User's manual for IVS-calculator

Martin Bažík

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Chapter 1

Getting started

1.1 Introduction

IVS-calculator is an application that provides you with the functionality of a basic calculator. The basic mathematical operations are just a small part of what this calculator can do. It also calculates trigonometric functions and can solve a system of up to three linear equations.

1.2 System requirements

IVS-calculator has a following requirements:

- **Operation system requirements:** Ubuntu 64bit
- **Network requirements:** internet access for an online installation

1.3 Installation

Steps of installation:

1. Open terminal in a location of install script `installer.sh`. Look at picture the 1.1.

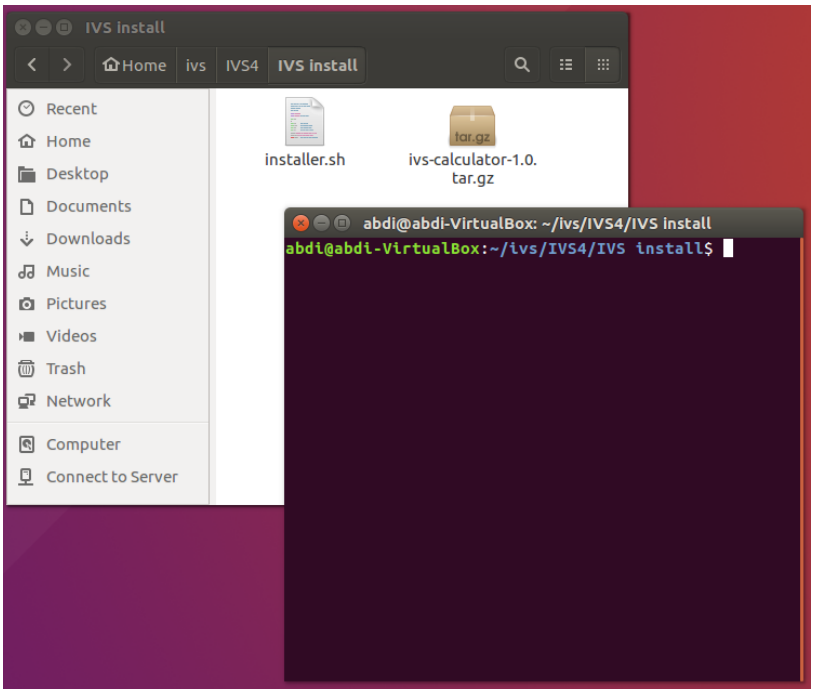

Figure 1.1: Terminal in the installation directory.

2. There are two ways to install this calculator:

   (a) Run the install script using the command `bash installer.sh` for installing the latest version of the calculator.

```
abdi@abdi-VirtualBox: ~/ivs/IVS4/IVS/installer
abdi@abdi-VirtualBox:~/ivs/IVS4/IVS/installer$ bash installer.sh
Package 'pip3' is installed.
Package of pip3 called 'wheel' is missing. Do you wish to install it?(y/n)
y
Collecting wheel
  Using cached wheel-0.29.0-py2.py3-none-any.whl
Installing collected packages: wheel
Successfully installed wheel-0.29.0
Collecting ivs-calculator
Collecting PyQt5 (from ivs-calculator)
  Using cached PyQt5-5.8.2-5.8.0-cp35.cp36.cp37-abi3-manylinux1_x86_64.whl
Collecting numpy (from ivs-calculator)
  Using cached numpy-1.12.1-cp35-cp35m-manylinux1_x86_64.whl
Requirement already satisfied (use --upgrade to upgrade): wheel in /usr/local/li
b/python3.5/dist-packages (from ivs-calculator)
Requirement already satisfied (use --upgrade to upgrade): sip<4.20,>=4.19 in /us
r/local/lib/python3.5/dist-packages (from PyQt5->ivs-calculator)
Installing collected packages: PyQt5, numpy, ivs-calculator
Successfully installed PyQt5-5.8.2 ivs-calculator-1.0 numpy-1.12.1
Installation was successful!
abdi@abdi-VirtualBox:~/ivs/IVS4/IVS/installer$
```

Figure 1.2: Installing an online package

   (b) The install script can also install the package from a local package using

the command `bash installer.sh offline [package_name]` for installing the locally stored package.

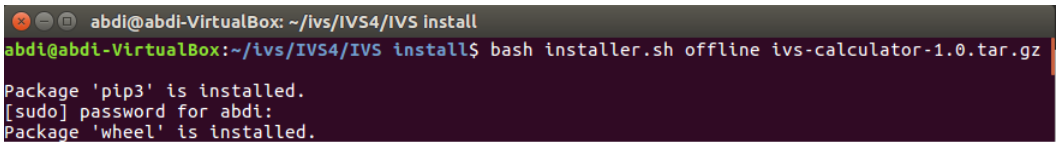

Figure 1.3: Installing an offline package

3. The install script will walk you through the installation process:
   (a) If install package `pip3` is not installed, it will install it for you with your permission.
   (b) The same applies to `wheel` package.
4. When all the install packages are installed, the calculator will be installed automatically.

1.4 Uninstallation

Steps of uninstallation:

1. Open terminal in a location of uninstallation script `uninstaller.sh`.
2. There are two possible ways of uninstallation:
   (a) To uninstall the calculator and the modules installed with it, run command `bash uninstaller.sh all`

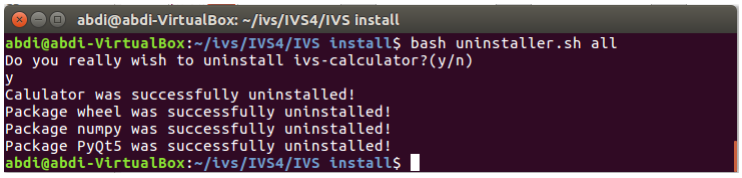

Figure 1.4: Uninstall all.

