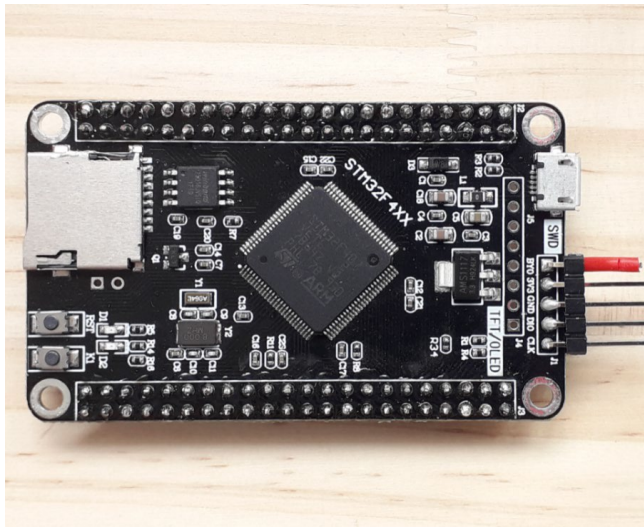


Pework prework.pdf

2022-06-20 G.S, Jee

Pework 0 [BOM](#)

Pework 1 Making stm32F407VET Breakout

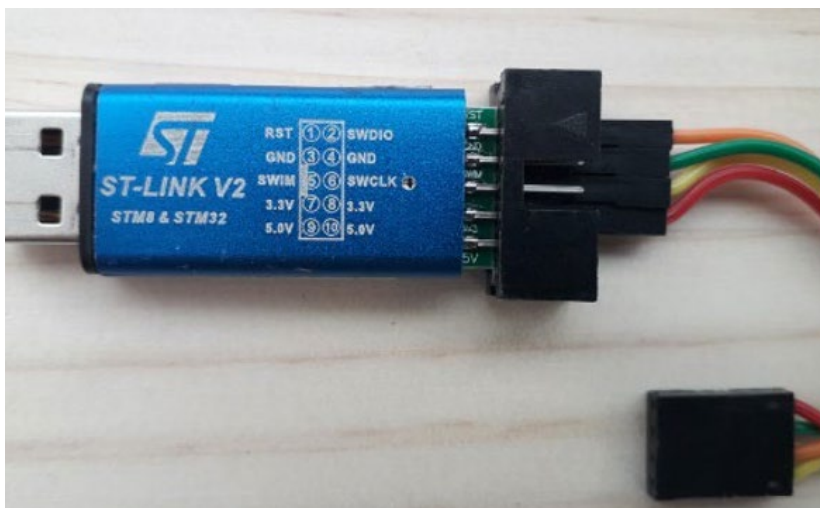


Pework 2 Upload Test

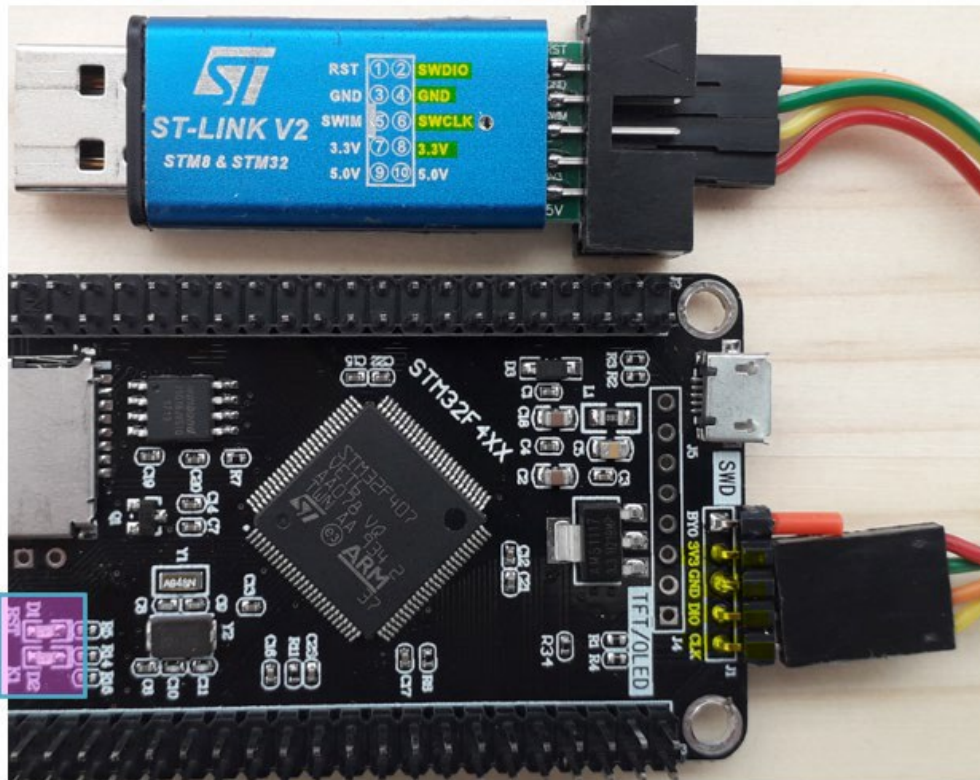
2-1. st-Link V2 Settings

SWIM | SWD?

SWIM is for stm8. The board for embedding we use is stm32, so we connect it to SWD. If you purchase the st-Link V2, the jumper wire also comes with it.



