



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

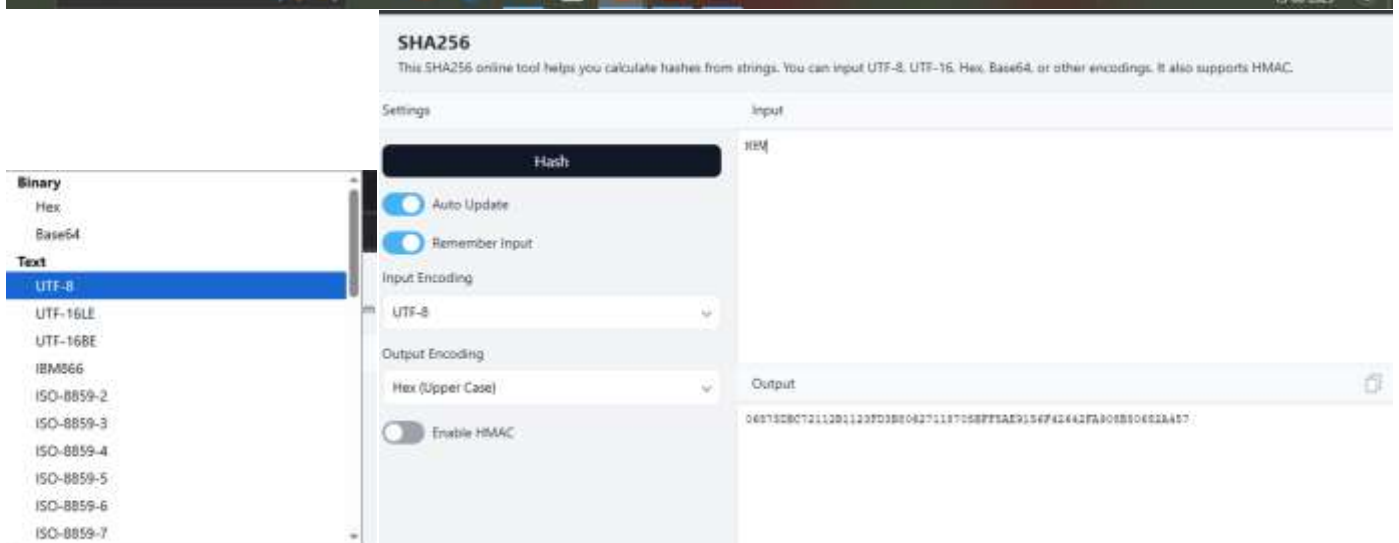
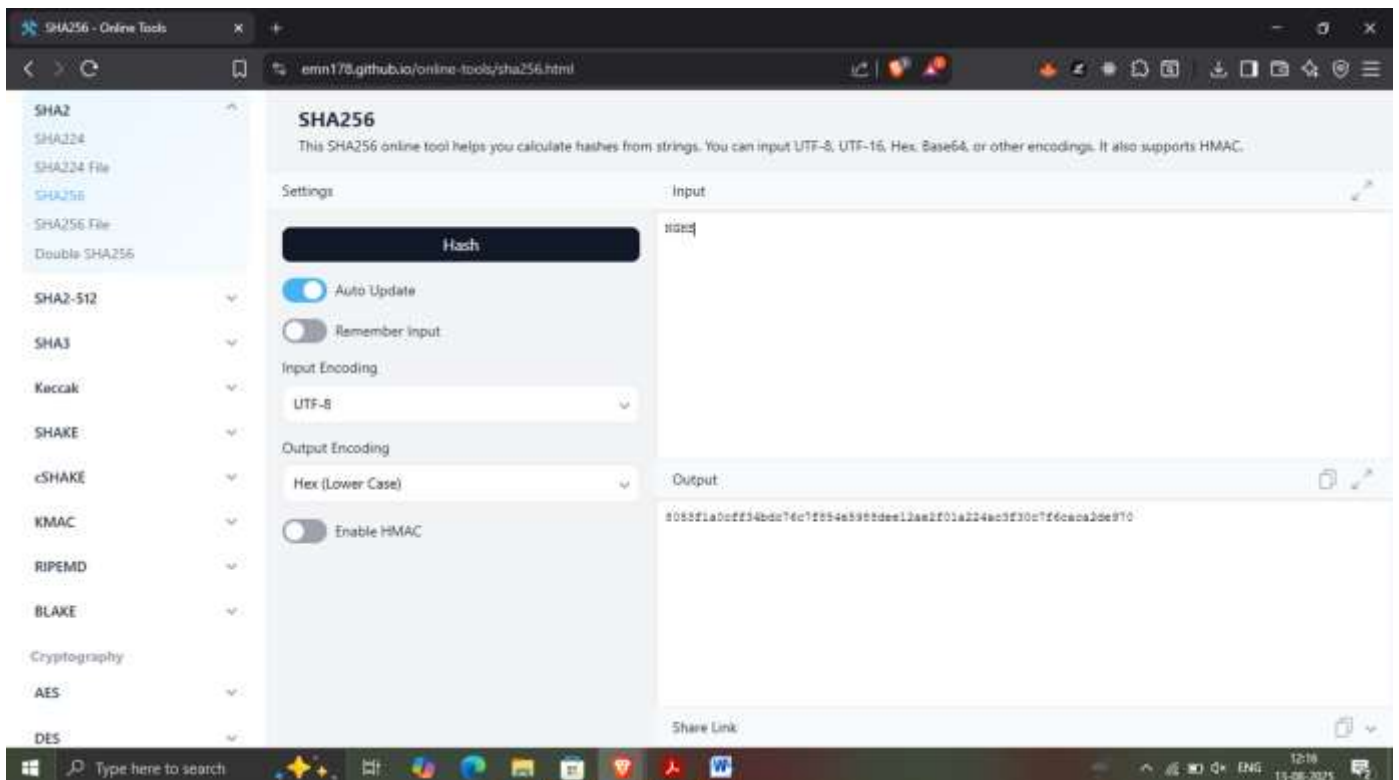
- Open the provided SHA-256 online tool link: <https://emn178.github.io/online-tools/sha256.html>.
- Enter any desired text or message in the input box.
- The tool automatically generates the corresponding SHA-256 hash.
- View the resulting 256-bit (64-character) hexadecimal hash output.
- Slightly modify the input and observe the drastic change in the hash (avalanche effect).
- Recognize that the hash is unique to the input and cannot be reversed.

* Software used

1. Web Browser – Brave
2. Online Tool – SHA-256 Hash Generator : <https://emn178.github.io/online-tools/sha256.html>

* Implementation Phase: Final Output (no error)

- ☐ **Input Data:** Type or paste your string into the **Input** box.
- ☐ **Configure Settings:**
 - **Input Encoding:** Keep it as **UTF-8** unless you know your data is in a different format.
 - **Output Encoding:** Select **Hex (Lower Case)** or **Hex (Upper Case)**.
- ☐ **View Output:** The **SHA256 hash** will appear automatically in the **Output** box.



* Implementation Phase: Final Output (no error)

The image displays two screenshots of the SHA256 Online Tools website, showing the final output of a SHA256 hash calculation. The website interface includes a sidebar with various cryptographic tools, a main settings panel, and an input/output section.

Top Screenshot:

- Settings:**
 - Hash: [Button]
 - Auto Update: ☒
 - Remember Input: ☒
 - Input Encoding: UTF-8
 - Output Encoding: Hex (Upper Case)
 - Enable HMAC: ☒
 - HMAC Encoding: UTF-8
 - Key: [Empty field]
- Input:** [Empty field]
- Output:** 2D482040978C0189D8AE3E6CA0D507E90B5F12D04187A58BC968B15C855086

Bottom Screenshot:

- Settings:**
 - Hash: [Button]
 - Auto Update: ☒
 - Remember Input: ☒
 - Input Encoding: UTF-8
 - Output Encoding: Hex (Upper Case)
 - Enable HMAC: ☒
 - HMAC Encoding: UTF-8
 - Key: HGGG
- Input:** [Empty field]
- Output:** 7DE394F1C00AD442248E758A910C6654A9A9AC9C93037DEC9B584ED1344EE477

* Implementation Phase: Final Output (no error)

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*Observations:

- Each input consistently produced a unique, fixed-length SHA-256 hash.
- Minor input changes caused significant differences in the hash (avalanche effect).
- The tool supports various input/output encodings and allows HMAC for additional security.

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: