

Online Order System Using Visual Studio and Arduino Platforms

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Abstract

There are two sections to make a web page-based online order form. They are the hardware section and the software section. The hardware section includes the Arduino Uno microcontroller and ESP32-CAM AI-Thinker. Visual Studio Code (VS Code) and Arduino IDE have used the part of the software section. Motion JPEG (M-JPEG) is an application of the multimedia software. After successfully uploading the Arduino sketch, the IP address slash MJPEG slash one is obtained in the serial monitor of the Arduino IDE. This IP address is rewritten to Python in Visual Studio Code. Dragging the program file of VS Code is made to copy the file and then drop the uniform resource locator (URL). The result of the program is displayed on the web page on PC.

Keywords: ESP32-CAM AI-Thinker, Visual Studio Code, Motion JPEG

Introduction

This order form design is made likely a web page. So this form includes images, text, command boxes and a link to another pages. Additionally, it is mainly offer the current status to customers in live video. The page is created by Visual Studio Code. Visual Studio Code is a source-code editor. It can be applied with a variety of computer languages. HTML and CSS are the computer programming languages. These languages can built the web page with Visual Studio Code. ESP32-CAM is made up of a dual-core processor, 2MP OV 2640 camera, and SD card slot. ESP32-CAM is easy to use to take a photo and is an IoT (Internet of Things) application. Motion JPEG (M-JPEG) was established for multimedia PC applications. M-JPEG can stream video from ESP32-CAM. To get a live video stream, people can use the device ESP32-CAM and software Arduino IDE [Flavian C et al, 2009].

Materials and Methods

ESP32-CAM AI-Thinker

ESP32-CAM is an IoT application and microcontroller, and it embeds Wi-Fi and Bluetooth wireless capabilities. ESP32-CAM is made up of a dual-core processor, 2MP OV 2640 camera, and SD card slot. ESP32-CAM is based on the ESP32 development module and its input-output (GPIO) pins are less than that of ESP32 because some GPIO pins are used for internal connection to the OV 2640 camera and micro SD card slot. It is easy to use for security applications, and live video applications, and can connect to the Blynk application, etc [Prathapagiri D et al, 2021].

Arduino Uno

In this research, FTDI adapter can be replaced with the ESP32-CAM adapter which is suitable for the Arduino board. Arduino Uno is easy to connect with other microcontroller board.

Software Section

In this research, the Visual Studio Code and the Arduino IDE software are prepared for a web page-based online order form. Motion-JPEG application is also used to attach Arduino Sketch. Visual Studio Code is one of the Python IDE. HTML and CSS languages are used for Visual Studio Code to write the web page [Nowrot A et al, 2018].

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System Operation

The interfacing of the ESP32-Cam with Arduino Uno is shown in Figure (1). The receive pin (UOR pin) and the transmit Pin (UOT pin) of the ESP32-Cam are connected to the RX pin and TX pin of the Arduino Uno board respectively. GND pin of ESP32-Cam connects with IO0 pin. 5V pin and GND pin of the ESP32-Cam is also connected to the Arduino's 5V pin and GND pin. The ground pin of the Arduino pin connects with the reset pin. Figure (2) shows the zip file of ESP32-Cam-MJPEG. The zip file of the ESP32-Cam-MJPEG is downloaded to upload the Arduino code. After the successful upload, the connection of the GND pin and IO0 pin of ESP32-Cam are removed. Figure (3) presents the IP address displayed by the serial monitor of Arduino IDE. This IP address is inserted in the file of VS code. After that the VS's Code file is dragged to the URL and dropped in the URL.