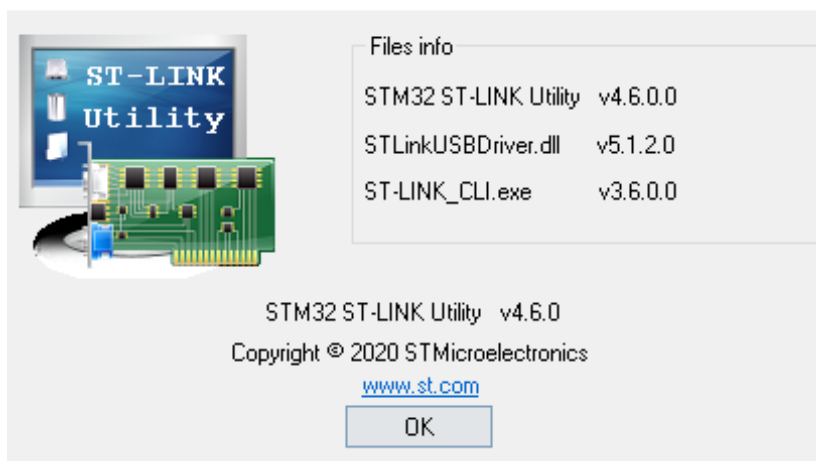
2-2. stm32F407VET6 & st-Link V2 Connection



If only one LED is on, OK!

2-3. st-Link Utility Install

About STM32 ST-LINK Utility



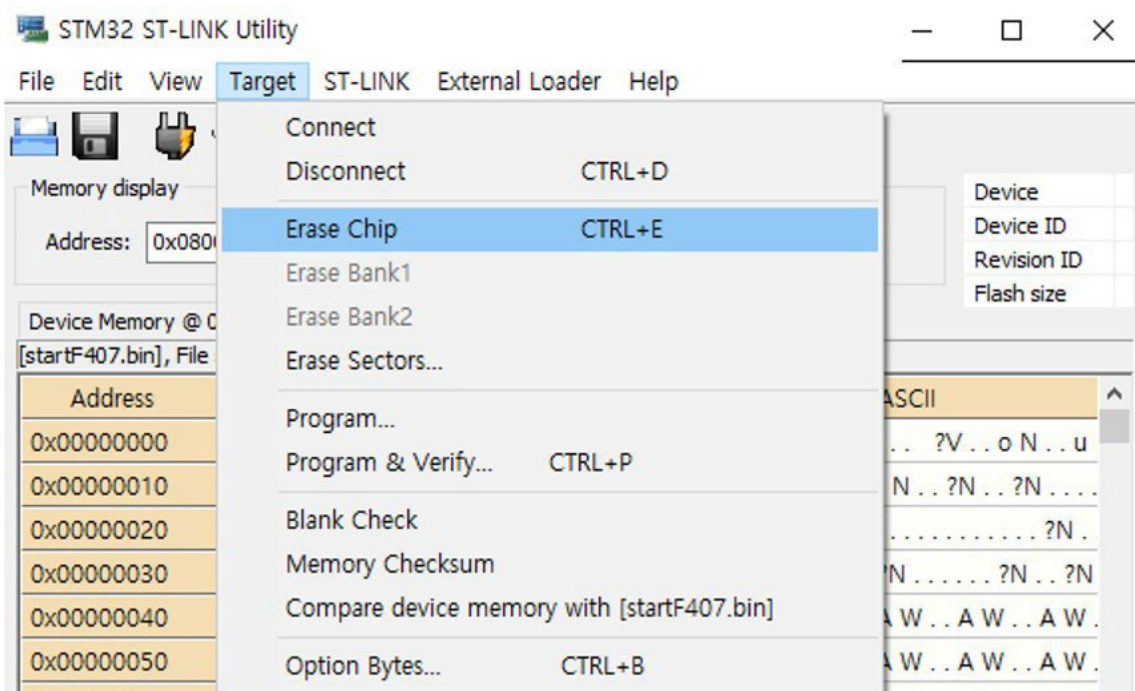
If you have problems with the DLL file, please install Microsoft Visual C++ 2015 Redistributable Update (~ 2018 also possible). Be sure to install it for 32-bit! Perhaps st-LINK Utility is 32-bit S/W.

Microsoft Visual C++ 2015 Redistributable Update 3 RC

Select Language:	English	Download
<input type="checkbox"/>	File Name	Size
<input type="checkbox"/>	vc_redist.x64.exe	14.3 MB
<input checked="" type="checkbox"/>	vc_redist.x86.exe	13.5 MB

2-4. Initializing stm32F407VET6 board, using the st-Link utility

[Target] - [Erase Chip]:

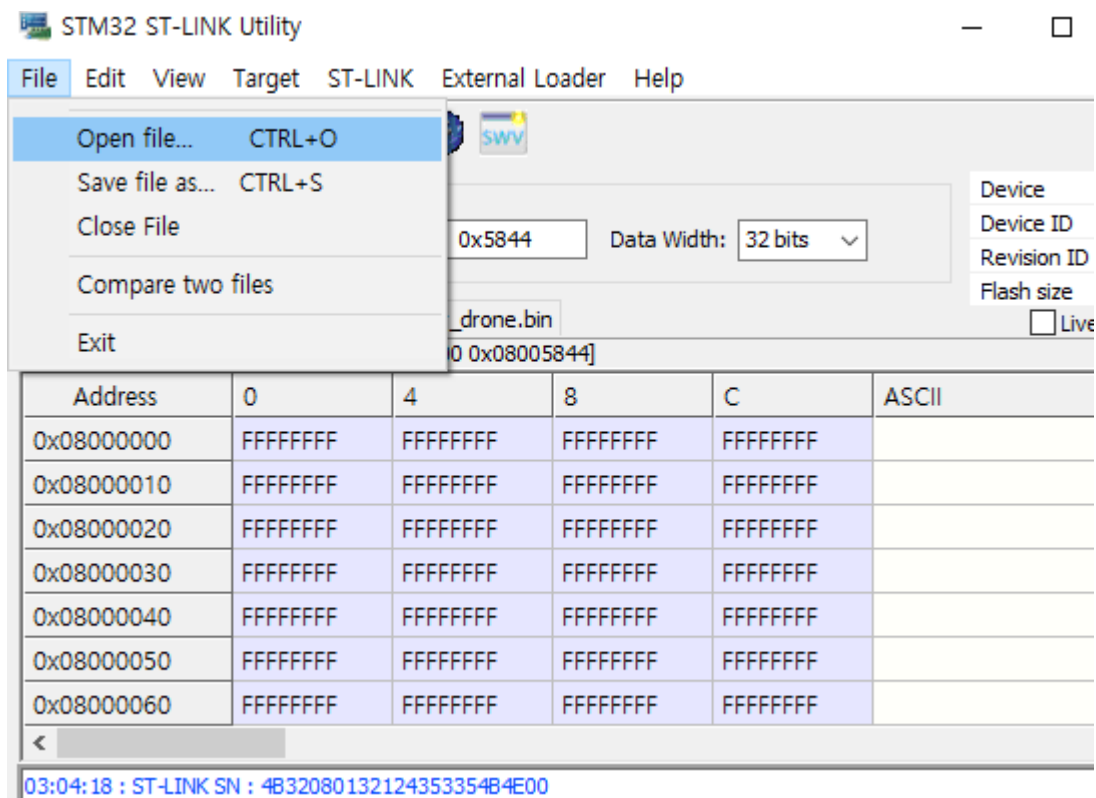


stm32F407VET Flash memory initialized:

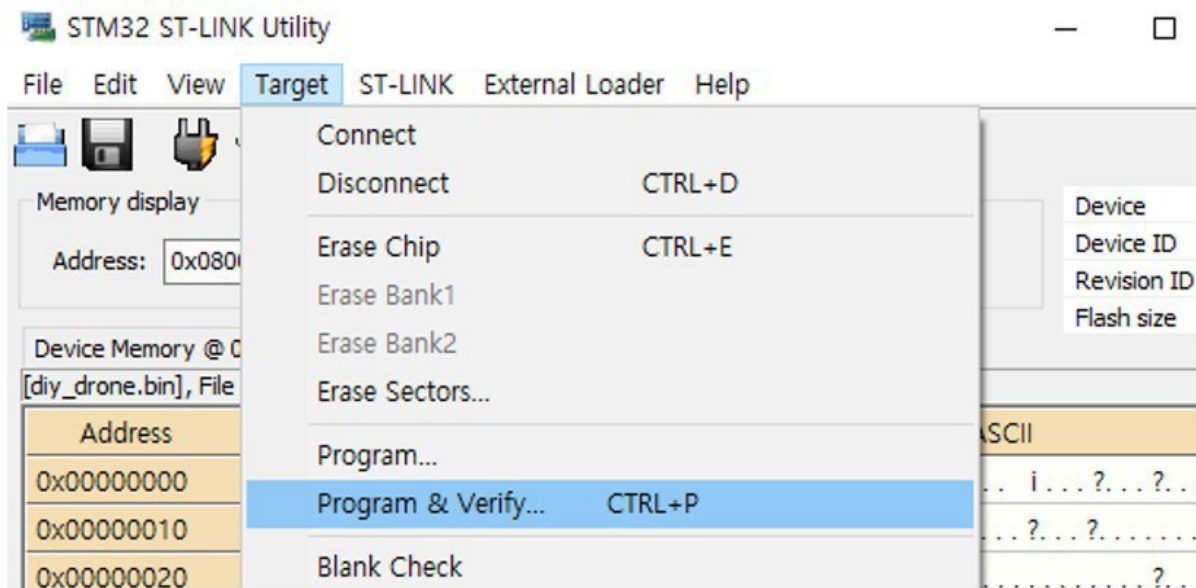
Address	0	4	8	C
0x08000000	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x08000010	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x08000020	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x08000030	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x08000040	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x08000050	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x08000060	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x08000070	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x08000080	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF

2-5. Upload

- ① Select the firmware (Hex | Bin file) to upload.



- ② [Target] - [Program & Verify]



Prework 3 [stm32CubeIDE](#) Install

(In June 2022) The current version is 1.9.0. Download and install it according to your OS.

Prework 4 [Arduino](#) Install

4-1. Adding the Library for Esp32

① Open the Arduino IDE, copy the following line to [Preferences] - [Additional Board Manager URLs] and click [OK].

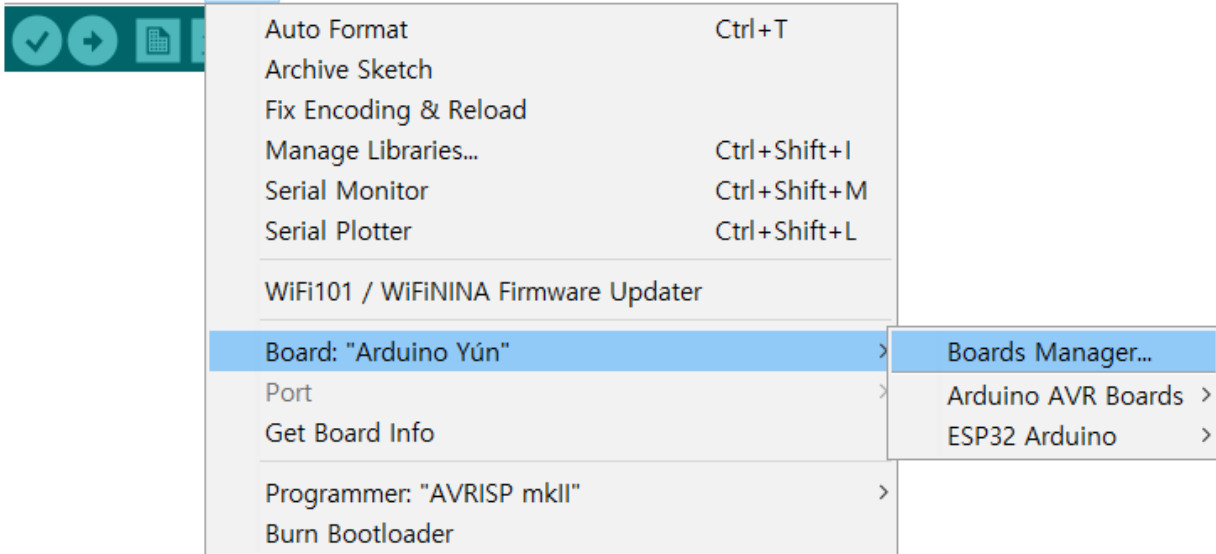
- https://dl.espressif.com/dl/package_esp32_index.json



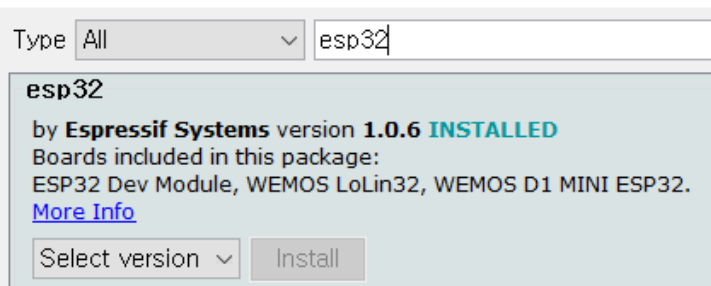
② Go to [Tools] - [Board] - [Board Manager] and install **esp32**.

sketch_jul27a | Arduino 1.8.19

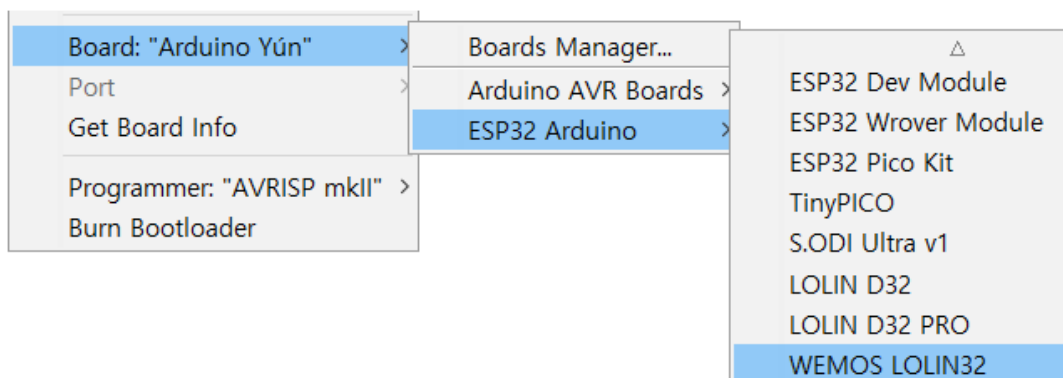
File Edit Sketch Tools Help



Boards Manager



③ Go to [Tools] - [Board] - [ESP32 Arduino] and select **WEMOS LOLIN32**.






4-2. Adding the WebSocket Library for Esp32

<https://github.com/Links2004/arduinoWebSockets>

- ① After downloading, unzip it and put it in the [Library] folder of the Arduino.

(E:) > arduino-1.8.19 > libraries

 Adafruit_Circuit_Playground
 arduinoWebSockets-master
 Bridge

You must restart the Arduino for the new library to take effect.

Pework 5 Android Studio

5-1. [Androis Studio](#) Install

Our version:



5-2. Obtaining an App Key to use Google Maps

We need Google Maps to implement multi-destination flights. To use Google Maps, we must have an App Key.

