import java.math.BigInteger;

import java.security.MessageDigest;

import java.security.NoSuchAlgorithmException;

import java.util.Scanner;

public class SHA256Hash {

    public static String getSHA(String input) {

        try {

            // Get a SHA-256 MessageDigest instance

            MessageDigest hash = MessageDigest.getInstance("SHA-256");

            // Compute the SHA-256 digest (returns a byte array)

            byte[] messageDigest = hash.digest(input.getBytes());

            // Convert byte array into hex representation

            StringBuilder hexString = new StringBuilder(new BigInteger(1, messageDigest).toString(16));

            // Ensure the hash is always 64 characters long by padding with leading zeros

            while (hexString.length() < 64) {

                hexString.insert(0, "0");

            }

            return hexString.toString();

        } catch (NoSuchAlgorithmException e) {

            throw new RuntimeException("SHA-256 algorithm not found", e);

        }

    }

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        // Taking user input

        System.out.print("Enter the text to hash using SHA-256: ");

        String input = scanner.nextLine();

        // Generating SHA-256 hash

        String shaHash = getSHA(input);

        // Displaying the hash

        System.out.println("SHA-256 Hash: " + shaHash);

        scanner.close();

    }

}