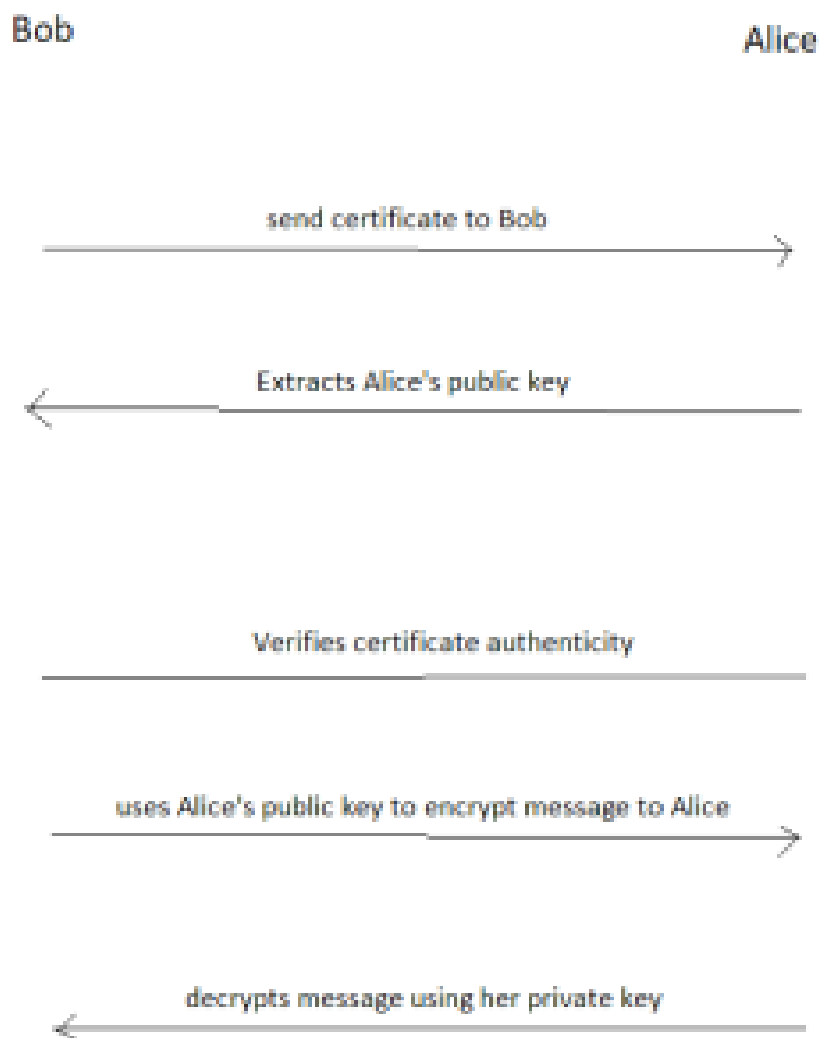


Alice's Certificate. Links to an external site.

Bob would like to use Diffie's rule 1 to send a confidential message to Alice. To achieve that, Bob needs Alice's public key. However, what he gets from Alice is Alice's certificate. Please draw diagrams to show the process of converting Alice's certificate to her public key.



What are the differences between Digital Certificates and Digital signatures?

⇒ The main differences between digital certificates and digital signatures in point form:

- Digital Certificates:
 - 1) Verify the identity of a person, organization, or device.
 - 2) Issued by a trusted third party, a Certificate Authority (CA).
 - 3) Contains information about the certificate holder's identity, including their public key.
 - 4) Used to establish trust and ensure the integrity of communication.

- Digital Signatures:
 - 1) Ensure the authenticity and integrity of a digital document or message.
 - 2) Created by applying a mathematical algorithm to the document or message.
 - 3) The resulting hash is then encrypted using the signer's private key to create the digital signature.
 - 4) Used to confirm that the document or message has not been altered since it was signed and that the signer is the one who created the signature.

Certificate on client

Applying for a certificate from CA, you can also use your root certificate.

