**Address Translation Tool**

A web application that translates addresses between English, Traditional Chinese, and Simplified Chinese, using Google APIs.

**Use of Google API key**
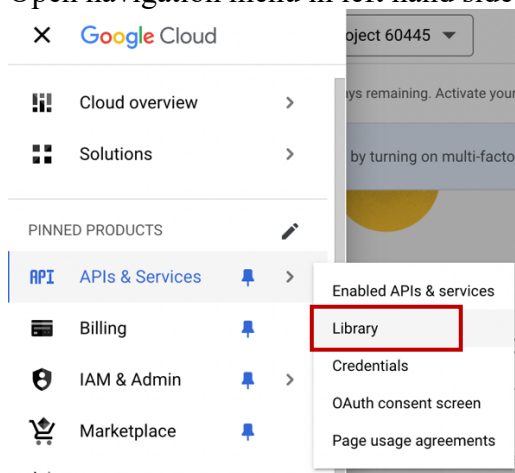
| API | Usage |
|---|---|
| Geocoding API | Search the address using Google Map and return the result in assigned language |
| Cloud Translation API | Translate address into assigned language |

**How to get API key**

1. Go to Google Console
2. Create a new project
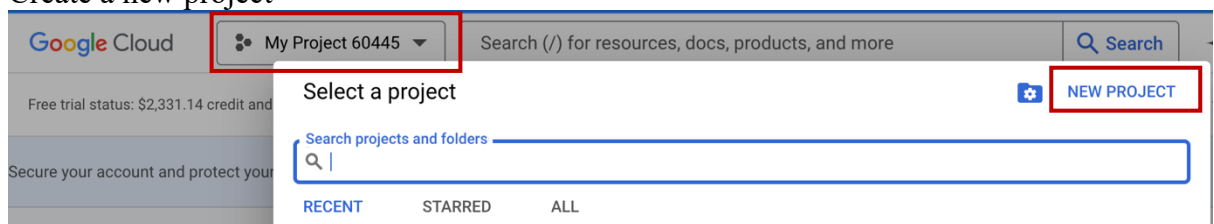


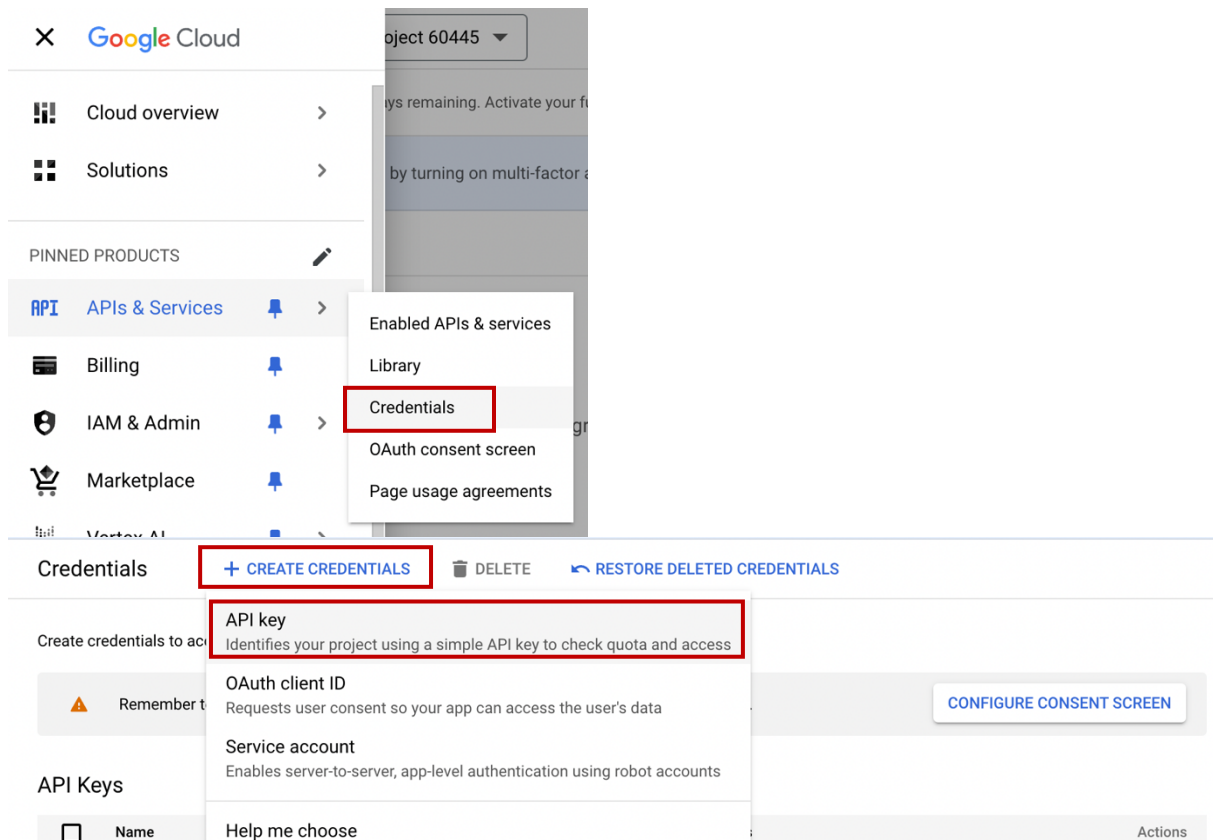3. Open navigation menu in left hand side→ APIs & Services → Enable APIs & services



4. Search 'Geocoding API' and 'Cloud Translation API'
5. Click 'Enable'
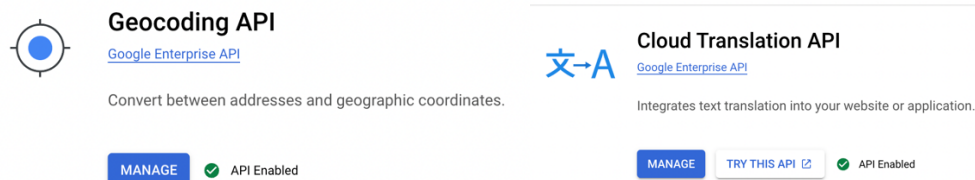
6. Go to Credentials and create



A new API key will be displayed.
7. Restrict the API key
   Click in the corresponding API key → Restrict Key → Restrict Usage to APIs →
   select corresponding API
   Click save to apply restriction

## 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

[ 1 API ▼ ]

Selected APIs:

Cloud Translation API

8. Copy the API keys to HTML code



```
const geocodingApiKey = "Replace with Geocoding API key"; // Replace with Geocoding API key
const translationApiKey = "Replace with Translation API key"; // Replace with Translation API key
```

## Pricing and Quota for API keys

### Translation API
Only first 500,000 characters per month are free

| Price table | Editions and tiers | Description | Pricing |
|---|---|---|---|
| Translation API | Basic - use pretrained model | First 500,000 characters per month | **Free** |
| | | 500,000 to 1 billion characters per month | **$20** per million characters |
| | | Document translation | **$0.08** per page |

For more information: Pricing for Translation API

### Geocoding API
uses a pay-as-you-go pricing model

| MONTHLY VOLUME RANGE (Price per REQUEST) | | |
|---|---|---|
| 0–100,000 | 100,001–500,000 | 500,000+ |
| 0.005 USD per each (5.00 USD per 1000) | 0.004 USD per each (4.00 USD per 1000) | Contact Sales for volume pricing |

