Exercise 1: RSA keygen

```
Senerating public/private rsa key pair.
Enter passphrase for "key" (empty for no passphrase):
Enter same passphrase again
Passphrases do not match. Try again.
Enter passphrase for "key" (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in key
 Your public key has been saved in key.pub
 The key fingerprint is:
 SHA256:rBpoVDFHDXXXoCdHDwfGUW0WW7z+eP2P5TRwY+y1XDQ kali@kali
 The key's randomart image is:
   -(kali@kali)-[~/HW 1/Ex 1
  -$ cat key
     -REGIN OPENSSH PRIVATE KEY-
b3BlbnNzaC1rZXktdjEAAAAACmFlczI1Ni1idHIAAAAGYmNveXB0AAAAGAAAABC1dV7TAe
wD2wmlw5ZjLgijAAAAGAAAAEAAAGXAAAAB3NzaClyc2EAAAADAQABAAABgODaHRJdSech
/CEIJNoAmX/NgJdzWNWk4Ysv6Vyv12T1Ku1ml1HcgZc6c02m7q6FEwxMC0IkVty1mw0ckI
yUUOaNL8nX4wG0IsN32+4FzMSP7GnGEJ8pCf7JihSRqI8yCvnVQWtD1Uge1HG3sbwZmRFN
KiORR2wDrk+BAI0Z+Mx1//7o1I9bT3ze2+Gbg7K43nW9tmIJr+lYXt8Lpbg+WJPB3CzgFD
RBymdTRzsLl5VPJceZNiWYIhH1MnbCLq8zHnVN9BAj95ZQmb4Xbg8biIgx24Qmhq7L1PyC
ewgrztu6e4R@cAAAWA49@ZwU29cy+2N6EMhk767wFfPO/Wlei2E5FeKStoipxTHLZ4JSpO
94N74OEH51ELMSnB4Son4uw3IQujZgeWuYZVWZgcH8mj\qyL7Z1*3NOKXVEqnAuk+ssAQU
dLDhrGG3ZWfcX14qLVZO4wxaeUU/XRYsgnUQB8femmDkxXLX4APCRWytVvTL3dVuT6Zfs
w18pCawzUBH+Vk1PcHxVDKfFMzWjODqafLVeXLZBANCYTSVea8z6bb1CL5truGiqfM
gTY9zgvvMC66LXBhb08eFUGZpvOHNVt8eiIhiMMpgdJNhsm/ip8e8SavhPcJ72cAamg10h
 8NmcQONBAYJndS7C6QEggeMInsUUaIxJN02IOz55+7Sx9VSUMggHLEErfR/n+YSlf7jUs
EVHIaiNEYYnm70mrJ6iYdAooPlulhczcoPE+NhlZVda+ZMFnBAzUuzL8cE4ec9GnMYx9zg
 gDfnHdV+4V9hEnS6+WNrHSouV4/9hRBmkM0oHK9/Oly2iXL/f1XE3anYUiZt5IiUnPHStZ
1i/N8hBlIOBLEkgrUDNgxnwHA3+K/FAYRYpQAQoDH8xeUs8ZJ+NV3DgVVbs7DmepiCa5GV
wN2vEwWV8VV1E4fbQOCVnfHnvXiu0oHHoi/5rrJXMNHT2hJ/WcnAIrc0vTVwlfgAc2+aJe
dSe/oj9FUt8ny2RCQKKdCSA2aUqE/q8tLEMQTRUfzDkMSofGC-WqwY+zuTtbVoYv8YmCT0
ofioCxALLakrfminCkBthXE64kF46kASwsl3nlF+3T3wuQ1ZVXEysxE/7AdhMDfpbT0phK
JgAHSmhtD8fVnhp8mC/G81Ak6T+9Y1YYwm9dGemULK7goxnUvu1Zz8ScwonYWFPVdVX
FVS51HXD1C21FZ0aElsnY80SndSsHBht415H7h0neaFoM16HX+fmCC2y17pk/KC33ZY/k
PUgY@IH/wlgJBTgS8XKRbLlYco6nXrIfQvUSCCgWF8ZL95wsMieAuwdH50ARs6/ffEoL5b
mSIG2oodmKYRIh49tRgzU01WvNI0eCK3hJdiJvvtTMf/LO5eN5Iv2OrzNzEe4KD/6t+GzJ
fthfLxqECUUud0ZLbgN47qC0/x4Q/qEIXTMDPUcy+imUpmFi4W9Sdj+EJQ6LnpsgX3HoLR
T-M4dkY+C9nVCuvJYMc/K2CbsykWBuSeyKYpZzGt+7yxw1ZkZapEndvkdDF+tOk8r96dC
UnZ9rCcHj3ozYMNSZ/sk+4WTCNM5dyvjESF63HzFECZemT8psbmcOZ+CQ4HZ/sWgU3Z
fDxZ9fCGWm6hM8ju2UmjhLL194UPjzuRZHCBitrevkcW3jh3b1034KOW/wemz2IFX2ESCD
Zhvt9gKa1BAPG@nqQ3cWyoolBFOQNGtwbQAMDqlff7J9tRbOncHnFH1/Xz7OUcJRn3eSAS
9YRx4b0ZNlkN59a72igS4R8Liai7RNtgHrafJ7+gXl+NBmHmTigLR0Je65oXnH8KE99ez0
 hDKrLAMekhbyNbCVC0FkP79hxyC4/vk@tybWRFjzD6+J2cMbrkkO+iMh9T2Bqc7XWoIbg
    -FND OPENSSH PRIVATE KEY-
   -(kali@ kali)-[~/HW_1/Ex_1
  $ cat key.pub
 ssh-rsa AAAAB3NzaC1vc2FAAAADAOABAAABGODaHR3dSech/CFI3NoAmX/Ng3dzWNWk4Ysv6Vvv12T1Ku
 GkcFg+s6WnaIyUUOaNL8nX4wG0IsN32+4FzMSP7GnGEJ8pCf7J1hSRgI8yCvnVQWtD1Uge1HG3sbwZmRFM
```



Exercise 2: ECB

```
—(kali⊛kali)-[~/HW_<u>1/Ex_</u>2]
s openssl rand -out 16_key.bin 16
___(kali⊛ kali)-[~/HW_1/Ex_2]
s openssl enc _aes-128-ecb -in hashing.txt -out hashing_enc_aes_1.dat -pass file:16_key.bin
*** WARNING : deprecated key derivation used.
Using -iter or -pbkdf2 would be better.
__(kali⊛ kali)-[~/HW_1/Ex_2]
openssl enc -d -aes-128-ecb -in hashing enc aes 1.dat -out hashing decrypted 1.txt -pass file:16 kev.bin
*** WARNING : deprecated key derivation used.
Using -iter or -pbkdf2 would be better.
__(kali@ kali)-[~/HW_1/Ex_2]
s cat hashing.txt
IBM
__(kali@ kali)-[~/HW 1/Ex 2]
s cat hashing decrypted 1.txt
TRM
 —(kali⊛kali)-[~/HW_1/Ex_2]
```

Exercise 2: CFB with iv vector

```
–(kali⊛kali)-[~/HW 1/Ex 2]
s openssl rand -hex 16 > iv.hex
 ---(kali⊛ kali)-[~/HW 1/Ex 2]
s openssl enc -aes-128-cfb -in hashing.txt -out hashing_enc_cfb.dat -pass file:16_key.bin -iv file:iv.hex
*** WARNING : deprecated key derivation used.
Using -iter or -pbkdf2 would be better.
hex string is too short, padding with zero bytes to length
non-hex digit
invalid hex iv value
 ---(kali⊛ kali)-[~/HW 1/Ex 2]
 ---(kali⊛ kali)-[~/HW 1/Ex 2]
s openssl enc -aes-128-cfb -in hashing.txt -out hashing_enc_cfb.dat -pass file:16_key.bin -iv $(cat iv.hex)
*** WARNING : deprecated key derivation used.
Using -iter or -pbkdf2 would be better.
 —(kali⊗kali)-[~/HW 1/Ex 2]
$ openssl enc -d -aes-128-cfb -in hashing enc cfb.dat -out hashing decrypted cfb.txt -pass file:16 key.bin -iv $(cat iv.hex)
*** WARNING : deprecated key derivation used.
Using -iter or -pbkdf2 would be better.
 ---(kali⊛ kali)-[~/HW 1/Ex 2]
s cat hashing decrypted cfb.txt
TBM
```

Exercise optional: online caesar cipher



Exercise optional: md5 decode

```
File Actions Edit View Help
 —(kali⊛kali)-[~/HW_1/Ex_3]
-$ echo -n Civic | md5sum
h2b587eebaec9613f7944acb3df044ce
 —(kali⊛kali)-[~/HW_1/Ex_3]
2f49f4708537033e725213452617f2e4
 —(kali⊛kali)-[~/HW_1/Ex_3]
 —$ civiC
civiC: command not found
___(kali⊗ kali)-[~/HW 1/Ex 3]
-$ echo -n civiC | md5sum
e91d0212f0e07a9015f4e14f35efb84f
---(kali⊗ kali)-[~/HW_1/Ex_3]
└$ echo -n Sticks | md5sum
e68ee2bd74b0ffd80c0698b6759e3604
___(kali⊛ kali)-[~/HW_1/Ex_3]
s echo -n Skcits | md5sum
0e4f2ce643c9ef69d4f98b4bd2ee427e
 —(kali⊗kali)-[~/HW_1/Ex_3]
 -$ echo -n skcits | md5sum
3e99349e98f323fb40413802d3b18888
 —(kali⊛kali)-[~/HW 1/Ex 3]
 -$ echo -n Canon | md5sum
767ae4575f235465c0318145d85cd947
```

Exercise optional

```
(kali@kali)-[~/HW_1/Ex_3]
$ openssl enc -aes-256-cbc -d -salt -in confession.enc -out confession.mp4 -k Canon
*** WARNING: deprecated key derivation used.
Using -iter or -pbkdf2 would be better.
```

Decrypted video

