Letsencrypt certificate request

In order to obtain a valid certificate from Letsencrypt we should perform 2 steps

1. **Obtain a valid Domain**
2. **Request letsencrypt certificate using Certbot**

Obtain a valid domain

Option 1

Register is a service which allows users to get a domain. Some of them are free

1. Connect to https://freenom.com/ website
2. Look for a domain name and select one of those are free
    - Attention: use **.tk** as top level domain during your research
3. Finalize your "purchase" and get access to your domain control panel
4. Login on https://my.freenom.com/
5. Go to https://my.freenom.com/clientarea.php?action=domains and click on your domain name
6. Click on **"manage domain"** and then on **"manage freenom DNS"**. Do not modify anything; we will update our DNS server later.

Option 2 (If Freenom is not working)

Register is a service which allows users to get a domain. Some of them are free
1. Connect to https://register.it website and create a new account with your personal email address (you can also use google or facebook login)
2. Look for a domain name and select **one** of those are free
3. Follow the instruction on the website and finalize your "purchase" to get access to your domain control panel
4. Login on https://register.it
5. Go to https://controlpanel.register.it/ and click on your domain name
6. Click on **"Domain & DNS"** and then on **"DNS Configuration"** or **"Configurazione DNS"** if the website is shown in italian. Do not modify anything; we will update our DNS server later.

Request letsencrypt certificate using Certbot

1. Install Certbot
   ```
   sudo apt install Certbot
   ```
2. Request a valid certificate
   ```
   sudo certbot -d YOUR_DOMAIN --manual --preferred-challenges dns
   certonly
   ```
3. Follow the instructions on the console
4. Finally, your certificate request will be forwarded and Certbot will ask you to add a new DNS TXT record to your domain dns

```
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Please deploy a DNS TXT record under the name
_acme-challenge.networksecurity2021.tk with the following value:

5g76v4pw4nbRUfMEm4on3yPHcfyFlKw6EZAhUpZAuG8

Before continuing, verify the record is deployed.
```

5. Come back to the freenom (or register) website under the **"manage freenom DNS" (or "DNS Configuration")** configuration tab and add a new record using the parameters obtained by Certbot
    a. **Name**: the one provided from Certbot
    b. **Type**: TXT
    c. **TTL**: 900
    d. **Target**: the one provided from Certbot
6. Click on "**Save changes**"
7. Go on https://toolbox.googleapps.com/apps/dig/#TXT and look for
   `_acme-challenge.<<your_domain_name>`
8. Wait until your txt record is visible on some servers as suggested by Certbot

9. When txt record is visible on some DNS server, come back on Certbot shell and press **_Enter_** in order to complete the process
10. At the end of the process your certificate will be visible on /etc/letsencrypt/live/<<YOUR_DOMAIN>>/ folder, containing the following files:
    a. cert.pem
    b. privkey.pem
    c. chain.pem
    d. fullchain.pem