For more information: Pricing for Geocoding API

## Working flowchart
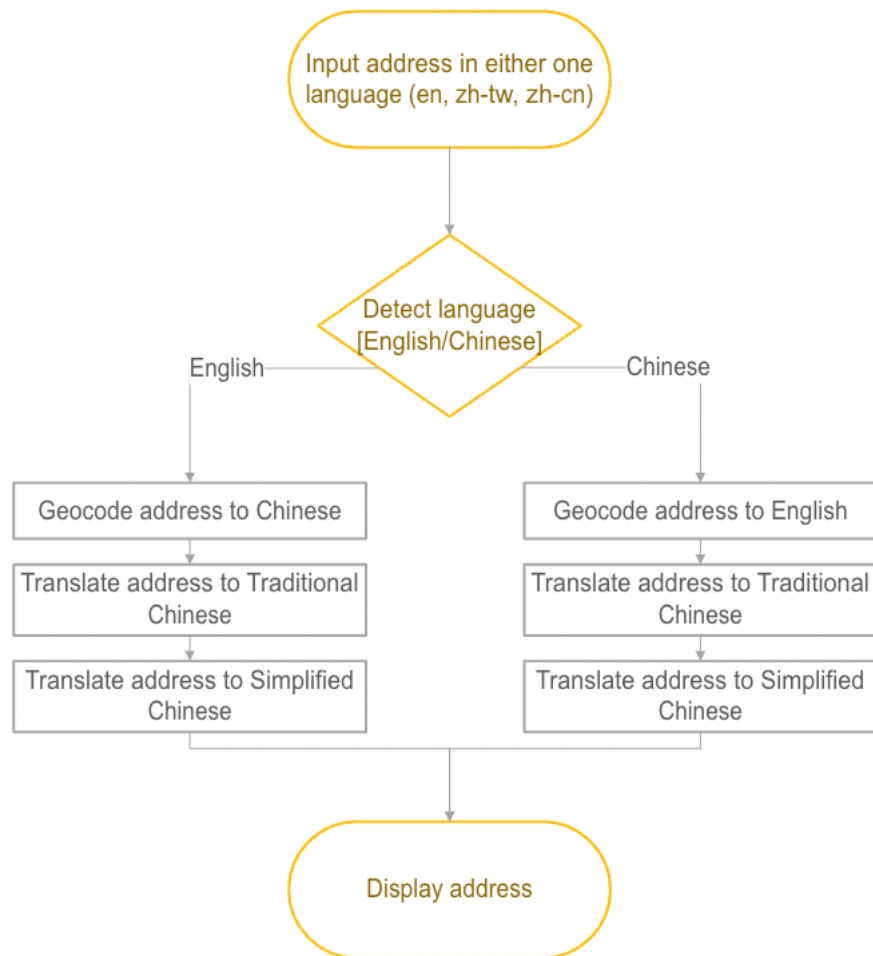


## Results

| INPUT | OUTPUT | Limitations |
|---|---|---|
| Flat A, 13/f, Fu Yat Yuen, Chi Fu Fa Yuen, Pok Fu Lam, Hong Kong | English: Flat A, 13/f, Fu Yat Yuen, Chi Fu Fa Yuen, Pok Fu Lam, Hong Kong<br><br>Traditional Chinese: 香港薄扶林置富道6號置富花園富逸苑<br><br>Simplified Chinese: 香港薄扶林置富道6号置富花园富逸苑 | Geocoding API cannot search for specific flat, floor and block. Manual input is still required. |
| 香港薄扶林置富花園富逸苑13樓A室 | English: Chi Fu Fa Yuen Fu Yat Yuen, 6 Chi Fu Rd, Pok Fu Lam, Hong Kong<br><br>Traditional Chinese: 香港薄扶林置富花園富逸苑13樓A室 | |

