

EX.NO:

ROLL.NO: 210701288

DATE:

Install and Configure Firewalls

AIM:

Demonstrating digital signature generation and verification using RSA and SHA-256.

ALGORITHM:

1. Generate RSA key pair with a 2048-bit key size.
2. Create digital signature by hashing input with SHA-256 and encrypting with private key.
3. Verify signature by decrypting with public key and comparing hash with input.
4. Output signature in hexadecimal format.
5. Output verification result as boolean.

PROGRAM:

```
root@fedora:/home/student# systemctl start firewalld
```

```
root@fedora:/home/student# systemctl restart firewalld
```

```
root@fedora:/home/student# systemctl stop firewalld
```

```
root@fedora:/home/student# iptables -L -n -v
```

```
root@fedora:/home/student# iptables -L
```

```
root@fedora:/home/student# iptables -A INPUT -s 172.16.11.4 -j DROP
```

```
root@fedora:/home/student# iptables -A OUTPUT -p tcp --dport 80 -j DROP
```

```
root@fedora:/home/student2# iptables -A OUTPUT -p tcp -d 172.16.11.5/24 --dport 80 -j ACCEPT
```

```
root@fedora:/home/student# host facebook.com
```

```
root@fedora:/home/student# whois 157.240.192.35|grep CIDR
```

```
root@fedora:/home/student# whois 157.240.24.35
```

```
root@fedora:/home/student# iptables -L
```

```
root@fedora:/home/student# iptables -A OUTPUT -p tcp -d 157.240.192.35/15 -j DROP
```

```
root@fedora:/home/student# iptables -D OUTPUT -p tcp -d 157.240.192.35/15 -j DROP
```

```
root@fedora:/home/student# iptables -A INPUT -m mac --mac-source 0F:22:1E:00:02:30 -j DROP
```

```
root@fedora:/home/student# iptables-save>~/iptables.rules
```

```
root@fedora:/home/student# vi iptables.rules
```

```
root@fedora:/home/student# iptables-save>~/iptables.r1
```

```
root@fedora:/home/student2# iptables -A INPUT -p tcp --syn --dport 22 -m connlimit --connlimit-above 3 -j REJECT
```

```
root@fedora:/home/student# iptables -A OUTPUT -p tcp --dport 25 -j REJECT
```

```
root@fedora:/home/student# iptables -A OUTPUT -p tcp --dport 25 -j ACCEPT
```

```
root@fedora:/home/student# iptables -A OUTPUT -p tcp --dport 25 -j REJECT
```

```
root@fedora:/home/student# iptables -L
```

```
root@fedora:/home/student# iptables -F
```

OUTPUT:

```
student@fedora:~$ su
Password:
root@fedora:/home/student# systemctl start firewalld
root@fedora:/home/student# systemctl restart firewalld
root@fedora:/home/student# systemctl stop firewalld
root@fedora:/home/student# iptables -L -n -v
Chain INPUT (policy ACCEPT 0 packets, 0 bytes)
 pkts bytes target    prot opt in     out     source                   destination

Chain FORWARD (policy ACCEPT 0 packets, 0 bytes)
 pkts bytes target    prot opt in     out     source                   destination

Chain OUTPUT (policy ACCEPT 0 packets, 0 bytes)
 pkts bytes target    prot opt in     out     source                   destination
root@fedora:/home/student# iptables -L
Chain INPUT (policy ACCEPT)
target    prot opt source                destination

Chain FORWARD (policy ACCEPT)
target    prot opt source                destination

Chain OUTPUT (policy ACCEPT)
target    prot opt source                destination
root@fedora:/home/student# iptables -A INPUT -s 172.16.11.4 -j DROP
root@fedora:/home/student# iptables -A OUTPUT -p tcp --dport 80 -j DROP
root@fedora:/home/student# iptables -A OUTPUT -P tcp -d 172.16.11.5/24 --dport 80 -j ACCEPT
iptables v1.8.9 (nf_tables): Cannot use -P with -A
Try 'iptables -h' or 'iptables --help' for more information.
root@fedora:/home/student2# iptables -A OUTPUT -p tcp -d 172.16.11.5/24 --dport 80 -j ACCEPT
root@fedora:/home/student# host facebook.com
facebook.com has address 157.240.192.35
facebook.com has IPv6 address 2a03:2880:f137:182:face:b00c:0:25de
facebook.com mail is handled by 10 smtpin.vvv.facebook.com.
root@fedora:/home/student# whois 157.240.192.35|grep CIDR
CIDR:        157.240.0.0/16
```

```

root@fedora:/home/student# whois 157.240.24.35
#
# ARIN WHOIS data and services are subject to the Terms of Use
# available at: https://www.arin.net/resources/registry/whois/tou/
#
# If you see inaccuracies in the results, please report at
# https://www.arin.net/resources/registry/whois/inaccuracy_reporting/
#
# Copyright 1997-2024, American Registry for Internet Numbers, Ltd.
#

```

```

OrgAbuseName: Operations
OrgAbusePhone: +1-650-543-4800
OrgAbuseEmail: noc@fb.com
OrgAbuseRef: https://rdap.arin.net/registry/entity/OPERA82-ARIN

OrgTechHandle: OPERA82-ARIN
OrgTechName: Operations
OrgTechPhone: +1-650-543-4800
OrgTechEmail: noc@fb.com
OrgTechRef: https://rdap.arin.net/registry/entity/OPERA82-ARIN

#
# ARIN WHOIS data and services are subject to the Terms of Use
# available at: https://www.arin.net/resources/registry/whois/tou/
#
# If you see inaccuracies in the results, please report at
# https://www.arin.net/resources/registry/whois/inaccuracy_reporting/
#
# Copyright 1997-2024, American Registry for Internet Numbers, Ltd.
#

```

```

root@fedora:/home/student# iptables -L
Chain INPUT (policy ACCEPT)
target    prot opt source                destination
^[DROP    all  --  172.16.11.4            anywhere

Chain FORWARD (policy ACCEPT)
target    prot opt source                destination

Chain OUTPUT (policy ACCEPT)
target    prot opt source                destination
DROP      tcp  --  anywhere              anywhere            tcp dpt:http
ACCEPT    tcp  --  anywhere              172.16.11.0/24      tcp dpt:http
root@fedora:/home/student# iptables -A OUTPUT -p tcp -d 157.240.192.35/15 -j DROP
root@fedora:/home/student# iptables -D OUTPUT -p tcp -d 157.240.192.35/15 -j DROP
root@fedora:/home/student# iptables -A INPUT -m mac --mac-source 0F:22:1E:00:02:30 -j DROP
root@fedora:/home/student# iptables-save>~/iptables.rules
root@fedora:/home/student# vi iptables.rules
root@fedora:/home/student# iptables-save>~/iptables.r1

```

RESULT: