HINDUSTHAN INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai, Accredited with "A" Grade by NAAC and Accredited by NBA (Aero, CSE, ECE & Mech.)

Valley Campus, Pollachi Main Road, Coimbatore 641 032.

Department of Computer Science and Engineering

Innovative Teaching

Name :	Ms.R.Gnanakumari & Mr.Biju Balakrishnan
Subject code & Title:	20CS420 – Cryptography and Network Security
Academic year & Semester :	2023-2024 & VII

Interactive Simulation - Virtual Lab (MHRD)

Objectives

1. To provide remote-access to simulation-based Labs in various disciplines of Science and Engineering.

2. To enthuse students to conduct experiments by arousing their curiosity. This would help them in learning basic and advanced concepts through remote experimentation.

3. To provide a complete Learning Management System around the Virtual Labs where the students/ teachers can avail the various tools for learning, including additional web-resources, video-lectures, animated demonstrations and self-evaluation.

Cryptography Lab

Objectives

To keep the plaintext secret from eaves- droppers trying to get some information about the plaintext

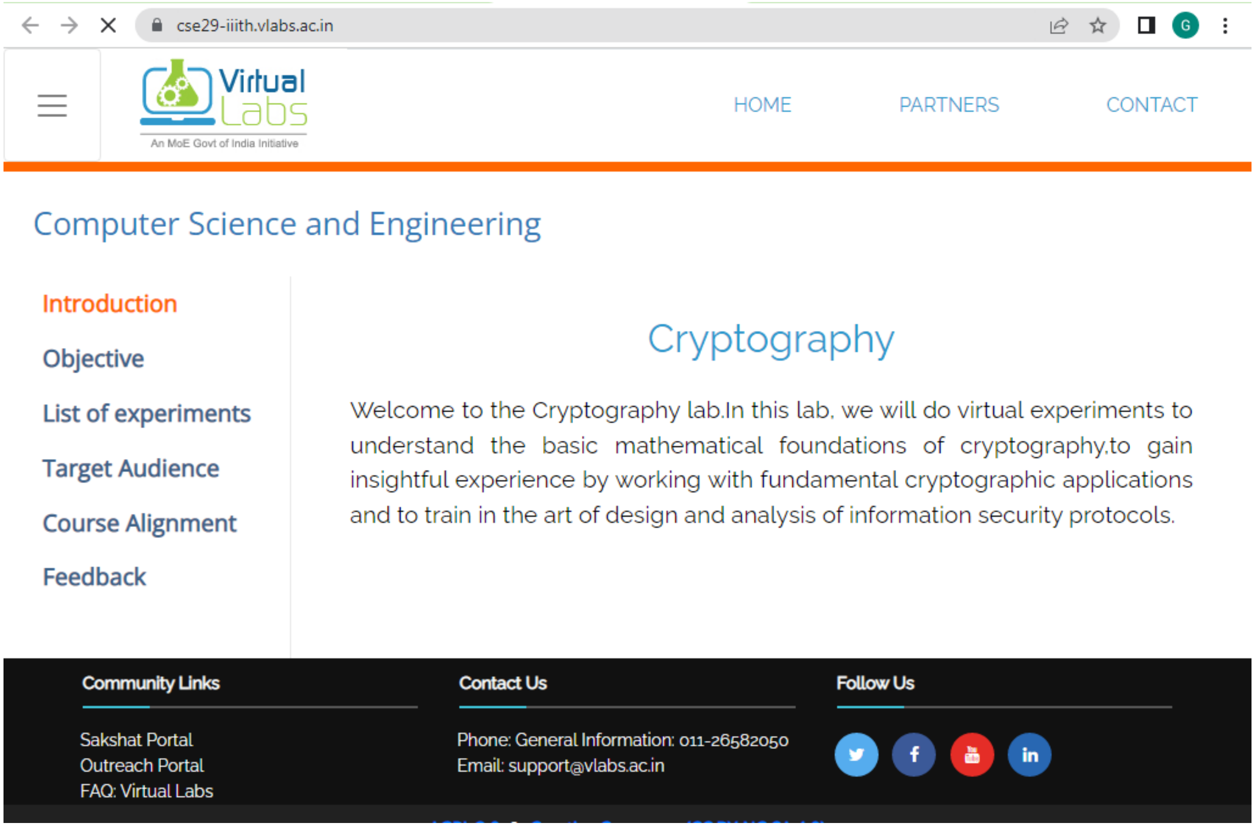
Course Alignment

1. This laboratory is aligned with an introductory course on Cryptography

List of Experiments

1. Breaking the Shift Cipher
2. Breaking the Mono-alphabetic Substitution Cipher
3. One-Time Pad and Perfect Secrecy
4. Message Authentication Codes