| | | |
|---|---|---|
| | Simplified Chinese: 香港薄扶林置富花园富逸苑 <span style="color:red">13 楼 A 室</span> | |
| Flat B, Lower Floor, Tower 2, Villa Tiara, No. 9 Tuen Hing Road, Tuen Mun | English: <span style="color:red">Flat B, Lower Floor, Tower 2, Villa Tiara</span>, No. 9 Tuen Hing Road, Tuen Mun<br><br>Traditional Chinese: 香港屯門屯興路 9 號<br><br>Simplified Chinese: 香港屯门屯兴路 9 号 | |
| 屯门屯兴路 9 号怡峰园 2 座低层 B 室 | English: 9 Tuen Hing Rd, Tuen Mun, Hong Kong<br><br>Traditional Chinese: 屯門屯興路 9 號怡峰園 <span style="color:red">2 座低層 B 室</span><br><br>Simplified Chinese: 屯门屯兴路 9 号怡峰园 <span style="color:red">2 座低层 B 室</span> | |
| Room 3, 5th Floor, No. 158 Gancheng Road, Banqiao District, New Taipei City, Taipei | English: Room 3, 5th Floor, No. 158 Gancheng Road, Banqiao District, New Taipei City, Taipei<br><br>Traditional Chinese: 220 台灣新北市板橋區干城路 158 號 Room 3, 5th Floor<br><br>Simplified Chinese: 220 台湾新北市板桥区干城路 158 号 Room 3, 5th Floor | |
| 台北，新北市，板橋區，干城路 158 號 5 樓 3 室 | English: 5 3, No. 158, Gancheng Rd, Banqiao District, New Taipei City, Taiwan 220<br><br>Traditional Chinese: 台北，新北市，板橋區，干城路 158 號 5 樓 3 室<br><br>Simplified Chinese: 台北，新北市，板桥区，干城路 158 号 5 楼 3 室 | |

| FAILED CASES | | |
|---|---|---|
| INPUT | OUTPUT | |
| 澳門孫逸仙博士大馬路之土地 LTN20 及 TN24 地段 | English: Av. Dr. Sun Yat Sen, Macao<br><br>Traditional Chinese: 澳門孫逸仙博士大馬路之土地 LTN20 及 TN24 地段<br><br>Simplified Chinese: 澳门孙逸仙博士大马路之土地 LTN20 及 TN24 地段 | Output is depending on google map search results. If detailed address is not found, it will return the most similar result on google map.<br><br> |
| Flat J, 15th Floor, Block 2, TN20 and TN24, Av. Dr. Sun Yat Sen, Macao | English: Flat J, 15th Floor, Block 2, TN20 and TN24, Av. Dr. Sun Yat Sen, Macao<br><br>Traditional Chinese: 澳门孙逸仙大馬路<br><br>Simplified Chinese: 澳门孙逸仙大马路 | |
| Yuen Long, The Parkhill, Block 3, Middle Floor, Room D | English: Yuen Long, The Parkhill, Block 3, Middle Floor, Room D<br><br>Traditional Chinese: 香港元朗<br><br>Simplified Chinese: 香港元朗 | <br><br>The Google map can search result for The Parkhill but not further address with floor and room |
| Yuen Long, The Parkhill | English: Yuen Long, The Parkhill,<br><br>Traditional Chinese: 香港元朗唐人新村路 138 號<br><br>Simplified Chinese: 香港元朗唐人新村路 138 号 | |

***Parts are not translated

## Improvement

To achieve more accurate translation result, some changes are suggested to be added to input format.

- Separate block, floor and flat from the input and do translation separately
  - "香港薄扶林置富花園富逸苑 13 樓 A 室" → "香港薄扶林置富花園富逸苑" & "13 樓 A 室"
    - Ask user to use ' ' to separate during input.
    - Create rules to detect the separation from each address. (patterns varies in different region)
    - Create 2 input boxes, 1) region and building 2) floor and flat
  - Geocode "香港薄扶林置富花園富逸苑" into English address.
    - "Chi Fu Fa Yuen Fu Yat Yuen, 6 Chi Fu Rd, Pok Fu Lam, Hong Kong"
  - Translate "13 樓 A 室" into English.
    - "Room A, 13th Floor"
  - Merge the two results as output.
    - "Room A, 13th Floor" + "Chi Fu Fa Yuen Fu Yat Yuen, 6 Chi Fu Rd, Pok Fu Lam, Hong Kong"