



**Centurion**  
UNIVERSITY  
*Shaping Lives...  
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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 :-hii...I am swadhina

Hash: 588dfbad6bcdcbd75a6bd431dd216f688943a15b0ff683a5ff3211a5e6c15d80

### Test case 2:

Input : Hellow...I am swadhina

Hash : 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. The 'Input' field contains the text 'hii... I am swadhina'. The 'Output' field displays the resulting hash: '588dfbad6bcdcbd75a6bd431dd216f688943a15b0ff683a5ff3211a5e6c15d80'. The settings on the left include 'Hash' selected, 'Auto Update' enabled, 'Remember Input' disabled, 'Input Encoding' set to 'UTF-8', 'Output Encoding' set to 'Hex (Lower Case)', and 'Enable HMAC' disabled.

### Test case 2:

The screenshot shows the SHA256 online tool interface. The 'Input' field contains the text 'Hellow... I am swadhina'. The 'Output' field displays the resulting hash: '099e9929306037759df60ab76d97762aabd28f3a7d3871557631837200fb2d44'. The settings on the left are identical to the previous screenshot: 'Hash' selected, 'Auto Update' enabled, 'Remember Input' disabled, 'Input Encoding' set to 'UTF-8', 'Output Encoding' set to 'Hex (Lower Case)', and 'Enable HMAC' disabled.

## 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		
<b>Total</b>	<b>50</b>		

**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.*