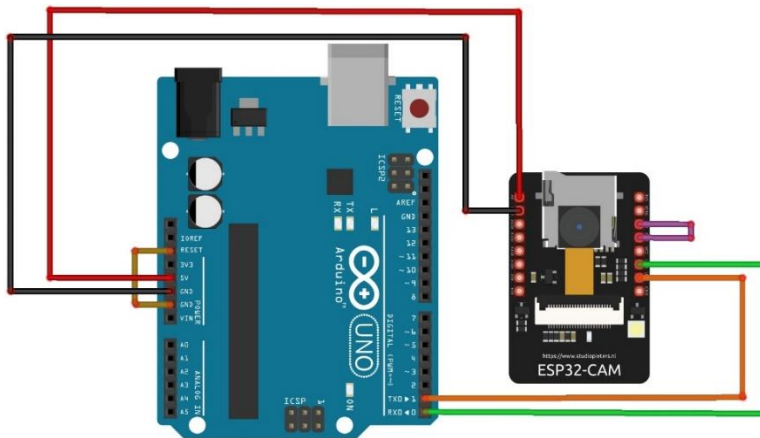


Figure 1 Interfacing of the circuit diagram

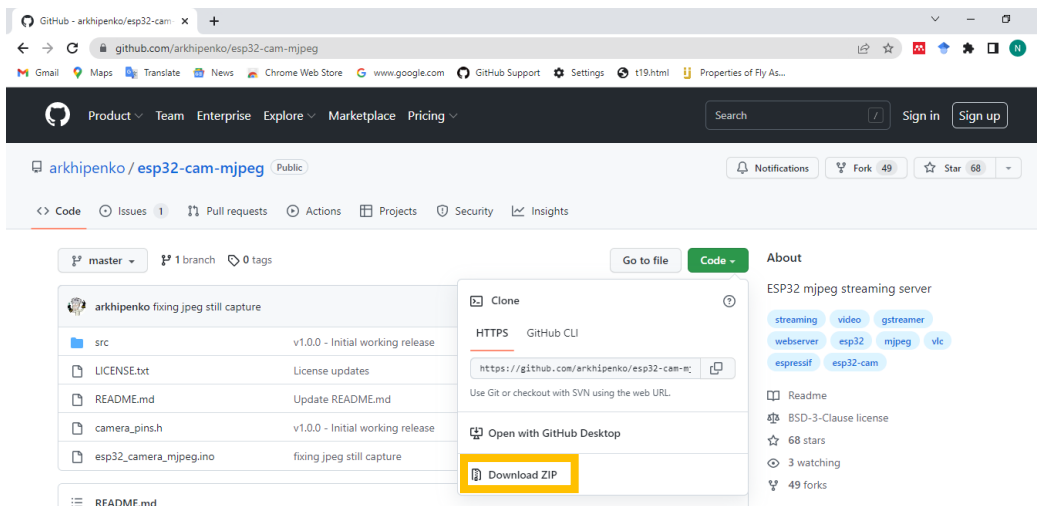


Figure 2 Zip file of the ESP32-Cam-MJPEG

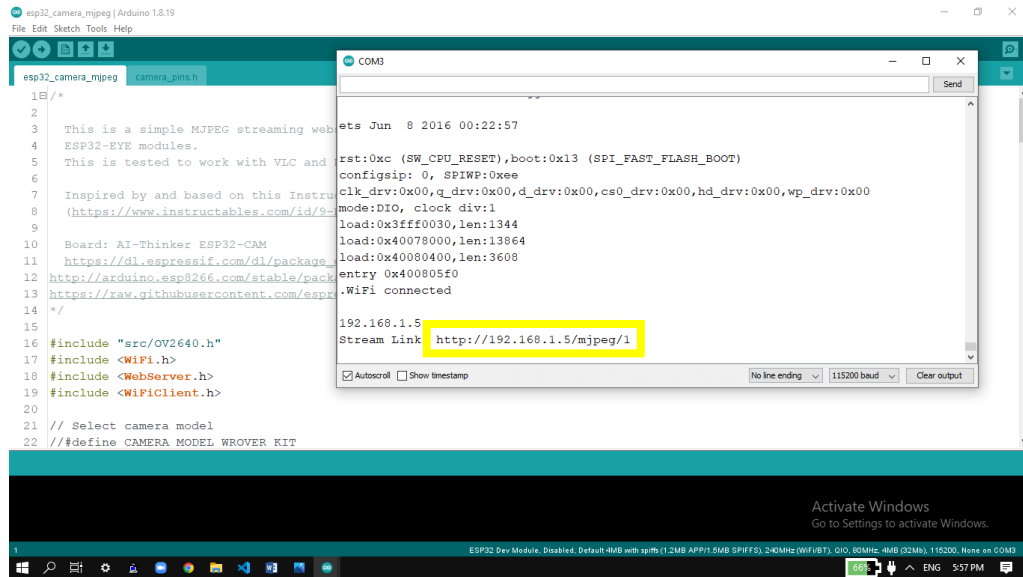


Figure 3 Obtaining IP address on serial monitor

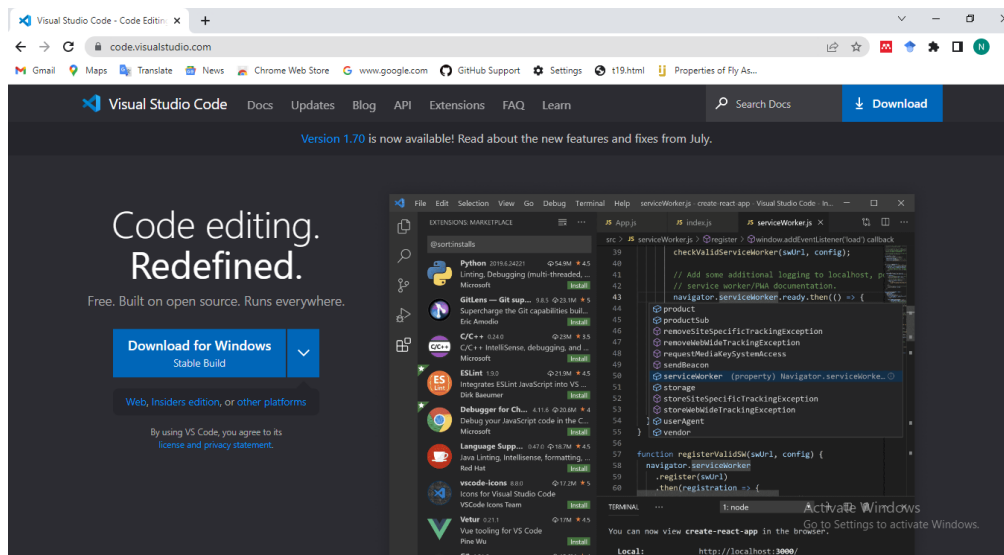


Figure 4 VS Code with the platform IO IDE

Results and Discussions

The online order form is shown on the web page and the live video is displayed in real-time. Figure (5) demonstrates the design of the implemented web page-based online order form. When “fruit images” as shown in the figure (5) is clicked, an image of fruit will appear as in the figure (6). Figure (7) describes the price of fruits and figure (8) is a live video showing the current status. The frame size of the video screen is quite small. The online order form is easy to view and simple to use, the customers can observe and order from a Laptop or desktop.

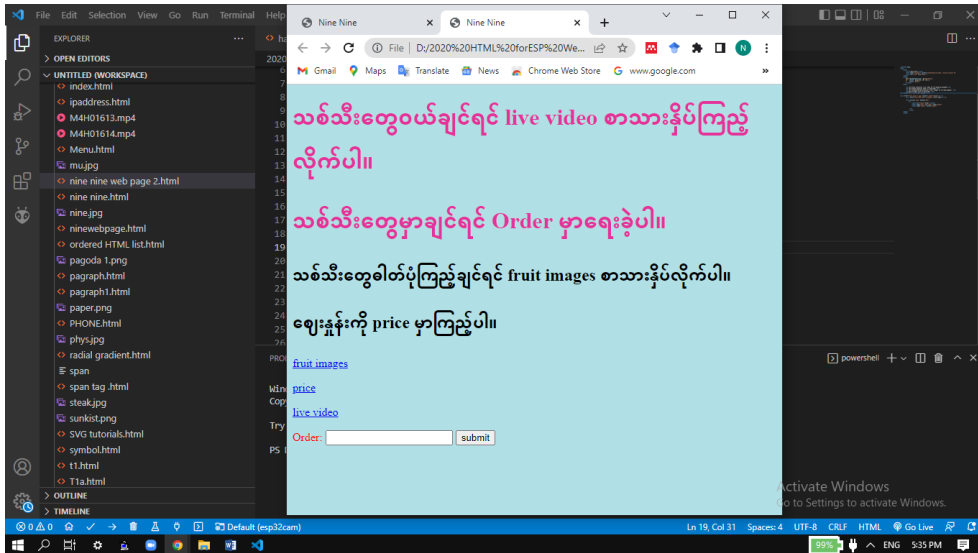


Figure 5 Design of the online order form

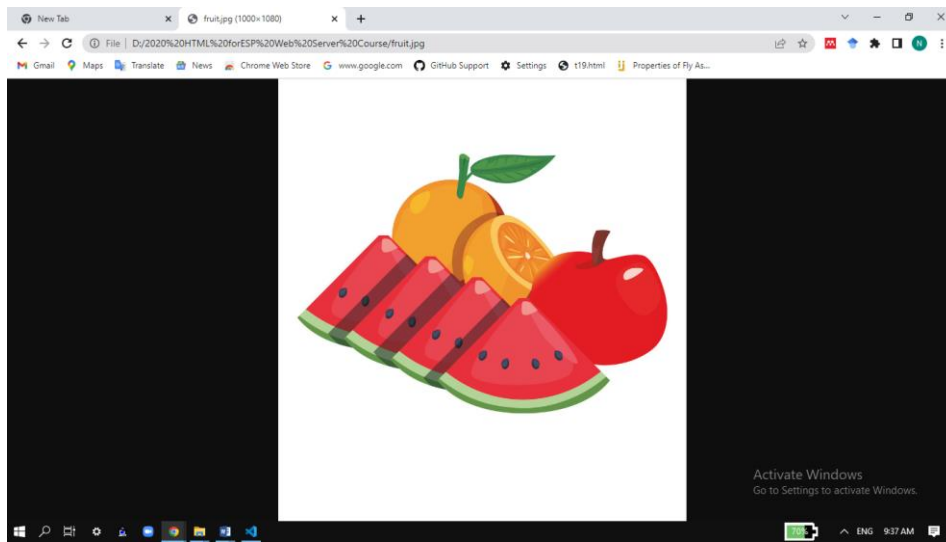


Figure 6 Image of fruits

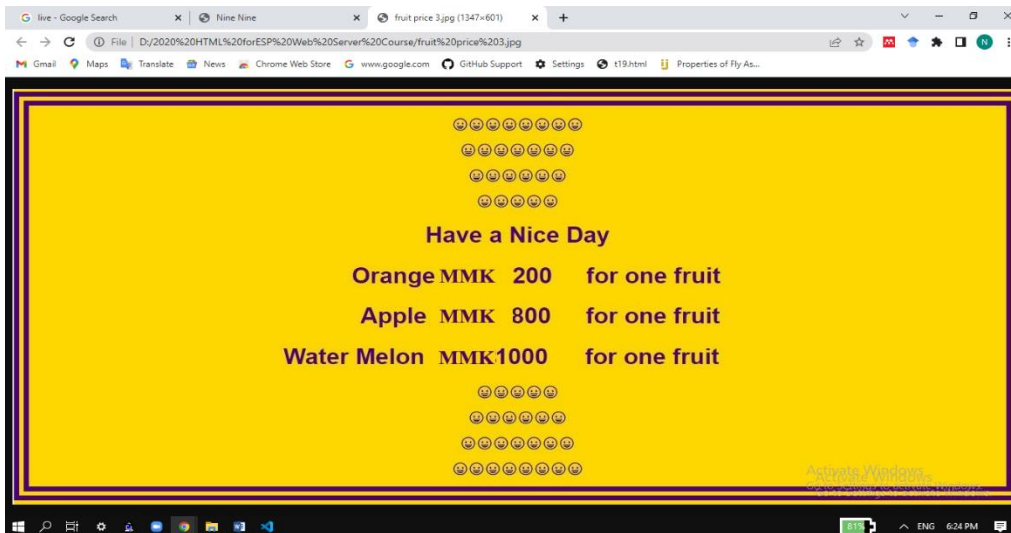


Figure 7 Price of fruits

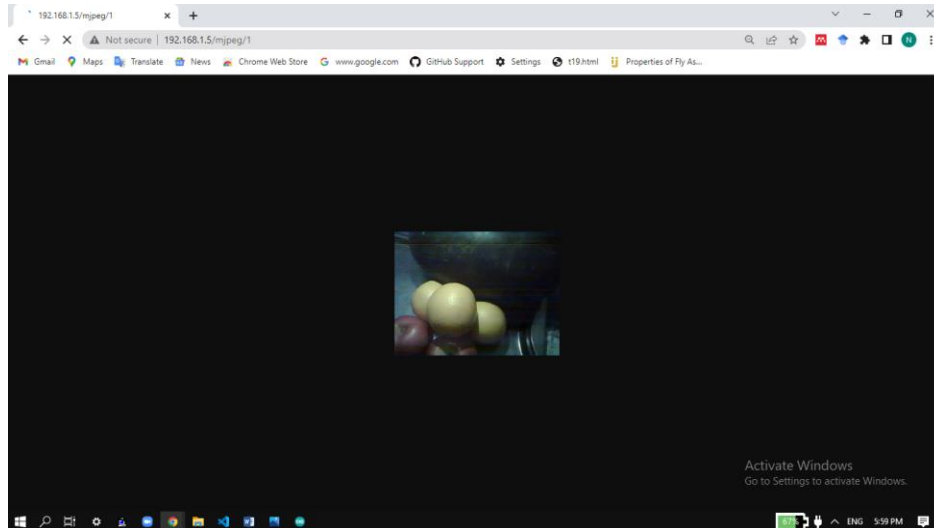


Figure 8 Image of live video

Conclusion

The design of the order form uses HTML and CSS languages of web page style. To show a live video, the zip file of ESP32-Cam-MJPEG is used. Moreover, the IP address for linking the Arduino IDE and VS code is used. In this research, there is no need to use too many electronic devices and these devices can be bought in the electronic markets. This work is useful to monitor the status of the system.

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