

Lab – Compare Data with a Hash

Objectives

Use a hashing program to verify the integrity of data.

Background / Scenario

It is important to understand when data has been corrupted or it has been tampered with. A hashing program can be used to verify if data has changed, or if it has remained the same. A hashing program performs a hash function on data or a file, which returns a (usually much shorter) value. There are many different hash functions, some very simple and some very complex. When the same hash is performed on the same data, the value that is returned is always the same. If any change is performed on the data, the hash value returned will be different.

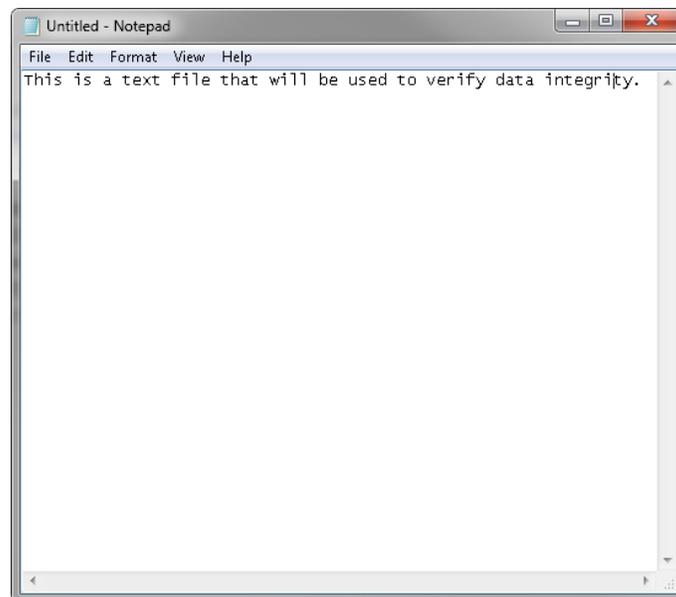
Note: You will need installation privileges and some knowledge of the process to install Windows programs.

Required Resources

- PC with Internet access

Step 1: Create a Text file

- a. Search your computer for the Notepad program and open it.
- b. Type some text in the program.



- c. Choose **File > Save**.
- d. Navigate to **Desktop**.
- e. Type **Hash** in the **File name:** field, and click **Save**.

Step 2: Install HashCalc

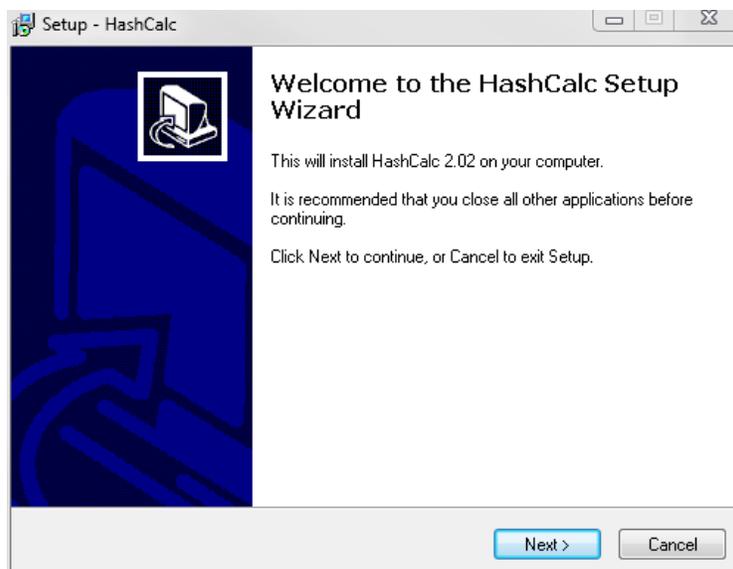
- a. Open a web browser and navigate to <http://www.slavasoft.com/download.htm>.

The screenshot shows the SlavaSoft website's 'Downloads' page. The header includes the SlavaSoft logo and the tagline 'Where quality software is just a click away.' Navigation links for Home, Products, Downloads, Purchase, and Support are visible, along with the date February 19, 2016. A sidebar on the left lists various products and company information. The main content area is titled 'SlavaSoft Downloads' and is divided into two sections: 'FREE TRIAL SOFTWARE DOWNLOADS' and 'FREE SOFTWARE DOWNLOADS'. The 'FREE TRIAL SOFTWARE DOWNLOADS' section contains a table with three rows, each listing a product name and version, operating system, size, free trial limitation, and a download link. The 'FREE SOFTWARE DOWNLOADS' section contains a table with two rows, each listing a product name and version, operating system, size, and a download link.