After you get your certificate, you need to import it into a browser,

```
yunishabasnet@Yunishas-Air ~ % mkdir ~/new
yunishabasnet@Yunishas-Air ~ % cd new
yunishabasnet@Yunishas-Air new % openssl req -new -newkey rsa:2048 -nodes -keyout file1.key -out file1.csr
Generating a 2048 bit RSA private key
.....+++++
.....+++++
writing new private key to 'file1.key'
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) []US
State or Province Name (full name) []:Califorina
Locality Name (eg, city) []:Fremont
Organization Name (eg, company) []:
Organizational Unit Name (eg, section) []:
Common Name (eg, fully qualified host name) []:Yunisha
Email Address []:yunishabasnet3@gmail.com

Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:Yunisha
yunishabasnet@Yunishas-Air new % ls -l file1*
-rw-r--r-- 1 yunishabasnet staff 1050 Mar 31 23:53 file1.csr
-rw-r--r-- 1 yunishabasnet staff 1704 Mar 31 23:53 file1.key
yunishabasnet@Yunishas-Air new % openssl pkcs12 -export -out file1.p12 -inkey file1.key -in file1.csr
t
Error opening input file file1.crt
file1.crt: No such file or directory
yunishabasnet@Yunishas-Air new % openssl req -x509 -newkey rsa:2048 -nodes -keyout file1.key -out file1.crt -days 365
Generating a 2048 bit RSA private key
.....+++++
.....+++++
writing new private key to 'file1.key'
```

```
yunishabasnet@Yunishas-Air new % cat file1.crt
-----BEGIN CERTIFICATE-----
MIIC5DCCAcwCCQCpxsQIBMc33TANBgkqhkiG9w0BAQsFADA0MQswCQYDVQQGEwJV
czETMBEGA1UECAwKY2FsaWZvcmluYTEQMMA4GA1UEBwwHZnJlbW9udDAeFw0yMzA0
MDEwNjU1MTZaFw0yNDZzMzEwNjU1MTZaMDQxMzA1BgNVBAYTA1VzMRMwEQYDVQKI
DApjaWxpZm9yaW5hMRAwDgYDVQQHDAdmcmVtb250MIIIBiJANBgkqhkiG9w0BAQEF
AAOCAQ8AMIIBCgKCAQEA00S5xp0b5q/g5UmDdezEQ+kFkw3V0km3Gznp+QJdg5H8
meQoIIQoixQBjhdmpCgQyKbQLompD+sdLbUhhOPMY91cL0khUCg0W8hZfgqt+quu
