Exp no 3

Date:11-02-2025

## ENCRYPTION CRYPTO101

**PROCEDURE**

**1. Log in to TryHackMe**

**Go to https://tryhackme.com, log in or sign up if you don't already have an account.**

**2. Search and Join the Room**

**Use the search bar and type "Crypto" or "Encryption" to find rooms like:**

- **"Intro to Crypto"**
- **"Cryptography"**
- **"Encryption"**
- **"RSA", "Hashing", or "Cyber Defense - Cryptography" Click on the room you want to start with and then hit "Join Room".**

**3. Start the Machine (If Required)**

**Some rooms offer a target machine. If so, click "Start Machine" and note the IP. For most crypto rooms, you'll solve challenges without needing a machine, just using the AttackBox or your own terminal.**

**4. Connect to TryHackMe Network (if needed) Use either:**

- **AttackBox (just launch from the browser — already connected) •**

**Or connect your own VM using:**

**bash**
**CopyEdit**
**sudo openvpn your-vpn-file.ovpn**

**5. Go Through Each Task**

**Each task teaches a cryptographic concept. Common topics include:**

| Topic | Learn About |
|---|---|
| Encoding vs Encryption | Base64, Hex, ASCII |
| Hashing | MD5, SHA1, SHA256, Hashcat basics |
| Symmetric Encryption | Caesar cipher, Vigenère, AES |
| Asymmetric Encryption | RSA, Public/Private Keys |
| Steganography | Hiding messages in files/images |
| Frequency Analysis | Cracking substitution ciphers |

**6. Use Tools and Commands Learn and apply tools such as:**

- **base64, xxd, md5sum, sha256sum**
- **openssl – to encrypt/decrypt messages**
- **hashcat or john – for cracking hashes**
- **Online tools like CyberChef or dcode.fr (as allowed)**
- **gpg – for key encryption Example: bash CopyEdit**

**echo "Hello" | base64 # Encoding echo**
**"SGVsbG8=" | base64 -d**
**echo -n "password" | md5sum # Hashing**

**7. Solve Challenges & Submit Answers Each task usually ends with a question like:**
**"What is the plaintext message?"**
**"Crack this hash."**
**"What encryption algorithm is used?"**
**Use your tools, commands, and clues to figure out the answer and submit it.**

**8. Mark the Room as Completed**
**Once all answers are submitted correctly, the room will be marked as "Completed".**

***INTRO***

Note: to actually become familiar with Linux, you need to be using it daily. Make sure you have it installed (whether that be as your host system, a dual reboot, or on a virtual machine). For pentesting, most people prefer to use Kali.

The name "Linux" is actually an umbrella term for multiple OS's that are based on UNIX (another operating system). Thanks to UNIX being open-source, variants of Linux come in all shapes and sizes, suited best for what the system is being used for.

For example, Ubuntu & Debian are some of the more commonplace distributions of Linux because it is so extensible. I.e. you can run Ubuntu as a server (such as websites & web applications) or as a fullyfledged desktop. For this series, we're going to be using Ubuntu.

The first version of Linux was released in 1991.

**Basic Commands**

Some basic commands include pwd, ls, cd, and more.
I have listed commands and their usages in my Gitbook here.

**An Introduction To Shell Operators**

Some shell operators include &, &&, >, and >>.
I have listed commands and their usages in my Gitbook here.

**TASKS**

Task 2Key terms

Answer the questions below

I agree not to complain too much about how theory heavy this room is.

No answer needed — ✓ Correct Answer

Are SSH keys protected with a passphrase or a password?

passphrase — ✓ Correct Answer — Hint

Task 3Why is Encryption important?

Answer the questions below

What does SSH stand for?

Secure Shell — ✓ Correct Answer

How do webservers prove their identity?

certificates — ✓ Correct Answer — Hint

What is the main set of standards you need to comply with if you store or process payment card details?

PCI-DSS — ✓ Correct Answer

Task 4Crucial Crypto Maths

What's 30 % 5?

0 — ✓ Correct Answer

What's 25 % 7

4 — ✓ Correct Answer

What's 118613842 % 9091

3565 — ✓ Correct Answer — Hint

Task 5Types of Encryption

Answer the questions below

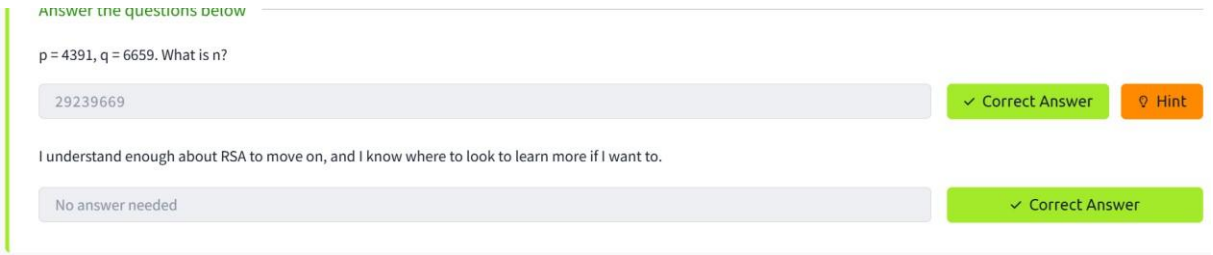
Should you trust DES? Yea/Nay

Nay — ✓ Correct Answer — Hint

What was the result of the attempt to make DES more secure so that it could be used for longer?

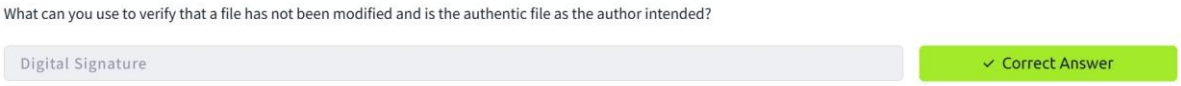
Triple DES — ✓ Correct Answer — Hint

## Task 6 RSA - Rivest Shamir Adleman

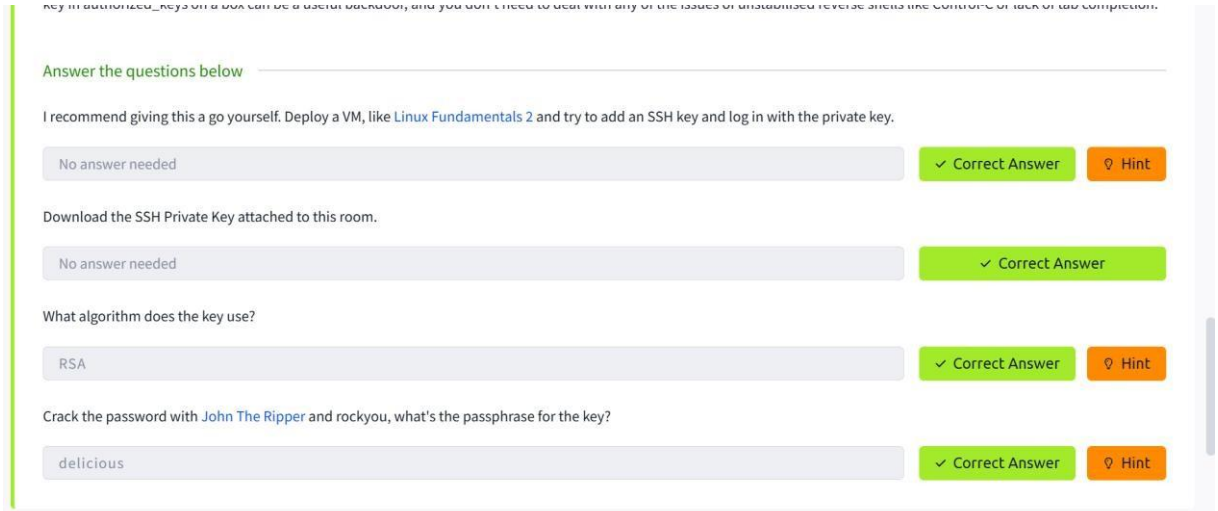



## Task 7Establishing Keys Using Asymmetric Cryptography


## Task 8Digital signatures and Certificates

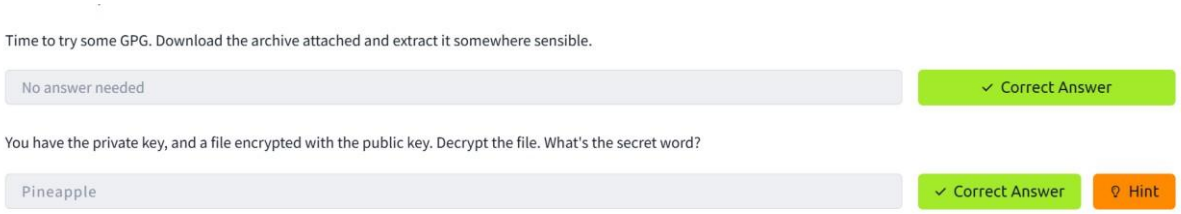



## Task 9SSH Authentication



## Task 10Explaining Diffie Hellman Key Exchange


## Task 11PGP, GPG and AES




**RESULT**

Thus the introduction to Encryption crypto 101 has been sucessfully studied and implemented successfully