

1. Rangkai ESP32-CAM dengan ESP32-CAM-MB seperti rangkaian berikut. Kemudian tancapkan pada USB laptop



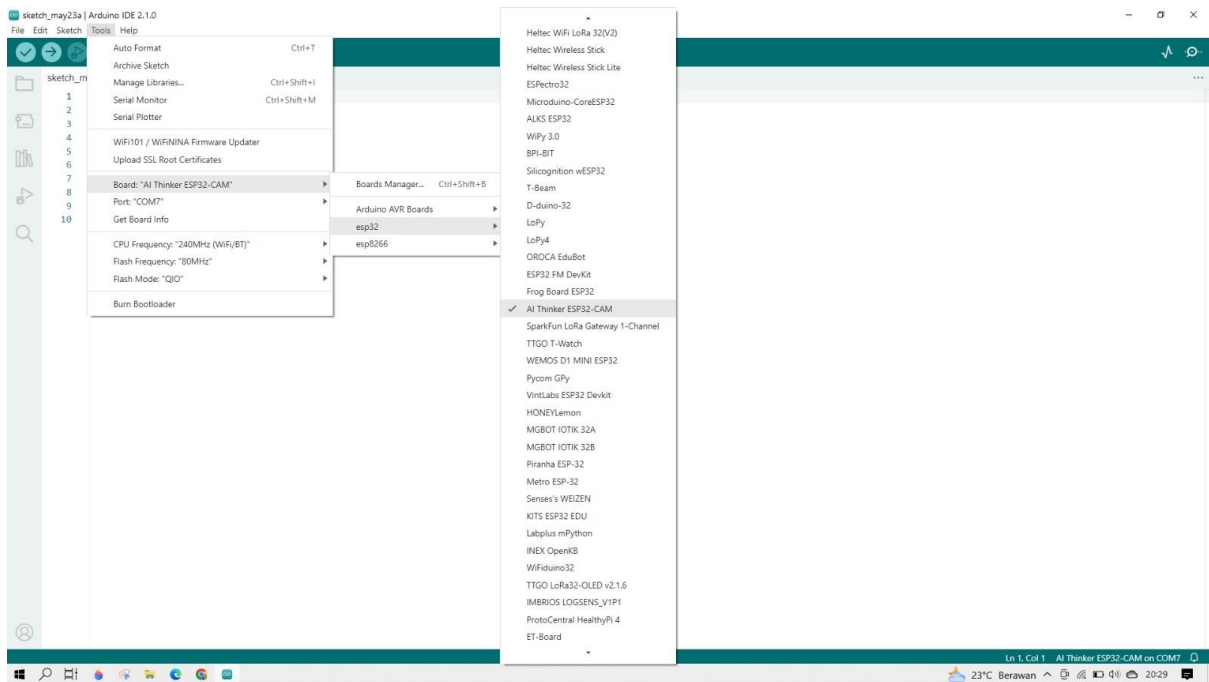
2. Bukalah Arduino IDE untuk proses memulai pembangunan/developing

A screenshot of the Arduino IDE software interface. The window title is "sketch_may23a | Arduino IDE 2.1.0". The menu bar includes "File", "Edit", "Sketch", "Tools", and "Help". The toolbar shows icons for file operations and execution. The main editor area displays a blank sketch for an "AI Thinker ESP32-CAM" module. The code is as follows:

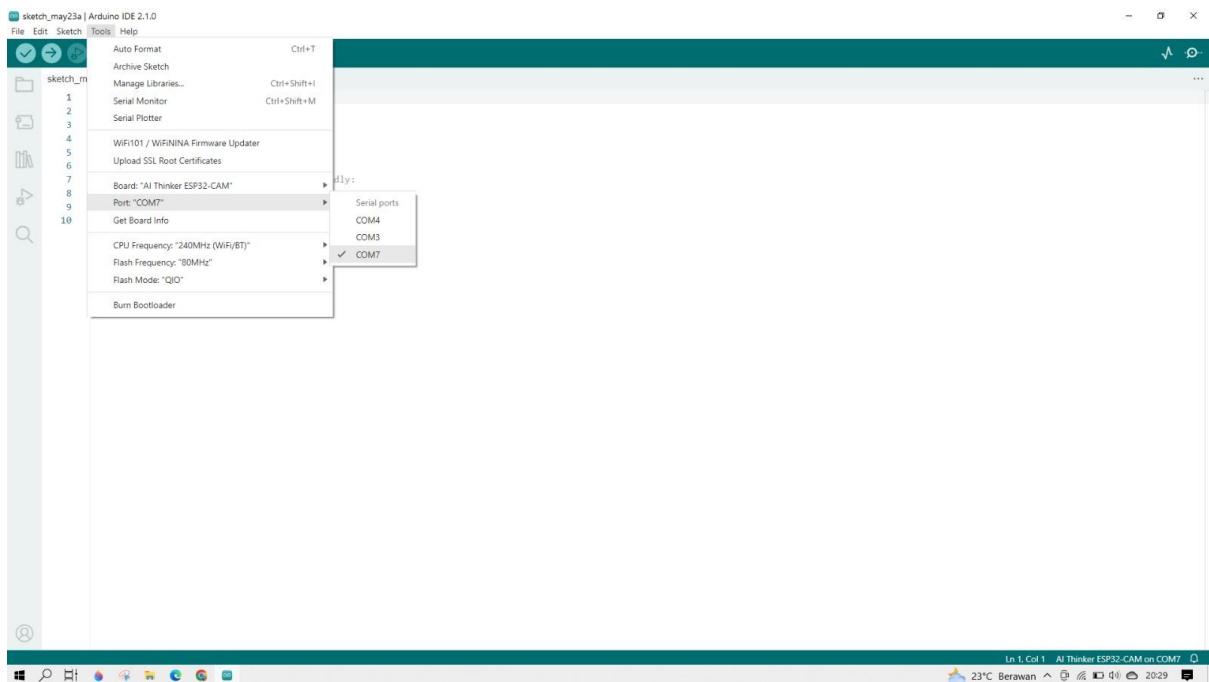
```
sketch_may23a.ino
1 void setup() {
2   // put your setup code here, to run once:
3 }
4
5
6 void loop() {
7   // put your main code here, to run repeatedly:
8 }
9
10
```

The status bar at the bottom shows "Ln 1, Col 1 | AI Thinker ESP32-CAM on COM7" and system information: "23°C Berawan 20:29".

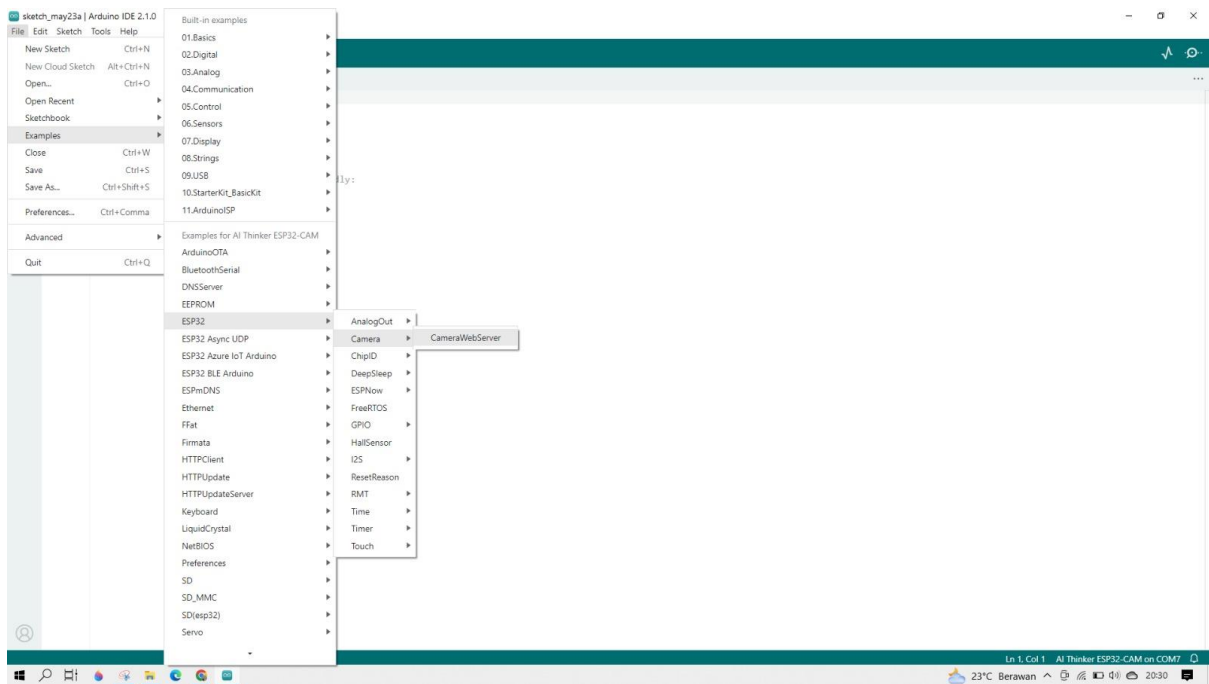
3. Pilihlah board dengan memilih aksi panah ke kanan. Kemudian pilih ESP32. Selanjutnya pilih AI Thinker ESP32-CAM



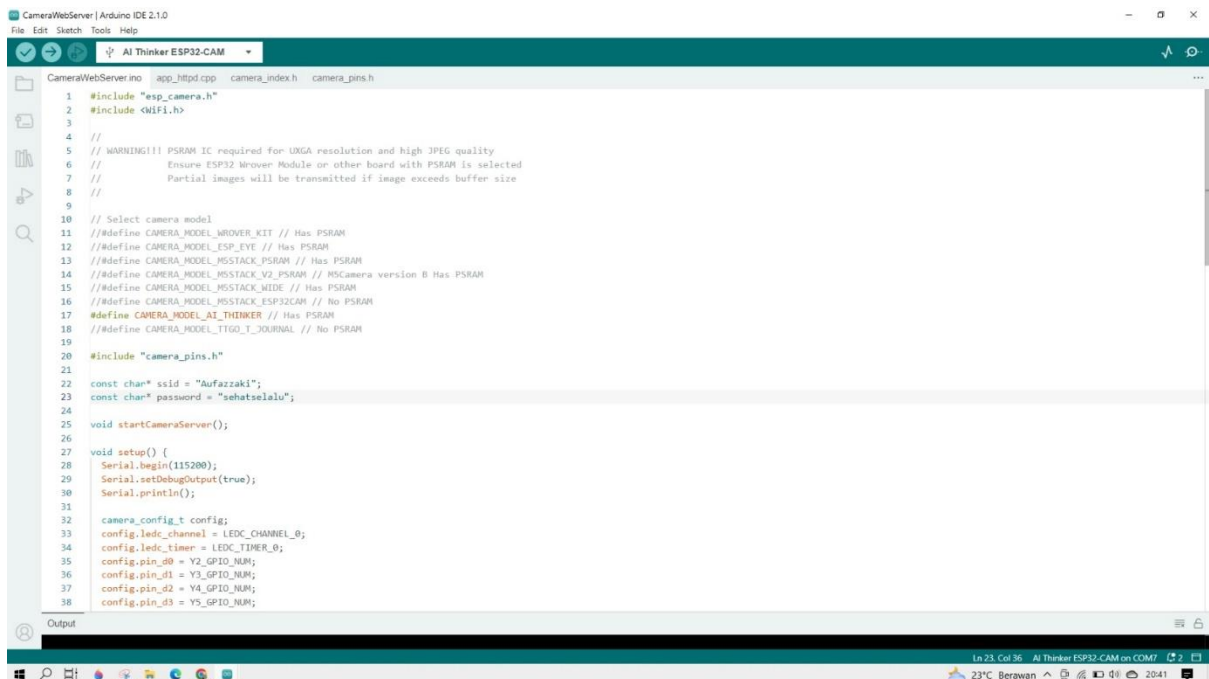
4. Pilihlah port COM7



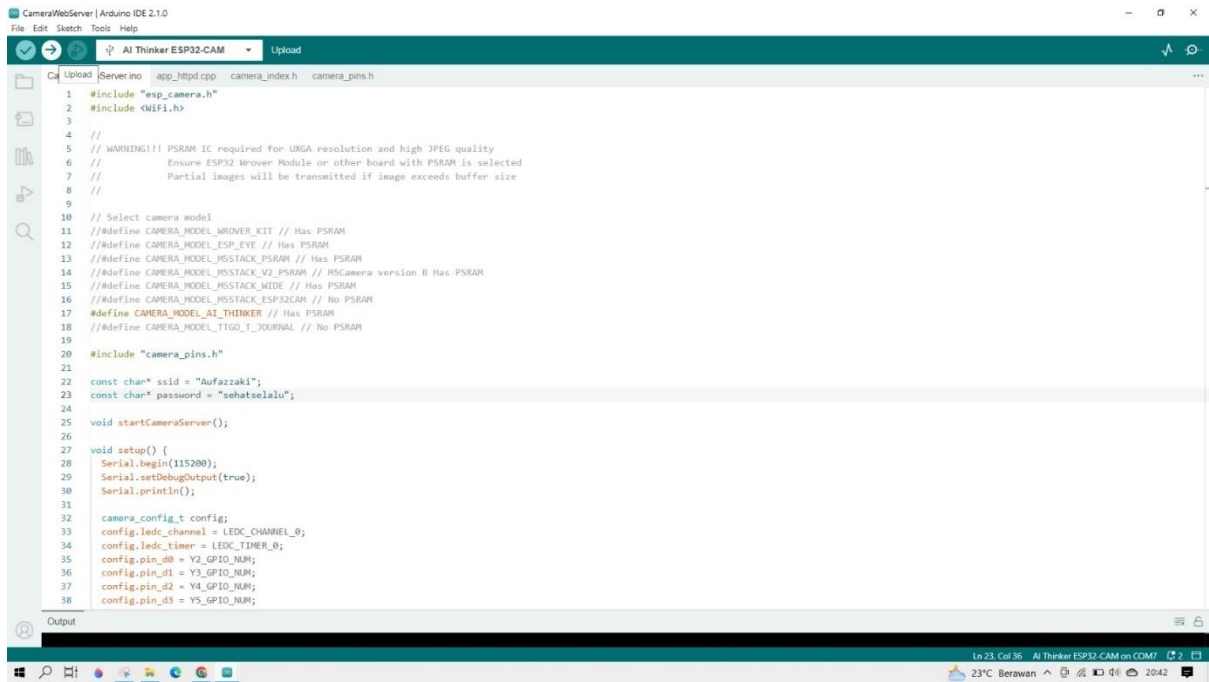
5. Bukalah code contoh untuk ESP32-CAM pada navbar file. Kemudian pilih examples. Selanjutnya pilih ESP32 dan dilanjutkan pilih Camera. Hanya terdapat satu pilihan selanjutnya yakni CameraWebServer



6. Mengisi username dan password WIFI yang disesuaikan secara mandiri dengan mengisi bagian dalam tanda kutip

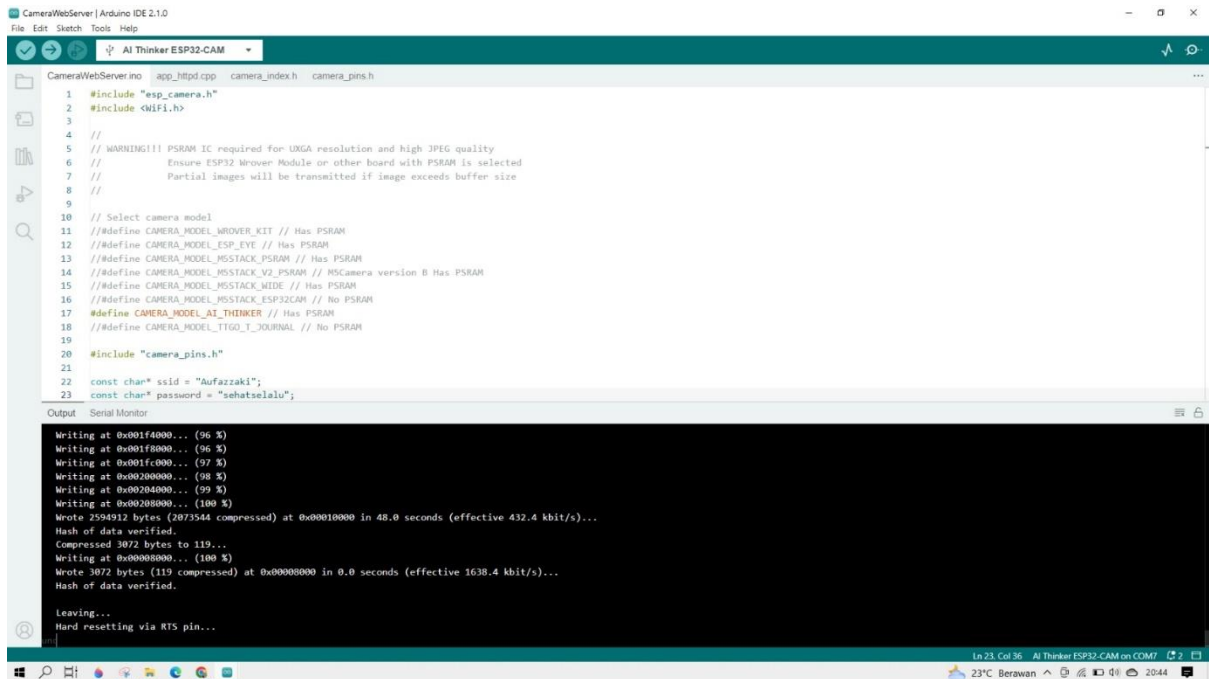


7. Upload code dengan milih tanda panah ke kanan pada bar dibawah navbar. Tunggu hingga prosesnya selesai



```
CameraWebServer | Arduino IDE 2.1.0
File Edit Sketch Tools Help
AI Thinker ESP32-CAM Upload
C:\Upload\Server no app_httpd.cpp camera_index.h camera_pins.h
1 #include "esp_camera.h"
2 #include <WiFi.h>
3
4 //
5 // WARNING!!! PSRAM IC required for UXGA resolution and high JPEG quality
6 // Ensure ESP32 Wrover Module or other board with PSRAM is selected
7 // Partial images will be transmitted if image exceeds buffer size
8 //
9
10 // Select camera model
11 #define CAMERA_MODEL_WROVER_KIT // Has PSRAM
12 #define CAMERA_MODEL_ESP_EYE // Has PSRAM
13 #define CAMERA_MODEL_MSSTACK_PSRAM // Has PSRAM
14 #define CAMERA_MODEL_MSSTACK_V2_PSRAM // MSCamera version B Has PSRAM
15 #define CAMERA_MODEL_MSSTACK_WIDE // Has PSRAM
16 #define CAMERA_MODEL_MSSTACK_ESP32CAM // No PSRAM
17 #define CAMERA_MODEL_AI_THINKER // Has PSRAM
18 #define CAMERA_MODEL_TTGO_T_JOURNAL // No PSRAM
19
20 #include "camera_pins.h"
21
22 const char* ssid = "Aufazzaki";
23 const char* password = "sehatselelu";
24
25 void startCameraServer();
26
27 void setup() {
28   Serial.begin(115200);
29   Serial.setDebugOutput(true);
30   Serial.println();
31
32   camera_config_t config;
33   config.ledc_channel = LEDC_CHANNEL_0;
34   config.ledc_timer = LEDC_TIMER_0;
35   config.pin_d0 = Y2_GPIO_NUM;
36   config.pin_d1 = Y3_GPIO_NUM;
37   config.pin_d2 = Y4_GPIO_NUM;
38   config.pin_d3 = Y5_GPIO_NUM;
39
40   startCameraServer();
41 }
42
43 void loop() {
44   // Do nothing here!
