



School: Campus:

Academic Year: Subject Name: Subject Code:

Semester: Program: Branch: Specialization:

Date:

Applied and Action Learning

(Learning by Doing and Discovery)

Name of the Experiment : SHA-256 in Action – Cryptographic Hashing

Coding Phase : Pseudo Code/Flow Chart/Algorithm

- **Start**
↓
- **Input Message**
↓
- **Preprocess (Padding and Splitting into Blocks)**
↓
- **Initialize Hash Values**
↓
- **Process Each Block with SHA-256 Rounds**
↓
- **Combine Final Hash Values**
↓
- **Output 256-bit Hash**
↓
- **End**

Apparatus/Software Used:

- Online SHA-256 Tool
- Brave browser
- Internet Connection

Testing Phase:

Test case 1:

Input :-hii...I am Pragnya Pralipta

Hase: 588dfbad6bcdcbd75a6bd431dd216f688943a15b0ff683a5ff3211a5e6c15d80

Test case 2:

Input : Hellow...I am Pragnya Pralipta

Hase : 099e9929306037759df60ab76d97762aabd28f3a7d3871557631837200fb2d44

Implementation Phase: Final Output (no error)

Using Online Tool

- Open SHA-256 Tool: <https://emn178.github.io/online-tools/sha256.html>
- Type any message
- Output hash is shown immediately

Test case 1:

The screenshot shows the SHA256 online tool interface. On the left, the 'Settings' panel is visible with the following options: 'Hash' (selected), 'Auto Update' (checked), 'Remember Input' (unchecked), 'Input Encoding' (set to 'UTF-8'), 'Output Encoding' (set to 'Hex (Lower Case)'), and 'Enable HMAC' (unchecked). The 'Input' field on the right contains the text 'hii...I am awadhina'. Below the input field, the 'Output' field displays the resulting SHA256 hash: '588dfbad6bcdcbd75a6bd431dd216f688943a15b0ff683a5ff3211a5e6c15d80'.

Test case 2:

The screenshot shows the SHA256 online tool interface for the second test case. The settings are identical to the first screenshot. The 'Input' field now contains the text 'Hellow...I am awadhina'. The 'Output' field displays the resulting SHA256 hash: '099e9929306037759df60ab76d97762aabd28f3a7d3871557631837200fb2d44'.

Observations

- ☐ Each input text produces a unique 256-bit hash value.
- ☐ Even a single character change in the input causes a completely different hash.
- ☐ Identical inputs always generate the same hash value.
- ☐ The hashing process is one-way — original data cannot be retrieved from the hash.

ASSESSMENT

Rubrics	Full Mark	Marks Obtained	Remarks
Concept	10		
Planning and Execution/ Practical Simulation/ Programming	10		
Result and Interpretation	10		
Record of Applied and Action Learning	10		
Viva	10		
Total	50		

Signature of the Student:

Name :

Regn. No. :

Page No.....

Signature of the Faculty:

** As applicable according to the experiment.
Two sheets per experiment (10-20) to be used.*