Product Name and Version	Operating System	Size	Free Trial Limitation	Download
Paint Express 1.31	Windows 95/98/Me/NT/2000/XP	1.71MB	60 uses	Download
QuickHash Library 3.02	Windows 95/98/Me/NT/2000/XP	692KB	10-second delay	Download
FastCRC Library 1.51	Windows 95/98/Me/NT/2000/XP	272KB	10-second delay	Download

Product Name and Version	Operating System	Size	Download
HashCalc 2.02	Windows 95/98/Me/NT/2000/XP	468KB	Download
FSUM 2.52	Windows 95/98/Me/NT/2000/XP	92KB	Download

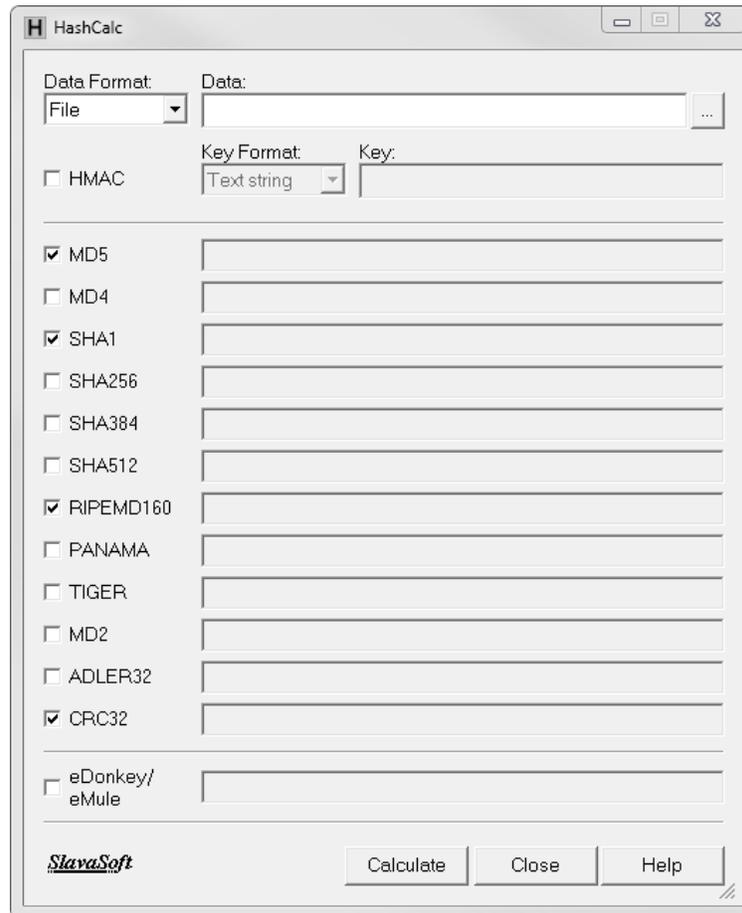
- b. Click **Download** in the **HashCalc 2.02** row.
- c. Open the **hashcalc.zip** file and run the **setup.exe** file inside.



- d. Follow the installation wizard to install HashCalc.

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- e. Click **Finish** on the last screen, and close the **README** file if it opened. You may read the file if you wish.
- f. HashCalc is now installed and running.



Step 3: Calculate a hash of the Hash.txt file

- a. Set the following items in HashCalc:
 - 1) Data Format: **File**.
 - 2) Data: Click the ... button next to the Data field, navigate to the **Desktop** and choose the **Hash.txt** file.
 - 3) Uncheck **HMAC**.
 - 4) Uncheck all hash types except **MD5**.
- b. Click the **Calculate** button.

What is the value next to **MD5**?

Step 4: Make a change to the Hash.txt file

- a. Navigate to the **Desktop** and open the **Hash.txt** file.
- b. Make a minor change to the text, such as deleting a letter, or adding a space or period.
- c. Click **File > Save**, and close **Notepad**.

Step 5: Calculate a new hash of the Hash.txt file

- a. Click the **Calculate** button in HashCalc again.

What is the value next to **MD5**?

Is the value different from the value recorded in Step 3?

- b. Place a check mark next to all of the hash types.
- c. Click **Calculate**.
- d. Notice that many of the hash types create a hash of a different length. Why?