

Lab 7 Report – Ryan King

Lab 7 Part 1

No external resources for part 1, just the lecture code

Lab 7 Part 2

For part 2 I used ChatGPT to ask how to convert from the http_request.c to a program that could handle POST.

<https://chatgpt.com/share/5564d6c4-5976-4203-806a-59a69394e0ac>

<https://chatgpt.com/share/c7858ff1-31e5-4739-b1af-e55067fa5bb3>

“How would I edit this code in the esp-idf framework for the esp32c3 to make a POST request instead of GET” (plus http_request.c code)

```
/* Constants that aren't configurable in menuconfig */
#define WEB_SERVER "example.com"
#define WEB_PORT "80"
#define WEB_PATH "/post-endpoint"
#define POST_DATA "field1=value1&field2=value2"

static const char *TAG = "example";

static const char *REQUEST = "POST " WEB_PATH " HTTP/1.0\r\n"
    "Host: " WEB_SERVER ":" WEB_PORT "\r\n"
    "User-Agent: esp-idf/1.0 esp32\r\n"
    "Content-Type: application/x-www-form-urlencoded\r\n"
    "Content-Length: " POST_DATA_LENGTH "\r\n"
    "\r\n"
    POST_DATA;

static void http_post_task(void *pvParameters)
{
    const struct addrinfo hints = {
        .ai_family = AF_INET,
        .ai_socktype = SOCK_STREAM,
    };
    struct addrinfo *res;
    struct in_addr *addr;
    int s, r;
    char recv_buf[64];

    while(1) {
        int err = getaddrinfo(WEB_SERVER, WEB_PORT, &hints, &res);

        if(err != 0 || res == NULL) {
            ESP_LOGE(TAG, "DNS lookup failed err=%d res=%p", err, res);
            vTaskDelay(1000 / portTICK_PERIOD_MS);
            continue;
        }

        /* Code to print the resolved IP.

        Note: inet_ntoa is non-reentrant, look at ipaddr_ntoa_r for "real" code */
        addr = &((struct sockaddr_in *)res->ai_addr)->sin_addr;
        ESP_LOGI(TAG, "DNS lookup succeeded. IP=%s", inet_ntoa(*addr));

        s = socket(res->ai_family, res->ai_socktype, 0);
        if(s < 0) {
            ESP_LOGE(TAG, "... Failed to allocate socket.");
            freeaddrinfo(res);
            vTaskDelay(1000 / portTICK_PERIOD_MS);
        }

        if(connect(s, res->ai_addr, res->ai_addrlen) != 0) {
            ESP_LOGE(TAG, "... socket connect failed errno=%d", errno);
            close(s);
            freeaddrinfo(res);
            vTaskDelay(4000 / portTICK_PERIOD_MS);
            continue;
        }

        ESP_LOGI(TAG, "... connected");
        freeaddrinfo(res);

        if(write(s, REQUEST, strlen(REQUEST)) < 0) {
            ESP_LOGE(TAG, "... socket send failed");
            close(s);
            vTaskDelay(4000 / portTICK_PERIOD_MS);
            continue;
        }
        ESP_LOGI(TAG, "... socket send success");

        struct timeval receiving_timeout;
        receiving_timeout.tv_sec = 5;
        receiving_timeout.tv_usec = 0;
        if(setsockopt(s, SOL_SOCKET, SO_RCVTIMEO, &receiving_timeout,
            sizeof(receiving_timeout)) < 0) {
            ESP_LOGE(TAG, "... failed to set socket receiving timeout");
            close(s);
            vTaskDelay(4000 / portTICK_PERIOD_MS);
            continue;
        }
        ESP_LOGI(TAG, "... set socket receiving timeout success");

        /* Read HTTP response */
        do {
            bzero(recv_buf, sizeof(recv_buf));
            r = read(s, recv_buf, sizeof(recv_buf)-1);
            for(int i = 0; i < r; i++) {
                putchar(recv_buf[i]);
            }
        } while(r > 0);

        ESP_LOGI(TAG, "... done reading from socket. Last read return=%d errno=%d.", r,
            close(s);
        for(int countdown = 10; countdown-- > 0) {
            ESP_LOGI(TAG, "%d... ", countdown);
            vTaskDelay(1000 / portTICK_PERIOD_MS);
        }
        ESP_LOGI(TAG, "Starting again!");
    }
}
```

Also questioned it about 400 and 415 status error codes until I found the issue.

“translate the curl request into a POST request string please”

```
http Copy code

POST /post HTTP/1.1
Host: 100.64.107.85:1234
Content-Type: application/json
Content-Length: 18

{"test":"testdata"}
```

“Issue was the content length. I fixed it. How can I make 2 key-value pair entries for the content and make the values variable? static const char *REQUEST = "POST /post HTTP/1.1\r\n" "Host: 100.64.107.85:1234\r\n" "Content-Type: application/json\r\n" "Content-Length: 19\r\n" "\r\n" "{\\"test\\":\\"testdata\\"}\r\n";”

```
const char *value1 = "testdata1";
const char *value2 = "testdata2";

// Buffer to hold the final request
char request[1024];

// Construct the JSON content with two key-value pairs
char json_content[256];
sprintf(json_content, "{\"key1\\\":\\\"%s\\\",\\\"key2\\\":\\\"%s\\\"}", value1, value2);

// Calculate the content length
int content_length = strlen(json_content);

// Construct the full HTTP request
sprintf(request,
    "POST /post HTTP/1.1\r\n"
    "Host: 100.64.107.85:1234\r\n"
    "Content-Type: application/json\r\n"
    "Content-Length: %d\r\n"
    "\r\n"
    "%s\r\n", content_length, json_content);
```

Lab 7 Part 3

Mostly combining previous code. I asked ChatGPT with help writing the /location page for my flask server though.

<https://chatgpt.com/share/6f46775f-5274-43e3-aa5b-ab0a821543e9>

“How do I add to this server so that when a user enters "wget http://SERVER/location" it responds to the get request with a text string of the variable location (which I will place in the server code)?”

```
@app.route('/location', methods=['GET'])
def get_location():
    return location, 200, {'Content-Type': 'text/plain'}
```