Hash a Text String

Time required: 15 minutes

How to Create Screenshots: Please use the Windows Snip and Sketch Tool or the Snipping Tool. Paste a screenshot of just the program you are working on. If you are snipping a virtual machine, make sure your focus is outside the virtual machine before you snip.

1. Press and hold down the **Windows key** & **Shift**, then type **S.** This brings up the on-screen snipping tool.
2. Click and Drag your mouse around whatever you want to snip.
3. Release the mouse button. This places the snip into the Windows Clipboard.
4. Go into Word or wherever you want to paste the snip. Hold down **CTRL**, then type **V** to paste the snip.

What is Hashing?

A hash value (or simply hash), also called a message digest, is a number generated from a string of text. The hash is substantially smaller than the text itself and is generated by a formula in such a way that it is extremely unlikely that some other text will produce the same hash value.

Hashes play a role in security systems where they're used to ensure that transmitted messages have not been tampered with. The sender generates a hash of the message, encrypts it, and sends it with the message itself. The recipient then decrypts both the message and the hash, produces another hash from the received message, and compares the two hashes. If they're the same, there is a very high probability that the message was transmitted intact.

Lab Description

Several hashing tools are available free online. One website, onlinemd5.com, lets you choose between three hashing algorithms: MD5 (an older, outdated hashing algorithm), SHA-1, and SHA-256. Complete the following steps:

1. In your browser, go to https://codebeautify.org/md5-hash-generator
2. There are several different types of Hash Generators on this site.

3. MD5 should be selected by default. Type a string of text into the box and watch the hash output calculate automatically as you type.
4. What do you notice about the length of the string hash as you enter each additional letter?

Click or tap here to enter text.

5. Insert a screenshot

Click or tap here to enter text.

6. Copy the final string hash into a text document for later comparison. Windows Notepad works well for this purpose.
7. Select SHA1 and copy the new string hash into your text document for comparison.
8. Select SHA-256 and copy the new string hash into your text document for comparison.
9. Which string hash is longer?

Click or tap here to enter text.

10. Why do you think that is? (Please explain your answer.)

Click or tap here to enter text.

11. Type a lot more text into the hash generator.
12. What happens to the string hash?

Click or tap here to enter text.

13. Now change exactly one letter in the hash generator's input text.
14. What happens to the string hash?

Click or tap here to enter text.

15. Insert a screenshot.

Click or tap here to enter text.

16. Save the text file.

The rest of the story: The longer the hash or encryption key, the more secure it is. On the flip side, it takes longer to calculate. There is always a tradeoff.

Assignment Submission

1. Attach this completed document
2. Attach the text file
3. Submit in Blackboard.