   (b) If you want to leave some of the packages that were installed together with the calculator, just run command `bash uninstaller.sh all`. You will choose them separately.

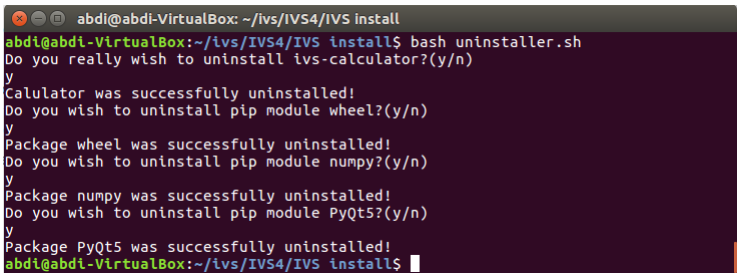

Figure 1.5: Uninstalling modules individually.

3. Before the process begins, the script will ask you, if you really want to proceed. Press `y` to continue or `n` to stop uninstallation. The same applies on the individual modules.

4. The calculator was successfully uninstalled.

Chapter 2

The use of IVS-calculator

2.1 Running the application

To run the calculator, you need to run command `ivs-calculator` in the terminal.

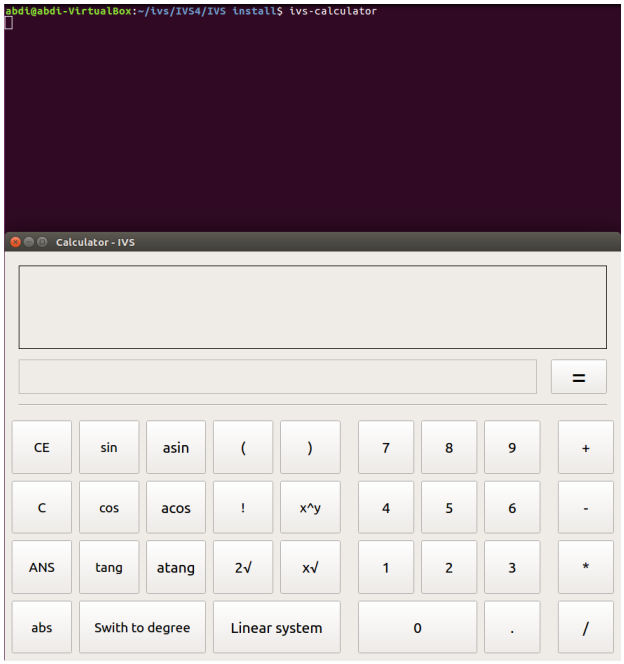

Figure 2.1: Running the calculator.

2.2 Input for the calculator

To operate this calculator, it is possible to use both, a keyboard and buttons. The expression is evaluated after hitting ENTER on the keyboard or '=' button. All the possible expressions are shown in the next section.

2.3 Key combinations of the calculation

OPERATION	KEYS	EXAMPLE
SUM	value + '+' + value	1+2
MULTIPLICATION	value + '*' + value	2*6
DIFFERENCE	value + '-' + value	6-6
DIVISION	value + '/' + value	5/9
ANSWER VALUE	'ANS'	
GONIOMETRIC FUNCTIONS	function + value + ')'	sin(0.5)
ABSOLUTE VALUE	'abs' + value	abs(-6)
FACTORIAL	'!' + value + ')'	fact(6)
CLEAR DISPLAY	'CE'	
REMOVE CHARACTER	'C'	
SQUARE ROOT	'2$\sqrt{}$' + value	$\sqrt{25}$
N-TH ROOT	value + 'x$\sqrt{}$' + value	$3\sqrt{27}$
BRACKETS	'(' + vlaue + ')'	(5)
N-TH POWER	value + 'x^y' + vlaue	5^2

Keyword `value` in this table means either a number or any valid operation defined in this table. Keyword `function` represents one of the following:

- `sin` is a sine function.
- `asin` is an arcsine function.
- `cos` is a cosine function.
- `acos` is an arccosine function.
- `tang` is a tangent function.
- `atang` is an arctangent function.

Goniometric functions can be solved in two distinguished modes. Your calculations may contain angles measured in degrees or radians. These two modes are switched, when you click on the button `Switch to degrees` or `Switch to radian` respectively.

There are also mathematical constants that may be useful in your calculations. To use π, you need to use your keyboard and type `pi`. The second constant is Euler's number. You can use this constant by typing `e`.

Example:

Figure 2.2: An example.

2.4 System of equations

It is possible to calculate a system of up to three linear equations. To open the window for this calculation, click on button `Linear system`. Each text field means coefficient of the term on the right side. Each row represents different equation of the system. Absolute term is the rightmost column. If you want to solve the system, just click on the button `Calculate`.

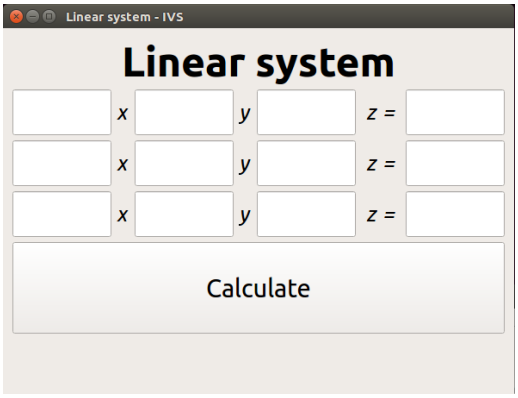

Figure 2.3: Framework for system of equations.