5. Cryptographic Hash Functions and Applications
6. Symmetric Key Encryption Standards (DES)
7. Symmetric Key Encryption Standards (AES)
8. Diffie-Hellman Key Establishment
9. Public-Key Cryptosystems (PKCSv1.5)
10. Digital Signatures



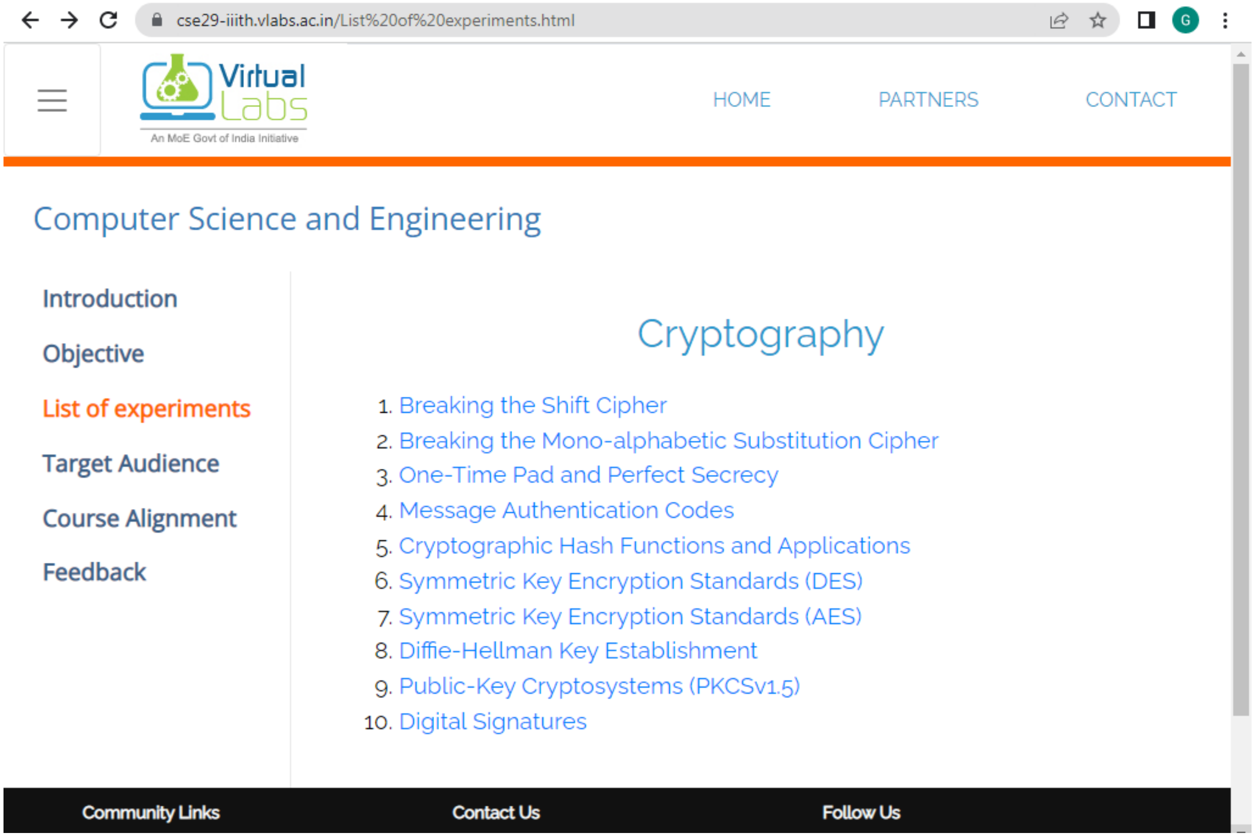
Computer Science and Engineering

Cryptography

Welcome to the Cryptography lab.In this lab, we will do virtual experiments to understand the basic mathematical foundations of cryptography.to gain insightful experience by working with fundamental cryptographic applications and to train in the art of design and analysis of information security protocols.