45 }
```

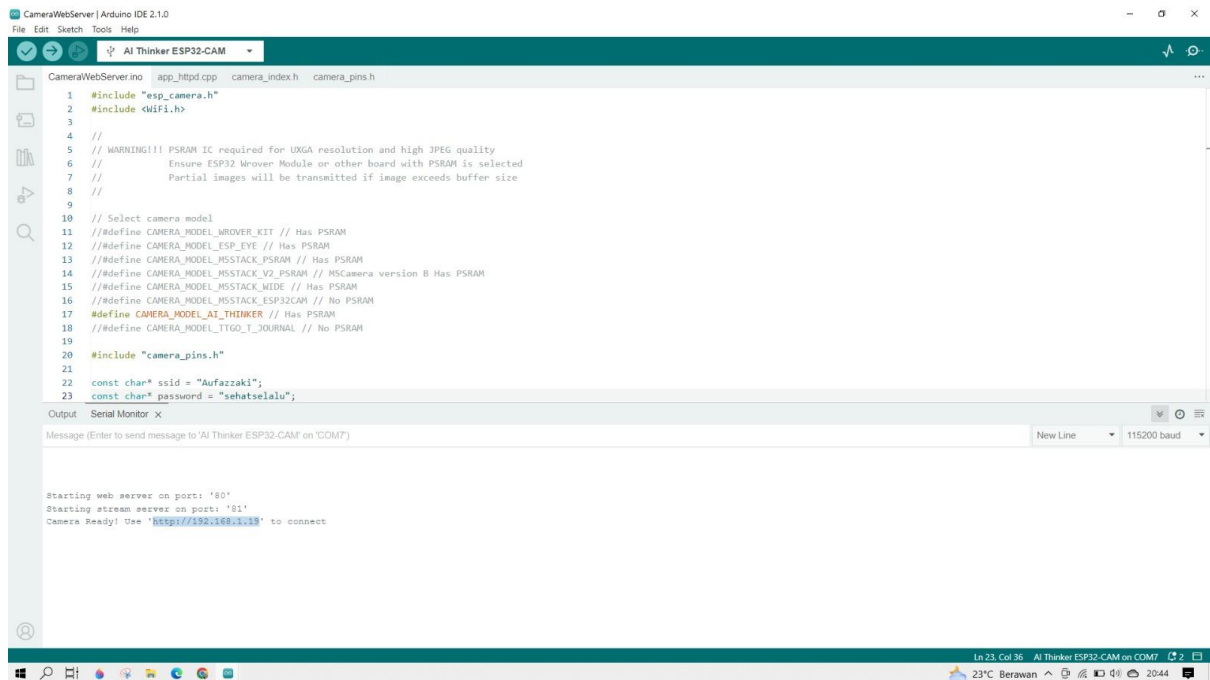
8. Output dari hasil upload dapat dilihat pada bagian bar hitam yang ada di bawah



```
CameraWebServer | Arduino IDE 2.1.0
File Edit Sketch Tools Help
AI Thinker ESP32-CAM
CameraWebServer no app_httpd.cpp camera_index.h camera_pins.h
1 #include "esp_camera.h"
2 #include <WiFi.h>
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4 //
5 // WARNING!!! PSRAM IC required for UXGA resolution and high JPEG quality
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15 #define CAMERA_MODEL_MSSTACK_WIDE // Has PSRAM
16 #define CAMERA_MODEL_MSSTACK_ESP32CAM // No PSRAM
17 #define CAMERA_MODEL_AI_THINKER // Has PSRAM
18 #define CAMERA_MODEL_TTGO_T_JOURNAL // No PSRAM
19
20 #include "camera_pins.h"
21
22 const char* ssid = "Aufazzaki";
23 const char* password = "sehatselelu";
24
25 void startCameraServer();
26
27 void setup() {
28   Serial.begin(115200);
29   Serial.setDebugOutput(true);
30   Serial.println();
31
32   camera_config_t config;
33   config.ledc_channel = LEDC_CHANNEL_0;
34   config.ledc_timer = LEDC_TIMER_0;
35   config.pin_d0 = Y2_GPIO_NUM;
36   config.pin_d1 = Y3_GPIO_NUM;
37   config.pin_d2 = Y4_GPIO_NUM;
38   config.pin_d3 = Y5_GPIO_NUM;
39
40   startCameraServer();
41 }
42
43 void loop() {
44   // Do nothing here!
45 }
```

```
Output Serial Monitor
Writing at 0x001f4000... (96 %)
Writing at 0x001f8000... (96 %)
Writing at 0x001fc000... (97 %)
Writing at 0x00200000... (98 %)
Writing at 0x00204000... (99 %)
Writing at 0x00208000... (100 %)
Wrote 2594912 bytes (2873544 compressed) at 0x00010000 in 48.0 seconds (effective 432.4 kbit/s)...
Hash of data verified.
Compressed 3872 bytes to 119...
Writing at 0x00000000... (100 %)
Wrote 3872 bytes (119 compressed) at 0x00000000 in 0.0 seconds (effective 1638.4 kbit/s)...
Hash of data verified.
Leaving...
Hard resetting via RTS pin...
```

9. Setelah selesai, copy IP address yang telah digenerate oleh sistem



```
1 #include "esp_camera.h"
2 #include <WiFi.h>
3
4 //
5 // WARNING!!! PSRAM IC required for UXGA resolution and high JPEG quality
6 // Ensure ESP32 Wrover Module or other board with PSRAM is selected
7 // Partial images will be transmitted if image exceeds buffer size
8 //
9
10 // Select camera model
11 #define CAMERA_MODEL_WROVER_KIT // Has PSRAM
12 #define CAMERA_MODEL_ESP_EYE // Has PSRAM
13 #define CAMERA_MODEL_MS_STACK_PSRAM // Has PSRAM
14 #define CAMERA_MODEL_MS_STACK_V2_PSRAM // MS_Camera version B Has PSRAM
15 #define CAMERA_MODEL_MS_STACK_MIDE // Has PSRAM
16 #define CAMERA_MODEL_MS_STACK_ESP32CAM // No PSRAM
17 #define CAMERA_MODEL_AI_THINKER // Has PSRAM
18 #define CAMERA_MODEL_TTGO_T_JOURNAL // No PSRAM
19
20 #include "camera_pins.h"
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```

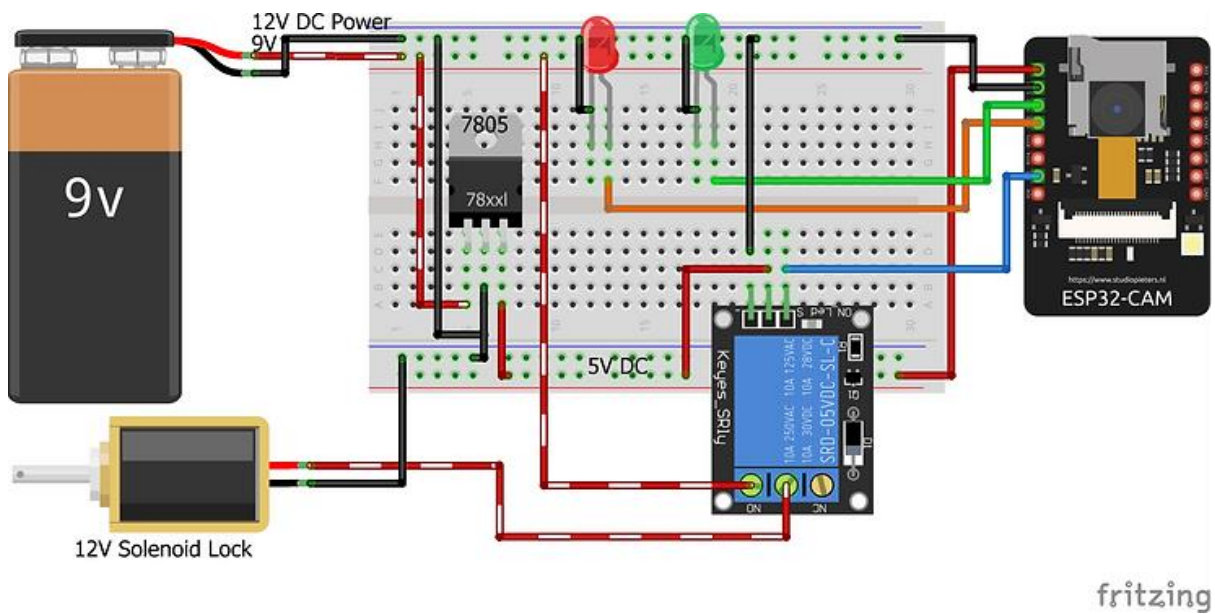
Output Serial Monitor x

Message (Enter to send message to 'AI Thinker ESP32-CAM' on 'COM7')

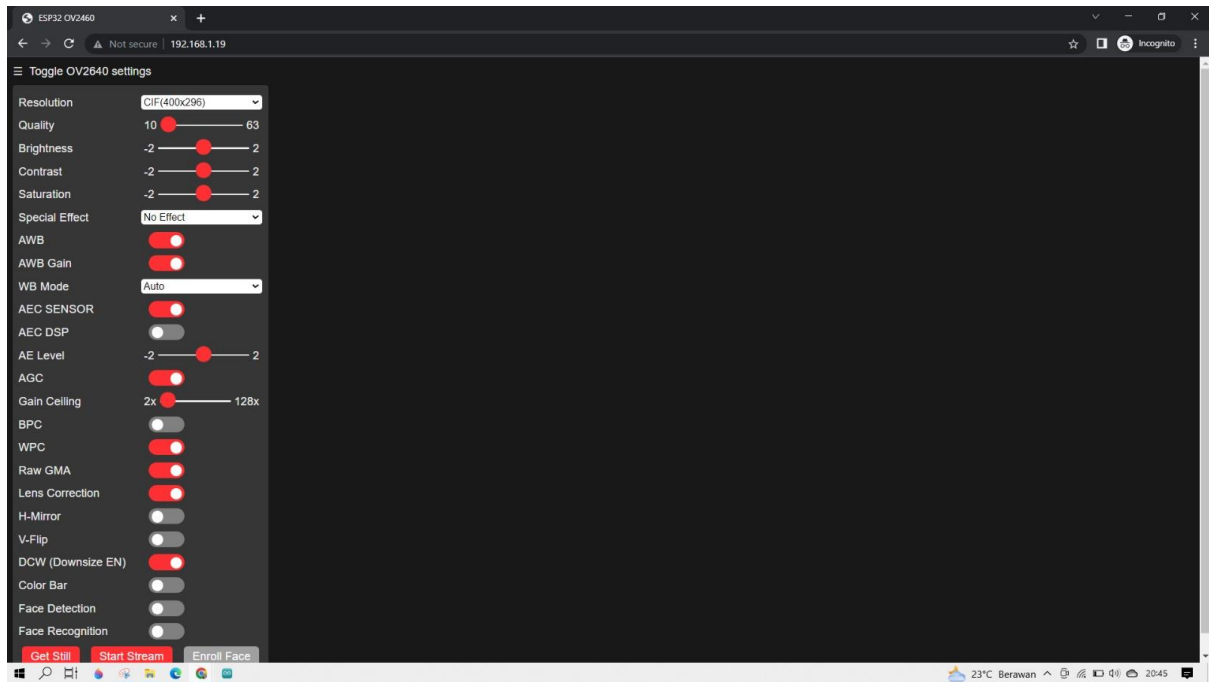
New Line 115200 baud

Starting web server on port: '80'
Starting stream server on port: '81'
Camera Ready! Use 'http://192.168.1.13' to connect

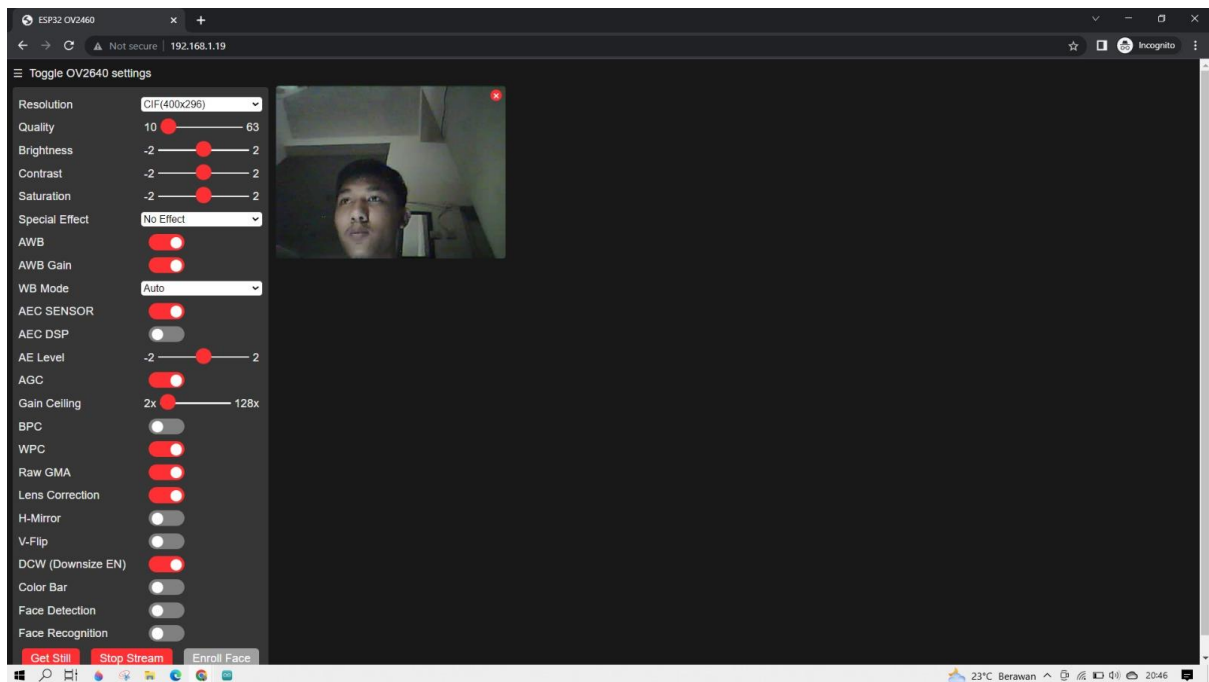
10. Rangkaian ESP32-CAM yang telah diprogram ke rangkaian seperti berikut



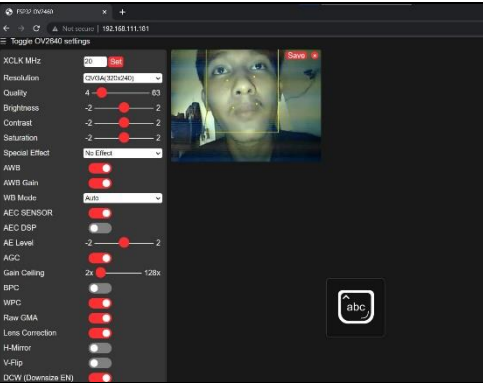
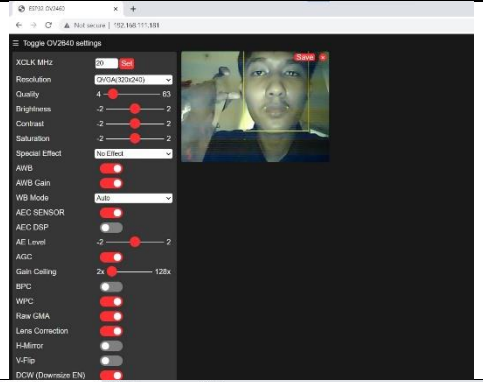
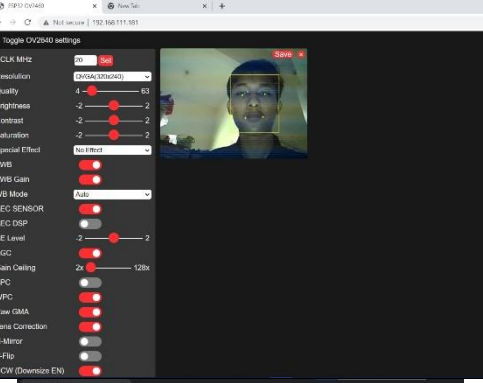
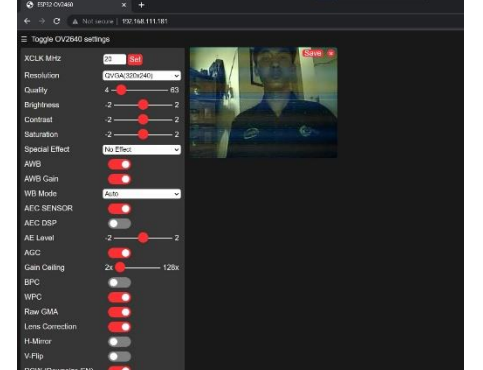
11. Kemudian paste pada browser



12. Aktifkan bar face detection dan klik button start stream untuk memulai mengaktifkan kamera



13. Test camera detection yang telah aktif pada jarak-jarak tertentu dari wajah. Lihat seberapa jauh jangkauan dari kamera

Jarak	Visual	Hasil
0,5 m		Terdeteksi
1 m		Terdeteksi
1,5 m		Terdeteksi
2 m		Tidak terdeteksi