

RPNcalc Version 0.4 Build 0078, 26 Jan 2008

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To run any of the simulators extract the contents of the ZIP file to a folder and just double click on the appropriate executable. It will run on Windows NT 4.0 ¹, Windows 2000 and Windows XP (but NOT Windows 95/98/Me) providing that the Visual BASIC 5.0 runtime is installed. When necessary the simulators save their state in an INI file in the same directory as the program and do not use the registry.

I started work on this project a few years after my own original HP33C died. Originally it was just intended to be a simple RPN calculator, written as an introductory project to keep me interested while I learnt Visual BASIC – but over the years I've kept on adding features and have slowly refined it more and more.

This release is a development of an earlier beta release of an HP33C simulator, but I've expanded it to be able to simulate a number of different models including the HP10C, HP21, HP25C, HP29C, and HP31E in addition to the original HP33C.

The code has been more or less totally rewritten, as it became obvious when tidying up the original code for public release that some fundamental changes were necessary to the program structure to make it easier to understand and maintain. In addition major changes were needed to allow me to use a common class as the basis for a number of different simulators.

There are some differences between the simulators and the real thing.

- Numeric accuracy is about as close to the real thing as I can make it given that Visual BASIC uses IEEE floating point numbers and though I'm thinking about writing my own BCD routines I think it is just about good enough for now. Note that there will be some differences between in the results returned by the real calculator and the simulations. It is up to you to check your own results!
- All simulators can only display a maximum of 10 digits.
- Errors messages and program steps may not be displayed is exactly the same way as on the real calculator.

I have kept to the original functionality and not included any additional program steps or registers (though you can easily modify the source code to allow this – particularly the with the HP31), however I have included a few enhancements:

- The backspace space key deletes the last digit entered.
- Clearing the function prefix also displays the full mantissa in all the simulations.
- Some keyboard short cuts to make number number entry easier:

Key	Result.
0 1 2 3 4 5 6 7 8 9 0	Digit.
.	Decimal point.
+	Add.
-	Subtract.
/	Divide.
*	Multiply.
Enter/CR	Enter.
Backspace	Delete the last digit entered.
Escape	Clear X.
Spacebar	Single Step
E	Exponent.
Up/Down arrow	Step forwards/backwards.

I've tested the simulations against the real thing as much as possible but unfortunately as I have never used an HP29C and don't own and HP31E any more so I have had to assume that they should behave in the same way as other similar models.

The biggest problem I have in adding more simulations to this collection is my own limited ability to understand how some of the functions available on the other models work! So if anyone would like to contribute code towards a future release I would appreciate your input in a number of areas. Particularly with the integrate and solve features of the HP34C (I think I've almost got integration sorted now); the normal distribution functions Q and Q-1 found on the HP32E; and the financial functions found on the HP22, HP27, HP37E, HP38C and HP12C. I can usually be contacted via the discussion forum at www.hpmuseum.com, and if you register on that site you can send me mail.

I hope you find these programs useful – enjoy.

Mike T.

Known Issues:

HP 21 / 25 / 29

- When displaying a number in scientific notation a maximum of only seven digits can be included in the mantissa instead of eight.
- Register overflow results in an 'Error' message instead of the message 'OF'. (I don't intend to fix this as I consider the original to be just too cryptic !)

HP25 / 29

- When in program mode single zero digits are shown incorrectly.
- Program instructions shown with a hyphen after the program step.

HP31

- I've not been able to check is whether or not 'Clear Prefix' should terminate number entry.

HP33

- Program instructions include a hyphen after the program step.

All

- Error messages are displayed with the lower case letters in the upper portion of the display.
- Rapid repeated clicks on the same button don't always register.
- Cannot start the application with the initial window minimised.
- When running a program the simulator will take the focus away from the current window when updating the display. This only really noticeable when you try to switch to another window when a program is running.
- Windows NT 4.0 can only run a maximum of three different simulators at any time.