Contact Us

Phone: General Information: 011-26582050
Email: support@vlabs.ac.in



Computer Science and Engineering

Cryptography

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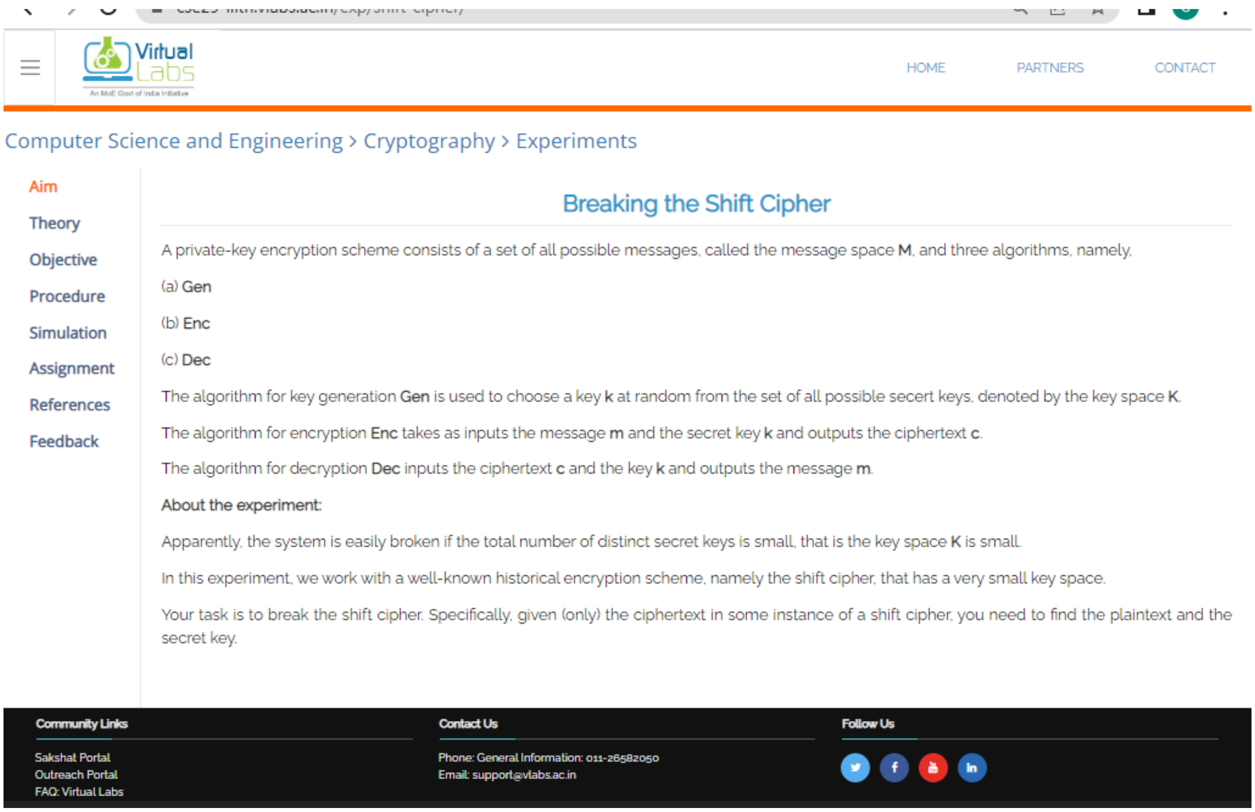

Computer Science and Engineering > Cryptography > Experiments

Breaking the Shift Cipher

A private-key encryption scheme consists of a set of all possible messages, called the message space **M**, and three algorithms, namely,

(a) **Gen**

(b) **Enc**

(c) **Dec**

The algorithm for key generation **Gen** is used to choose a key **k** at random from the set of all possible secert keys, denoted by the key space **K**.

The algorithm for encryption **Enc** takes as inputs the message **m** and the secret key **k** and outputs the ciphertext **c**.

The algorithm for decryption **Dec** inputs the ciphertext **c** and the key **k** and outputs the message **m**.

About the experiment:

Apparently, the system is easily broken if the total number of distinct secret keys is small, that is the key space **K** is small.

In this experiment, we work with a well-known historical encryption scheme, namely the shift cipher, that has a very small key space.

Your task is to break the shift cipher. Specifically, given (only) the ciphertext in some instance of a shift cipher, you need to find the plaintext and the secret key.

Community Links

Sakshat Portal
Outreach Portal
FAQ: Virtual Labs

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Email: support@vlabs.ac.in

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Course Report:

Students are learned about cryptography concepts through this virtual lab. They completed assignment given in this course and submitted.