member/S_K_Gouda/) S_K_Gouda (/member/S_K_Gouda/) Question 5 months ago

Answer Upvote

Hi can somebody help me on how to retrieve image from ov7670 CMOS camera. It only shows port name come and looking for image.
Help....

1 more answer

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