Exercise 3: Add a rule for SSH

```
sudo ufw allow ssh
sudo ufw allow 22/tcp
```

Exercise 5: Open ports

```
sudo ufw allow http
sudo ufw allow domain
```

Exercise 7: Change default

```
sudo ufw default allow incoming
sudo ufw default deny incoming
sudo ufw default reject incoming
```

Advanced exercise:

If you want to modify the filtering behavior of ICMP/ICMPv6, you need to change the rule files applied before the ufw rules are applied. The files are located under the `/etc/ufw/` directory. The ICMP/ICMPv6 rules are defined in `before.rules` and `before6.rules`.

To deny all the incoming ICMP Echo Request, change the line in `before.rules` as below.

```
root@ns49:/etc/ufw# diff -u before.rules-dist before.rules
--- before.rules-dist   2017-08-17 16:34:49.000000000 +0000
+++ before.rules        2019-02-21 03:43:53.835588294 +0000
@@ -35,7 +35,7 @@
 -A ufw-before-input -p icmp --icmp-type source-quench -j ACCEPT
 -A ufw-before-input -p icmp --icmp-type time-exceeded -j ACCEPT
 -A ufw-before-input -p icmp --icmp-type parameter-problem -j ACCEPT
--A ufw-before-input -p icmp --icmp-type echo-request -j ACCEPT
+-A ufw-before-input -p icmp --icmp-type echo-request -j DROP


 # ok icmp code for FORWARD
 -A ufw-before-forward -p icmp --icmp-type destination-unreachable -j
ACCEPT
```

For ICMPv6, change the `before6.rules` file.

```
--- before6.rules-dist  2017-08-17 16:34:49.000000000 +0000
+++ before6.rules       2019-02-21 03:43:39.507619245 +0000
@@ -41,7 +41,7 @@
 -A ufw6-before-input -p icmpv6 --icmpv6-type time-exceeded -j ACCEPT
 # codes 0-2
 -A ufw6-before-input -p icmpv6 --icmpv6-type parameter-problem -j ACC
EPT
--A ufw6-before-input -p icmpv6 --icmpv6-type echo-request -j ACCEPT
+-A ufw6-before-input -p icmpv6 --icmpv6-type echo-request -j DROP
 -A ufw6-before-input -p icmpv6 --icmpv6-type echo-reply -j ACCEPT
 -A ufw6-before-input -p icmpv6 --icmpv6-type router-solicitation -m h
l --hl-eq 255 -j ACCEPT
 -A ufw6-before-input -p icmpv6 --icmpv6-type router-advertisement -m
hl --hl-eq 255 -j ACCEPT
```

Please beware that ICMP/ICMPv6 messages are important control messages that may affect protocol behavior of other protocols or applications (e.g. Path MTU discovery). So please think twice when you change the behavior of ICMP responses. (Echo Request/Echo Reply may be fine. Actually, some administrators configure not to respond ICMP Echo Request messages)