> Create a new project

- ① Go to the [API-Key](#) site to obtain API Key. A Google account is required.
- ② Click the [Select a project].



- ③ Click the [NEW PROJECT].

Select a project



NEW PROJECT

- ④ Enter a project name and click the CREATE button. Then a new project is created.

Project name * ?

Location * BROWSE

Parent organization or folder

CREATE CANCEL

> Creating a withdrawal account (billing account)

- ① (When a new project is created) A window will pop up, asking you to create a new withdrawal account. Like below:

No active billing accounts

You cannot enable billing for this project because all your billing accounts are closed. Please visit the billing section to correct your account state, then try again to enable billing.

CANCEL

MANAGE BILLING ACCOUNTS

Google gives users \$200 worth of free credits each month. After all, in the case of ordinary users, they can use it as it is without burdening the cost as before.



- ② Create a new withdrawal account.

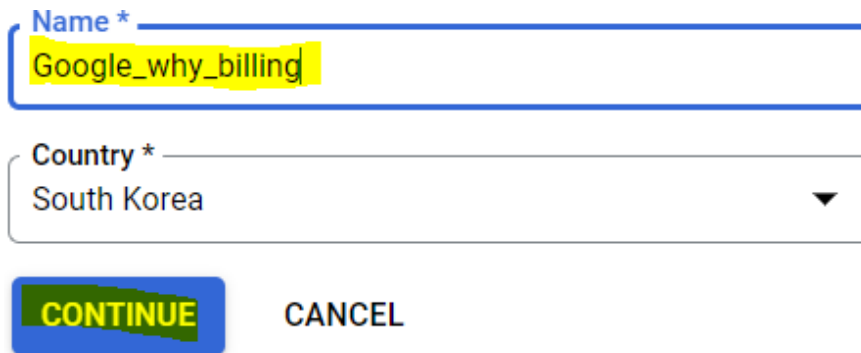
CREATE ACCOUNT

Filter

Status : Active x

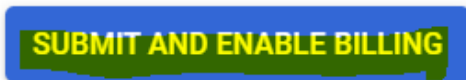
Enter property name or value

- ③ Enter the desired account name and proceed to [Next].



The screenshot shows a form with two input fields. The first field is labeled 'Name *' and contains the text 'Google_why_billing'. The second field is labeled 'Country *' and has a dropdown menu showing 'South Korea'. Below the fields are two buttons: 'CONTINUE' and 'CANCEL'.

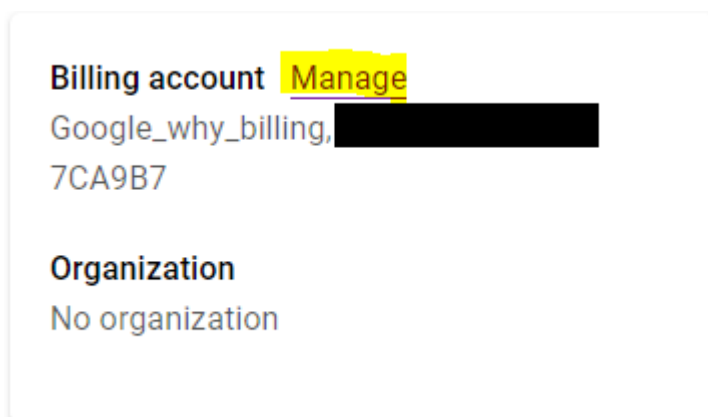
- ④ Check and finalize my billing account details.



The screenshot shows a single button with the text 'SUBMIT AND ENABLE BILLING'.

At this time, you will also go through the card registration process (for withdrawal accounts), which we omitted here.

- ⑤ (In the new screen) Click Manage billing account.



