Java SHA-256

Cryptographic hash functions are mathematical operations run on digital data; by comparing the computed *hash* (i.e., the output produced by executing a hashing algorithm) to a known and expected hash value, a person can determine the data's integrity. For example, computing the hash of a downloaded file and comparing the result to a previously published hash result can show whether the download has been modified or tampered with. In addition, cryptographic hash functions are extremely collision-resistant; in other words, it should be extremely difficult to produce the same hash output from two different input values using a cryptographic hash function.

Secure Hash Algorithm 2 (*SHA-2*) is a set of cryptographic hash functions designed by the National Security Agency (NSA). It consists of six identical hashing algorithms (i.e., *SHA-256*, *SHA-512*, *SHA-224*, *SHA-384*, *SHA-512/224*, *SHA-512/256*) with a variable digest size. *SHA-256* is a 256-bit (32 byte) hashing algorithm which can calculate a hash code for an input of up to $264 - 1$ bits. It undergoes 64 rounds of hashing and calculates a hash code that is a 64-digit hexadecimal number.

Given a string, s, print its *SHA-256* hash value.

Input Format

A single alphanumeric string denoting s.

Constraints

- $6 \leq |s| \leq 20$
- String s consists of English alphabetic letters (i.e., $[a - zA - Z]$ and/or decimal digits (i.e., 0 through 9) only.

Output Format

Print the *SHA-256* encryption value of s on a new line.

Sample Input 0

```
HelloWorld
```

Sample Output 0

```
872e4e50ce9990d8b041330c47c9ddd11bec6b503ae9386a99da8584e9bb12c4
```

Sample Input 1

```
Javarmi123
```

Sample Output 1

```
f1d5f8d75bb55c777207c251d07d9091dc10fe7d6682db869106aacb4b7df678
```