TpoSUWGYo8uwmqGT+X5/IQH9Ec/AGChPIPqXyL/mx07bly8UTG6y0HpLxfoDdc
i/dL456KI0gbAQBy0LSN+ti9qa7TlRpg0v9p3EfsEAE6Wnata7D6SLzGgrLv8ug
dCqma6MBzeitRiUgXhSHtxNohONneAwFJW/UYe+xbdzgTzW9kA0XzubTZSL1EXy
gwir0Vls1hcGuAy5/oA9cJRfiXc7A10HD9A1SPRyhwIDAQABMA0GCSqGSIb3DQEB
CwUAA4IBAQA0+cDV8tFv6AAEa4ZuCaULirADZooxv1sk/iyqfDS5bpMPth57UDu7
rk57LvDCDB56GapS8R6weAjeKzks5gm/wPJ1Af6+6RWWLUdistlnUnJwWynIB/YT
0NXQtSCinmBm59StYlbyl9yao7yu6ufJmGZzmqVE5MHaYDQeMqhKgXLE1z4xGuW
addz1b01AY0GUYESYkfVTJNUwQ9EzeFGkEp0IYVntu3G808TfR7LtSHHGS4yvo5V
WzH3FYFxmTggfs9g6fU1d6qT8NJNhQvIkWbeimscKUCueRuCtfXU/ztar/zgcuIW
atYN+cTysS6C9sNEpoQv1c+iL4NjG7AA
-----END CERTIFICATE-----
yunishabasnet@Yunishas-Air new %
```

```
yunishabasnet@Yunishas-Air new % cat file1.csr
-----BEGIN CERTIFICATE REQUEST-----
MIICzTCCAbUCAQAwbzELMAkGA1UEBhMCVVMxEzARBgNVBAgMCkNhbg1mb3JpbmEx
EDA0BgNVBAcMB0ZyZW1vbnQxEDA0BgNVBAMMB11bmlzaGExJzA1BgkqhkiG9w0B
CQEWGH11bmlzaGF1YXNuZXQzQGdtYWlsLmNvbTCCASIwDQYJKoZIhvcNAQEBBQAD
ggEPADCCAQoCggEBAMA6YXqPcE03sPeShhtnCG0Inpjsm3tY4g41/tFKZsf0UcEs
qJVsB/1siQLVMZY+smfmxCCzQgwEUtPET6ZQA6m1pd1/MDPrsGEg/NzM6b01ddQ6
nJV15dX4NFKQf1AMYuqHXxNQUash4MmDJSb0YxoWPGJusGNDBFzIKR4yYsh4rjsC
7Nav9zZMor4wdsnK5M8nMmqe8aSdseafN3yEesRe/S/g7grpySebydBm03XW9RTM
oLeq6r/6KrIlwIF478uSeizc6hm6UYobJfSRambLv7rPKtmMSfgdts1kbQXaK0Ry
8DZ4jM1UFfw+Mp46o1qn3zOY+1WoD4sRqfWBzOCCAwEAAAZMBcGCSqGSIb3DQEJ
BzEKDAhAWXVuaXNoYTANBgkqhkiG9w0BAQsFAAOCACAEuZAg9l5j4nmABecXMyxF
hF0tE5nWb9HXA+lzeUWsGndi3NUF9s5tRq/bbp3Gowf7wH7UiWwkK0irSyJ5j7nu
m4W+rmqN+h/LddXamWAUBjWIIG/aic9qkoXuFhxG4JDSXZChcNqIoJ05WX2SngNb
Bsv2JMdfvGqLneLb29vAcQPixQ2DQFA+jdtCMA59trIaqjhuTI1Hy189kfR6oPlI
C8ePaMP4YcPgZEYCG8pmLvWt0Igz2AjL6e98YdfVAFg+hTd0E7a+wHwwrxYeV10
xL6AajA7jvXufsrfI339XJTTQ3+jVxVM3N+49ILnP61WP02GF4DEpVYynd03xAdN
Jg==
-----END CERTIFICATE REQUEST-----
yunishabasnet@Yunishas-Air new %
yunishabasnet@Yunishas-Air new %
```

Create Your Certificate and CA

This exercise will let you learn.

How to generate a key pair, a certificate signing request (CSR) using the Java Key tool

How to set up your own CA using the OpenSSL tool and sign a certificate.

All the trust issues associated with Certificate and CA.

How to use the generated certificates to implement secure communication.

➔ generate a key pair and a certificate signing request (CSR) using the Java keytool : 1. Navigate to the JAVA_HOME/bin directory,

2. where JAVA_HOME is the installation directory of the Java SDK

3. Enter the following command:

4. `keytool -genkey -keyalg RSA -alias aliasname -keystore keystore.jks -keysize 2048` 5. When prompted, enter your keystore password

6. Generate a certificate signing request (CSR) for an existing Java keystore: 7. `keytool -certreq -alias aliasname -keystore keystore.jks -file domainname.csr`

steps to set up your own Certificate Authority (CA) using the OpenSSL tool and sign a certificate:

1. Create a private key to be used for the certificate

2. Create a Certificate Authority from the key that you just generated

3. Create a Certificate Signing Request (CSR) for your server

4. Sign the certificate signing request using the key from your CA certificate

Once you have generated a certificate and signed it with your own Certificate Authority (CA), you can use it to implement secure communication between a client and a server.

1. A client requests access to a protected resource
2. The server presents its certificate to the client
3. The client verifies the server's certificate
4. If successful, the client sends its certificate to the server
5. The server verifies the client's credentials
6. If successful, the server grants access to the protected resource requested by the client

```
Last login: Fri Mar 31 23:29:02 on console
yunishabasnet@Yunishas-Air ~ % mkdir ~/certificates
yunishabasnet@Yunishas-Air ~ % cd ~/certificates
yunishabasnet@Yunishas-Air certificates % keytool -genkey -alias mykey -keyalg RSA -keysize 2048 -keystore mykeystore.jks
Enter keystore password:
Re-enter new password:
What is your first and last name?
[Unknown]: Yunisha basney
What is the name of your organizational unit?
[Unknown]:
What is the name of your organization?
[Unknown]:
What is the name of your City or Locality?
[Unknown]: Fremont
What is the name of your State or Province?
[Unknown]: California
What is the two-letter country code for this unit?
[Unknown]: US
Is CN=Yunisha basney, OU=, O=Unknown, L=Fremont, ST=California, C=US correct?
[no]: NO
What is your first and last name?
[Yunisha basney]: Yunisha basnet