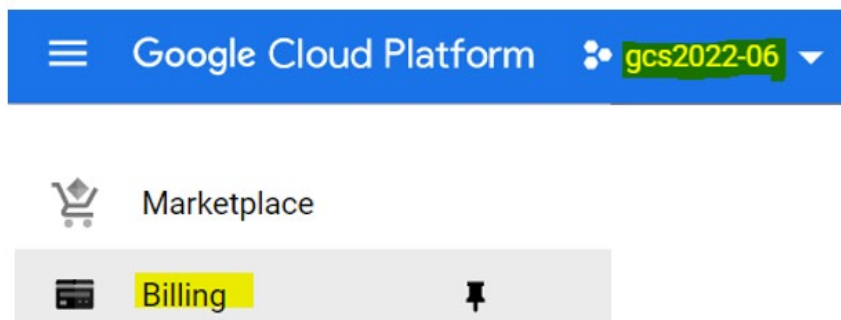
The screenshot shows a billing account management screen. It displays the account name 'Google_why_billing' followed by a redacted area. Below the account name is the ID '7CA9B7'. Under the heading 'Organization', it says 'No organization'. A 'Manage' link is visible next to the account name.

- ⑥ There is no project linked to the billing account (withdrawal account). To use the Google Maps project, you need to connect your account.

Projects linked to this billing account

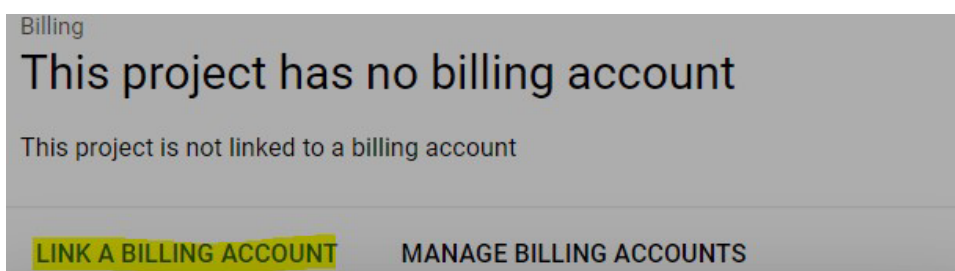
Project name	Project ID	Actions ?
There are no projects linked to this billing account.		

- ⑦ Select the project you created and click [Billing].



- ⑧ Link my card and the project.

- LINK A BILLING ACCOUNT
- Select my Billing account
- SET ACCOUNT



Set the billing account for project "gcs-app"

Billing account *

Any charges for this project will be billed to the account you select here.

CANCEL

SET ACCOUNT

⑨ If you click on Manage Billing Accounts, you will see the two are linked together.

Billing account [Manage](#)
Google_why_billing, [REDACTED]
7CA9B7

Organization
No organization

Projects linked to this billing account

Project name	Project ID	Actions ?
gcs-app	gcs-app-351802	⋮

> Obtaining the App Key

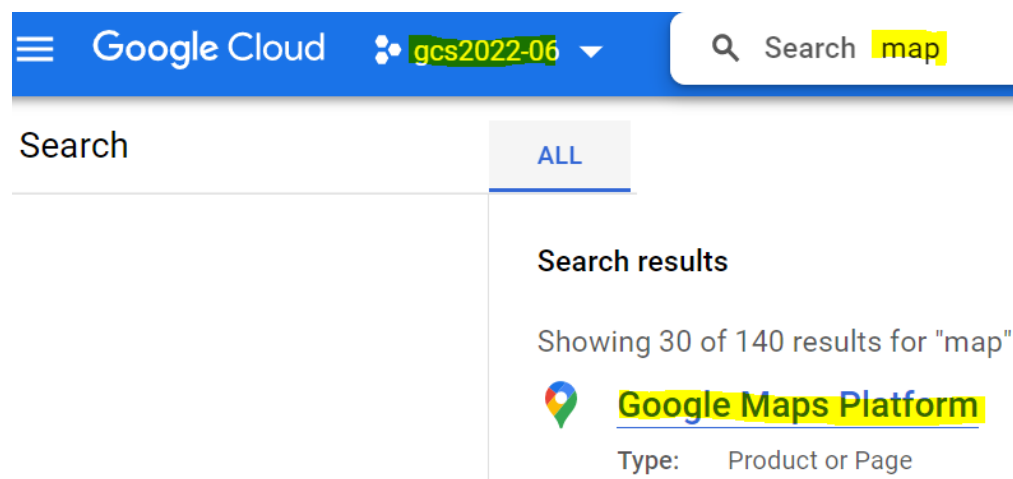
Now that you have created a project and linked your account, Google must provide a password or certificate for you to use Google Maps. It's called App Key.

① Select the project name.



② Go to 'credentials.'

When it is not easy to find credentials, select your project, search for 'map' and click on Google Maps Platform.



③ Determine whether the app is restricted or not, and create an app key.

- ① Allows apps to be created and distributed on any computer.
- ② Allows apps to be created and distributed only on a specific computer.

① **No limit**

Application restrictions

☒ None

API restrictions

API restrictions specify the enabled APIs that this key can call

- ☒ Don't restrict key
This key can call any API
- ☐ Restrict key

Note: It may take up to 5 minutes for settings to take effect

SAVE

CANCEL

② Limited**Application restrictions**
☒ Android apps
Restrict usage to your Android apps

Add your package name and SHA-1 signing-certificate fingerprint to restrict usage to your Android apps

com.copter1.new20,
01:3E:11: [REDACTED] AC:CC:B1:34:61 [REDACTED]

▼

ADD AN ITEM

Certificate fingerprint

API restrictions

API restrictions specify the enabled APIs that this key can call

- ☒ Don't restrict key
This key can call any API
- ☐ Restrict key

Note: It may take up to 5 minutes for settings to take effect

SAVE

CANCEL

> Getting Certificate fingerprint (SHA1)

- ① Enter the [API-Key](#) site.
- ② Click [Credentials] – [Maps API Key].
- ③ [Debug certificate fingerprint] Copy the certificate fingerprint.

Debug certificate fingerprint

For Linux or macOS:

```
$ keytool -list -v -keystore ~/.android/debug.keystore -alias and
```

For Windows:

```
$ keytool -list -v -keystore "%USERPROFILE%\android\debug.keystore"
```

Copy to clipboard

- ④ Execute 'cmd' and move to the .android folder.

```
C:\Users\gyoos\android>
```

- ⑤ Paste the certificate fingerprint you copied to the clipboard and press Enter.

- ⑥ Copy SHA1 from the printed result and paste it into the App's certificate fingerprint.

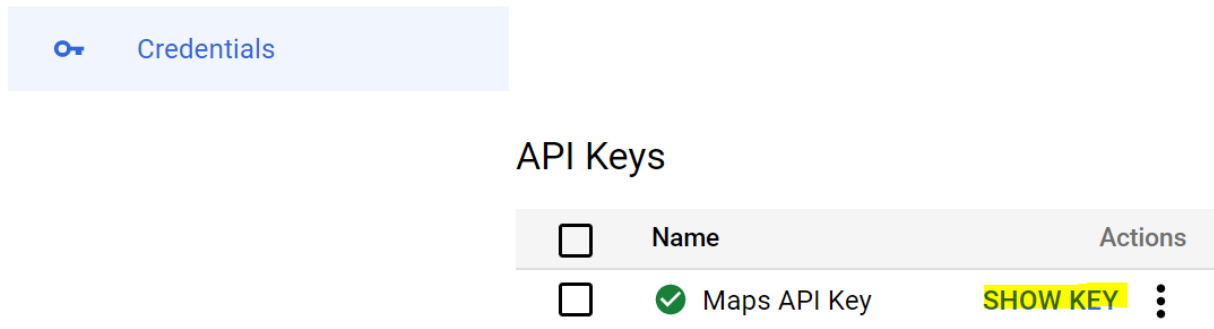
```
Certificate fingerprints:
  SHA1: 01:3E:11:11:97:32:AC:CC:B1:34:61:6E:5
  SHA256: 15:37:FD:27:B6:64:16:51:53:34:D1:3
Signature algorithm name: SHA1withRSA (weak)
Subject Public Key Algorithm: 2048-bit RSA key
```

com.copter1.new20,
 01:3E:11: [REDACTED] AC:CC:B1:34:61: [REDACTED]

ADD AN ITEM

> Applying App Key

- ① [Credentials] – [SHOW KEY] Copy App Key.



- ② [Android Studio] - [AndroidManifest.xml] Past App Key.

```
<meta-data
    android:name="com.google.android.geo.API_KEY"
    android:value=" " />
```

5-3. Making App in Android Studio

If you have restricted the use of the app to a specific PC, from now on, when creating a new app, you must use the 'package name used to restrict the app.'

- com.copter1.new20

