



Centurion
UNIVERSITY
*Shaping Lives...
Empowering Communities...*

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 the program or open the hash tool
- Input a string or message
- Use the SHA-256 algorithm to convert the message into a hash
- Display the hash
- Change the input message slightly
- Hash again and compare with the previous hash
- End

Apparatus/Software Used:

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

Testing Phase:

Test case 1:

Input :- swornapriya

Hex : 02f4fc9ab0a4d13679d2922617ce60e8e15cb4d39b3a0c0ae7f630acaa5b3772

Test case 2:

Input : sonali

Hex : 4603a0713480d23dda8c8a4b6cdf0cbcd5b0cc359dd98f1133d47e6e42b6cae

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:

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	Input
<div>Hash</div> <div><input checked="" type="checkbox"/> Auto Update</div> <div><input type="checkbox"/> Remember Input</div> <div>Input Encoding UTF-8</div> <div>Output Encoding Hex (Lower Case)</div> <div><input type="checkbox"/> Enable HMAC</div>	<div>swornapriya</div> <div>Output 02 f4 fc 9a b0 a4 d1 36 79 d2 92 26 17 ce 60 e8 e1 5c b4 d3 9b 3a 0c 0a e7 f6 30 ac aa 5b 37 72</div>

Test case 2:

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	Input
<div>Hash</div> <div><input checked="" type="checkbox"/> Auto Update</div> <div><input type="checkbox"/> Remember Input</div> <div>Input Encoding UTF-8</div> <div>Output Encoding Hex (Lower Case)</div> <div><input type="checkbox"/> Enable HMAC</div>	<div>sonali</div> <div>Output 46 03 a0 71 34 80 d2 3d da 8c 8a 4b 6c df 0c bcd 5b 0c c3 59 dd 98 f1 13 3d 47 e6 e4 2b 6c ae</div>

Observations

- SHA-256 always gives a **fixed 64-character** hash.
- A **minor change** in input gives a **completely different** output.
- It is a **one-way function** — original data **can't be reversed**.
- Commonly used in **blockchains**, **digital signatures**, **file verification**, and **password storage**.
- **Highly secure**, fast, and deterministic

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.*