What is the name of your organizational unit?
[.]:
What is the name of your organization?
[Unknown]:
What is the name of your City or Locality?
[Fremont]:
What is the name of your State or Province?
[California]:
What is the two-letter country code for this unit?
[US]:
Is CN=Yunisha basnet, OU=, O=Unknown, L=Fremont, ST=California, C=US correct?
[no]: y
Enter key password for <mykey>
(RETURN if same as keystore password):
Re-enter new password:
They don't match. Try again
Enter key password for <mykey>
(RETURN if same as keystore password):
Re-enter new password:
They don't match. Try again
Enter key password for <mykey>
(RETURN if same as keystore password):
Re-enter new password:
Warning:
The JKS keystore uses a proprietary format. It is recommended to migrate to PKCS12 which is an industry standard format using "keytool -importkeystore -srckeystore mykeystore.jks -destkeystore mykeystore.
jks -deststoretype pkcs12".
yunishabasnet@Yunishas-Air certificates % keytool -certreq -alias mykey -keyalg RSA -file mycsr.csr -keystore mykeystore.jks
Enter keystore password:
Warning:
The JKS keystore uses a proprietary format. It is recommended to migrate to PKCS12 which is an industry standard format using "keytool -importkeystore -srckeystore mykeystore.jks -destkeystore mykeystore.
jks -deststoretype pkcs12".
yunishabasnet@Yunishas-Air certificates % openssl genrsa -out rootCA.key 2048
Generating RSA private key, 2048 bit long modulus
.....+++++
e is 65537 (0x10001)
yunishabasnet@Yunishas-Air certificates % openssl req -x509 -new -nodes -key rootCA.key -sha256 -days 1024 -out rootCA.crt
You are about to be asked to enter information that will be incorporated
```

```
yunishabasnet@Yunishas-Air certificates % ls
mycsr.csr      mykeystore.jks  rootCA.crt      rootCA.key
yunishabasnet@Yunishas-Air certificates % cat mycsr.csr
-----BEGIN NEW CERTIFICATE REQUEST-----
MIIC4DCCAacgCAQAwazELMAkGA1UEBhMCVVMxEzARBgNVBAGTCkNhbgG1mb3JpbmEx
EDA0BgNVBAcTB0ZyZW1vbnQxEDA0BgNVBAoTB1Vua25vd24xCjAIBgNVBAcTAS4x
FzAVBgNVBAMTD1l1bmlzaGEgYmFzbmV0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8A
MIIBCgKCAQEaje2Fpb/4NYF1cvH8UnpM9FCwgCsAxOLvs4GdPB8RashPFMH41LCu
YTiEak9rdn98Qfv1FidtyZqTePf4W+zoJSHjdmq49lSzdXu+NWYoxT00WJ21rU1E
E97/oAC5glGuRnWuKwhhrZZyDdPhfxDYtf9PCpsJIG0356pRnBlXzSI/Xq7p3WSW
X5t5U7mRuWA8sDgWeYJTFZn2jZCdcdpEWlT3y1zAdq8nH9SRQaBbBdIc+71Dlwur
mv3h99MnxyulqIsH78xrE3sV2HsltiHq7YcguRbF2w9v9byZghmbetnLeKtS7epF
gSZypt3oidsn9nnSun1rrmAY20FNWvh2+QIDAQABoDAwLgYJKoZIhvcNAQkOMSEw
HzAdBgNVHQ4EFgQUUL0W8Y+4SCJccIGsvehK1zRENlgwDQYJKoZIhvcNAQELBQAD
ggEBAEgULyJ3hgoKHZFvBWSuxoRDyEzR5NcLFQMMpLdCu77MdSmp8KQs2aEAvYxe
9M3l9ZwFWiYUqVLYwezvXXIZyv68NvV3IgzrVt7UEo1aiWqvh5aAqtt0cqCFtbU0
v4AJ7CGNmIXmDK11xc+YCxdcFqAkRIzjQyrDL3toSszUAux+kEYfBOFWdf1HaE00
DRqAV007J1m0JZqG/7zefvIcaP8kw9NkyCcUoxDMI10/RYk+pPI5iInf7o0oHKcR
q3KD8Y/e+qqTydzZv8RcYBMvJWCa6Q/eF+Ry8MzeUgFsCt2D5Lov5w+sJ2NZ3f6g
Hq53fUHbzHRSUmWizN600S0AtF4=
-----END NEW CERTIFICATE REQUEST-----
yunishabasnet@Yunishas-Air certificates % █
```

```
yunishabasnet@Yunishas-Air new % cat file1.key
-----BEGIN PRIVATE KEY-----
MIIEvQIBADANBgkqhkiG9w0BAQEFAASCBCwggSjAgEAAoIBAQQDQ5LnGnRvmr+Dl
SYN17MRD6QWTDdU6Sbcb0en5A12DkfyZ5CgghCiLFAGOF2Y9wZDIptAs6akP6x0t
tSGE48xj3VwvSSFQKDRbyFl+Cq36q650mhJRYbKjy7C+aoZP5fn8hAf0Rz8AYKE8
g+pfIv+bE7tuXLxRMbrLQekvF+g0h1yL90vjnoojSBsBAHI6VI362L2prtOVGmDS
/2ncR8WwQATpadq1rsPpIvMaCsu/y6B0JqqZrowHN6K1GJSBeFie3E2iE42d4DAU
lb9Rh77Ft30BPNb2QDRf05tNlIuURfKDCks5WWyWFwa4DLn+gD1wlF+JdzsCU4cP
0CVI9HKHAgMBAAECggEACIui0e4xawF86MRWHWffK4wHz1k8hNLPK7L10Fr5a115
g041ehcN9Yq0+boZU6NsgdjZIU05vk329py3T1FmVhuDHugV9cp/QdXzW0WikmOd
kNeasjuV7D9z7oY7El+tF1hrXuHfQ0uzDN+0ocmzvStUepJ0nd+z7Ya3vFZ1BssN
1ABsEgeFIhGkv18Ti0bXoHeaD6JsqrTR4PjiGaP8R/JAUHAXJSBeX/LoxLQXMCaf
M1sNKIXiMc50bSIItKzMSesJxFODzA2H1KfywdACQjG3EPKiSbyFWBxTTQcQUNJcr
a0AwBNuCHNtyE++2T9tbny003grFcUfvSoIZSUACyQKBgQD5M9TA5jj2CVvpjQYR
VEapQsu8WQYdscilDGf4VBaNGkryBpknhAeC50/MaYmfXSX9oV5MojSENEvIYtHb
tyQ/VEJDAA9/kw/RVL70iB8dX3TlMWECYiBF7t50V9mTcwtc+cQwcr5HukU504sK
eUEj3+ELpxz2Lt76X5V2WpFqNQKBgQDWl2szk5EEMbhcIChS1vRP68h1K/IcBaIT
1ZsQqI3ZxiCXQqK3FB1QEq/J0V2RMkDdKv0G0/Oct6jk+VIOT4J0NEGizuREoQX7
Q28zLfRe2IcM3Mzs9Md+3tspk7qXDSQMYIg/2y5Ku2Vt2MghkqVqfZJiU6JpGyE7
AUKg3HohSwKBgBjRl6vKgVYOIpBErE0Hhq40z/mnKBvG/A0sE6LAXSoyZyppi9FK
rfDUWimSjTlI7qKu8pRRR0evaajAZsQqHjsMajkABYsgG2Auv34Uqn0LZ7oCJ440
NaChZJhTs4Ci4YvV+DsXAmPKW8ahkeRuJRWsk140u4atLlnjMSCDb0PNAoGALVY0
SeNFYhN3FeWU778AwtnXrrhIIIVxFqusZSqXPY1EXXCwm+ldJ70q/AKFuCVb2t44
MvcYouWSgz3BflCCCTb5HwKC65TxhJJMrg1pcZhhf/AuQ2m7tCw1NWWGqF8YXJ0Q
bB1MfHF3DmwcBct1U0hQYwG0cGxQ6vxrLT0neF0CgYEA1RQaCbKqK+U3hXP81P2
vV6IVY8jUD0qRKyW+XkrG8euM/H1bTsos8/iU9LAskkanAIH86oTXuq4WhFT0qm+
0VV0DQTH6T74xsa2wRTgz0rEdm9YY1aXRnyVJAAC30AsAxcWC5Ba6kAN7WzXnGIh
s5ykfw5w/+JCZCZ5Z/WS1Ug=
-----END PRIVATE KEY-----
yunishabasnet@Yunishas-Air new % █
```



```
/yunishabasnet@Yunishas-Air certificates % cat rootCA.crt
-----BEGIN CERTIFICATE-----
MIIDaDCCA1ACCQCVponJMiH50DANBgkqhkiG9w0BAQsFADB2MQswCQYDVQQGEwJV
JzETMBEGA1UECAwKY2FsaWZvcmluYTEQMA4GA1UEBwwHZnJlbW9udDEXMBUGA1UE
AwwOWXVuaXNoYSBCYXNuZXQxJzAlBgkqhkiG9w0BCQEWGH11bmlzaGFiyXNuZXQz
QGdtYWlsLmNvbTAeFw0yMzA0MDEwNjM5MThaFw0yNjAxMTkwNjM5MThaMHYxCzAJ
BgNVBAYTA1VTMRMwEQYDVQQIDApjYWxpZm9yaW5hMRAwDgYDVQQHDAdmcmVtb250
MRcwFQYDVQQDDA5ZdW5pc2hhIEJhc25ldDEnMCUGCSqGSIB3DQEJARYYeXVuaXNo
/WJhc25ldDNAZ21haWwuY29tMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKC
AQEAtHdpXuvVcFktQ1bYnI/0g8lz2y6PH2YXtb7e/urmdvjNAM/mPvb6JvYefOds
o9x6i5wx/dqPqWS74C6CvEpcNsnMcgSJFak9jx5KJtVljMRUUG6sFtCgdiXMh2rL
gWEaBo1F8P5LRrhpR7wwjWTLyL+YSFPuzjFnbZZPpBWxgCHMBXimBBKkiAV/LRui
rqUr5eLsQy2Icq1xTKIBzp5+ynnehckXgXEpZwRtrxyc6wlqgP1tkgLpic0jVkB
BpiDXjHK6ThZTjtHUVwjpyfASqILfjlunCW8ual09qqn54FNWWpm7W/AtDBTALgN
/v6XX9FJbMI2m98U2EpN1YEQQIDAQABMA0GCSqGSIB3DQEBcwUAA4IBAQA9Njn8
RQAdDVF2Ei40/CaOyYM+/n1qzQjQ8M1Fw+H2SzjppVxYHMx61DYgrr+X/J4aPGyU
LbyehASTpgf5SjtPlnhw4ent1o0EC6/z0hP5edR9Yj4uBqDM/2QYpeC01ratg4oX
da+o+yufNcwEtLn+SSGyoshdCMXv2cjKvnqX1+0WvY614ynN9G5oegx0Hp9pCfHe
a38L1kbu6vJtnBhID0gceN9xzvknc2l6kw6UMG4PH9A5Noxui/pavZw/TvgWlIZd
j04QpVYqTzESisxcPfkf2t0DJRHDY0M5dxgAiR/uSuBWH0roipBxzEN2x1Ccdp9f
JCKyIRVwow57ntmc
-----END CERTIFICATE-----
yunishabasnet@Yunishas-Air certificates %
```

```
yunishabasnet@Yunishas-Air certificates % cat rootCA.key
-----BEGIN RSA PRIVATE KEY-----
MIIEpAIBAAKCAQEAtHdpXuvVcFktQlbYnI/0g8lz2y6PH2YXtb7e/urmdvjNAM/m
Pvb6JvYef0dso9x6i5wx/dqPqWS74C6CvEpcNsnMcgSJFak9jx5KJtVljMRUUg6s
FtCgdiXMh2rLgWEaBolF8P5LRrhpR7wWjWTLyL+YSFPuzjFnbZZPpBWxgCHMBXim
BBKkiAV/LRuirqUr5eLsQy2Icq1xTKIBzp5+ynnehckXgXEpZwRtrxyc6wlqgP1t
kgLpic0jVkkBBpiDXjHK6ThZTjtHUVwjpyfASqILfjlunCW8ual09qqn54FNWWpm
7W/AtDBTALgNvv6XX9FJbMI f2m98U2EpN1YEQQIDAQABAOIBAH7vcxVKCnIgt53u
2i0ded5sh2pG4HK0a77xh4aEkSBjtkZ49TmanK9k4hk86oSDY0rpzZwB7IS4jxGL
hXeNUjlTTdNw7z9mMB+HrZ6NAQW3XpvtKAxQKF2SDr+9VXEmbJjmW2S8aRRQR/Um
DjLcEB6e7S0KpHEX/M7vKAuBGr3FWYHElYaPPHSMaTsmP0kkCCxvIUdpSmFXIu+f
WyxVxtU+JIWNwjfFwGG94Py9FcUrMhqh+OwEYmy+BKvwhSs9F5XdRkDPUyPnZBBf
fARVhkU0t2ZCpsYx38BvGkJBhn0qhc0zx3dDBQn3oQIjNKY58nuTaevqI5hBQhsU
yISAabECgYEA2sijwzqrFtGgYvvgSRXCqrJnanAzfss//uQs9aKTbk0iqijnFFmD
uQVocMxqFL1C5nguIAFgvr9fEkqaiD0heKiyuKn0eoVlmT8IhDjJSXlU2IgWzRfI
Dwp3tBEIKoYcZkHqHRycIXf/7JV8psaJtyqrCZF71Vmr58xf/UXNMTUCgYEA0yor
2ifh0F3qz+DiZDjilhRnQUzsSd0rYMnAxruS6duIISTRk0Fii4B61bxFs93pIRaq
VIjhCp/GzFfkw/UyilFUG9046HUBaPQ2ZedCodTx2jpINhivSa5bIsoRfTcuJ9NV
i3rsHH6ZiJz0+rmIMUkxTb/lPDB9JgtEe32HFF0CgYEAsWRRc/BT3LKnitqTJm8g
Yes5ctH6zunZv8AevCPPym3IrJNxmciw1ghMKRtttcmMVxsecLkQIVGfrxCxAhc
5UpTbusv4aPblv/G1f59JrfcFZ1yb2TDEywPls7ggiovSLJVMrmJ1pFHznv+EfOU
ohFUKPOHJpwIiG/rvJ4mG6kCgYA2GgzoNOWnNBjQL+bxFJ4BI7McyO+VLrUu9CH/
CNNoLsXe8Ab9+necFEvkbPtSzR1Iy/zR8cvuo+cUPcSv7CeJxrKM+p7ad/6Q0lkJ
hMm2ms9oQRx1N7fZYeGZtTnr4fJ9CQFW3iSWXF1L4iLmBhj9v6nxKKQ72pSF5cci
+JNeRQKBgQDH6aS+ohhqZfiGTSY0AQzRmemCPdVG7q4M45RDN4MPRpy59LK75ap5
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-----END RSA PRIVATE KEY-----
yunishabasnet@Yunishas-Air certificates % █
```