



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

Objective/Aim:

- To understand the working of the **SHA-256 hashing algorithm**.
- To observe how the same input always produces the same hash and even a small change in input creates a completely different hash.

Apparatus/Software Used:

- Laptop/PC
- Brave browser
- Online SHA-256 hashing tool (e.g., <https://emn178.github.io/online-tools/sha256.html>)
- Text editor for input testing

Procedure:

1. Open an online SHA-256 hashing tool.

SHA256

This SHA256 online tool helps you calculate hashes from strings. You can input UTF-8, UTF-16, Hex, Base64, or other encodings. It also supports HMAC.

Settings

Hash

☒ Auto Update

☐ Remember Input

Input Encoding

UTF-8

Output Encoding

Hex (Lower Case)

☐ Enable HMAC

Input

Enter here...

Output

Output here...

Procedure:

2. Now enter a sample text, e.g. Shruti, it will generate a SHA-256 hash of that text.

SHA256

This SHA256 online tool helps you calculate hashes from strings. You can input UTF-8, UTF-16, Hex, Base64, or other encodings. It also supports HMAC.

Settings

Hash

☒ Auto Update
 ☐ Remember Input

Input Encoding

UTF-8

Output Encoding

Hex (Lower Case)

☐ Enable HMAC

Input

Shruti

Output

8b7ddd1b52205b146f8cf37005b27a2d9d11c32e6273b70b531b8cf1260af933

3. If we change a simple letter or any thing in the input section it will create a new hash of that changed string , this is because of the avalanche effect.

SHA256

This SHA256 online tool helps you calculate hashes from strings. You can input UTF-8, UTF-16, Hex, Base64, or other encodings. It also supports HMAC.

Settings

Hash

☒ Auto Update
 ☐ Remember Input

Input Encoding

UTF-8

Output Encoding

Hex (Lower Case)

☐ Enable HMAC

Input

shruti

Output

cfbff47427fb68609fc3d9b0c28b81a6b4d7621a5c81cf5170fb7da07b92c54f

Observation:

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- SHA-256 produces a **unique fixed-length hash** for any input.
- Even a **tiny change** in input creates a totally different hash (avalanche effect).
- It ensures **data integrity, security, and immutability** in blockchain systems.

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. :

Signature of the Faculty:

Page No.

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