

# Prime Creation

by:

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## Introduction

The purpose of this program is two-fold: First, it is to generate prime numbers between 0 and  $2^{32}-1$ . The numbers can be generated in various ways, and displayed as binary, decimal, or hexadecimal numbers. The data can be saved to file in binary format (as long integers) or ASCII format.

The second reason for developing this program is to provide programmers (and myself) with examples of how to perform many Mac-style functions. Important topics covered are multiple windows through linked-list management, file output, scroll bars, program specific (custom) Save dialog box, creation of temporary files when

not enough memory is available, dynamic creation of arrays, and probably many others. Read the section below (Registration) for information on how to get the source code for this program.

## **Registration**

Please don't skip this section. Even if you don't plan on registering initially, some of what I have to say might entice you to register, especially if you want the program code for this or other products that I'm developing.

This program is Shareware. I am asking for a registration fee of \$5. If you use this program, please pay the fee. If you register, you will get a future upgrade for free.

Ok, now, here's the real value. If you send \$15 for registration, I will send you the **FULL SOURCE CODE PROGRAM** in THINK C 4.02 format for this program. This will allow you to modify the procedures for your own program. If you want to know the features of the program, see the Introduction (above). Also, run the program. No features are missing. With registration, you will receive a future upgrade for free and the C source code for that upgrade.

Please, when you register, give me a current address. Also, try to send either a check or money order. I will accept cash, but it could become a real hassle, especially if it gets lost in the mail.

Send your Shareware fees to:

**John Schlack**

**824 Rhoads Avenue**

**Jenkintown, PA 19046**

## **Operating Instructions**

There are two versions of this program: the standard version (titled: Prime Creation 1.0) and a version for Mac IIs (titled: Prime Creation.881 1.0). The Mac II version requires a 68020 (or later) processor and a 68881 (or later) math coprocessor. If there is demand, I will compile a version for the 68020, but does not access the math coprocessor (for those of you who have purchased a Mac LC or IIsi, or a future 68040 Mac). You could also purchase a copy of the source code (procedure is described in the Registration section) and compile it with any options that you choose. After choosing the appropriate file, open it.

In order to generate prime numbers, choose New from the File menu. A dialog box will appear with various options. After setting the values of the dialog box, the program will generate the prime numbers. If you chose to create many prime numbers, sit back and relax. The creation will take some time. You can cancel the creation at any time by striking the command and period keys. After the primes are created, they will be displayed in a window. You can save the data to disk, if you desire. The only other features of the program are a help section (which displays some of the info. in this file), a Preferences menu item to set display and save preferences, and a Get Info menu item to examine the prime generation options that you have chosen for that particular window.

When new is chosen, a dialog box appears. It is pretty much self explanatory. There are four standard options: Generate {quantity} primes starting at {starting num}, Generate all primes between {starting num} and {ending num}, Find the next prime greater than or equal to {starting num}, Find the previous prime less than or equal to {starting num}. Select one of these options depending on the primes you want to generate. Enter starting / ending / quantity numbers in the boxes at the bottom of the dialog box whenever you see a {} in a currently selected radio control. The numbers entered in these boxes can be in either decimal or hexadecimal form. For hex form, precede the number with the "0x" prefix.

If the items that were entered are valid, the prime number generation begins. If you want to cancel the generation process, strike the command and period keys simultaneously. It might take a few moments for the generation to stop, since I don't check for the events every prime number (that would make generation VERY slow). When generation is completed, or stopped, the results are displayed in a window.

If you want to control the ways the data is displayed or saved, choose Preferences. This allows you to display / save (for ASCII format) prime numbers as either binary, decimal, or hexadecimal number (or any combination of the previous). The default is for decimal if no boxes are checked. Whenever new preferences are chosen, the results are applied to the current window and all windows created thereafter (not to any non-active window already present).

Choose Get Info to display the prime generation settings.

For saving a file, choose Save As... Two radio controls and a check box are at the bottom of the Save dialog box. The radio controls toggle between binary and ASCII format for the file. Binary format saves the data as unsigned long integers in binary form (4 bytes per number). ASCII saves the file in ASCII format with the data set up as described by the preferences for that particular window. The check box is active only for ASCII saves. This allows the data from Get Info to be stored as a header for the ASCII file.

When you are done, choose close (to close a window) or quit. Either one will display a dialog asking you if you want to save a particular file if it has not yet been saved.

## **Menus:**

### *Apple*

**About:** This gives information about the creation of this program.

**Help:** A full featured help file is available. Categories that you might need help in are listed on the left. By highlighting one of these choices, text pops up in the box on the right.

### *File*

**New:** This menu item allows the user to start creating the prime numbers.

**Save As:** This menu item allows you to save the data in either ASCII or binary format. Radio controls in the dialog allow choice

between binary and ASCII. Clicking the Save ASCII Header box saves the Get Info data at the top of the ASCII file.

**Get Info:** This displays the prime number creation characteristics of the current window. The data is shown in a modal dialog box.

**Close:** This will close the active window. It will prompt you to save the data if you haven't done so already.

**Preferences:** This brings up a dialog box with preference check boxes. There are six choices, three for display and three for saving to a file. These choices include display / ASCII save with data in binary, decimal, and/or hexadecimal form. If nothing is chosen, decimal is the default. Whenever you change the preferences, the changes are applied to the current window and all new windows created after the changes. Inactive windows are not affected.

**Quit:** This quits the program. Save prompts will appear for all open documents that have not yet been saved. At any time, if you hit cancel for the "Do you want to save" dialogs, the quitting process will be halted. In order to skip all remaining "Do you want to save" dialogs, click the "Quit (Skip Save Warnings)" button.

## Edit

The edit menu is available for DAs. It is not used in this program.

## Revision History

*version 1.0:* (December 22, 1990) This is the initial release.

## **Machines Tested / Errors**

This program has been developed exclusively on a Mac IIx with Apple's 13" color monitor, Raster Ops video card 208 and System 6.0.5.

If you experience any compatibility problems, please let me know. I am almost certain a few bugs remain. These will probably crop up in situations where the program is low on memory and temporary files need to be created. Include the computer, monitor, video card, System version, INITs, Prime Creation version number, error, descriptions of the steps you took, MultiFinder memory setting (if running under MultiFinder; otherwise System memory), and any other pertinent information. I'll see what I can do to fix the bug. I cannot guarantee compatibility for all system configurations (there are just too many, and I only have access to a few).

If you experience errors, make sure that you are using the correct program (if the name has a .881 extension, you need a computer with at least a 68020 and 68881; see Operating Instructions section).

## **Feedback**

Register and give me feedback. I want to know what you think. What do you like? What do you want improved? Added? Deleted? Overhauled? Registration is \$5, and you will get a future update sent to you free. For \$15, you get all the above, one future update free, along with the THINK C 4.02 source code for that update.

A great value considering the time that I put into this program. Send your comments and registration fees to:

**John Schlack**

**824 Rhoads Avenue**

**Jenkintown, PA 19046**

You can also reach me through E-mail. On **America Online**, I am **John40**. On **CompuServe** (which I rarely use), I am **71311,1262**.