WaterLift Calculator

Version 1.0

Team: Blue Hair is the Way

Last manual release: April 29, 2021

Contents

1 Important information

WaterLift Calculator is a calculator application providing basic mathematical operations created for comfortable home counting.

This application was developed as the second project of the *"Practical Aspects of Software Design"* school subject by the team *"Blue Hair is the Way"*

1.1 Supported platforms

Requirements	**Minimum**
CPU	Any modern CPU
Operating system	64-bit Ubuntu 20.04 or newer

1.2 Authors

"Blue Hair is the way" Team:

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1.3 License

The project is licensed under the GNU GPLv3 license.

2 Installation

2.1 Via the installer

Download the last version installer of the application.

- Open the installer and click the Install button

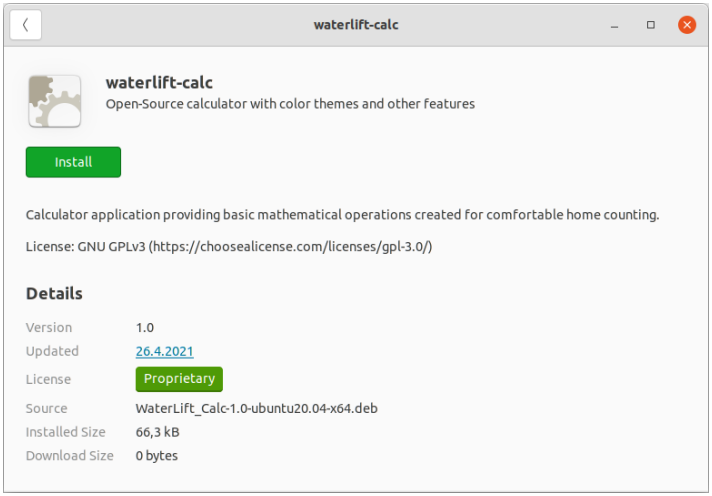

Figure 1: Installation window

- Or use CLI command:

```
sudo dpkg -i waterlift_calc-1.0-ubuntu20.04-x64.deb
```

2.2 Manually

Do all steps in the directory, where you have downloaded the necessary files.

1. Download source files and the icon:
   - `gui.py`
   - `math_lib.py`
   - `manual_for_hepl_window.pdf`

- waterlift_calc_logo.png

2. Give yourself superuser rights

```
sudo -s
```

3. Make gui.py executable

```
chmod a+x gui.py
```

4. Change the path to the user manual in the gui.py by the following commands:

```
awk '{gsub("manual_for_help_window.pdf"," "/usr/share/-
waterlift-calc/manual_for_help_window.pdf")}1'
gui.py > tmp_gui.py

cat tmp_gui.py > gui.py
```

5. Change the path to the application icon in the gui.py by the following commands:

```
awk '{gsub("../images/waterlift_calc_logo.png","/usr/-
share/pixmaps/waterlift_calc_logo.png")}1'
gui.py > tmp_gui.py

cat tmp_gui.py > gui.py

rm -f tmp_gui.py
```

6. Install the following packages:
   - python3.8
   - python-tk
   - python3-pip
   - tkDocViewer

```
apt-get install python3.8 python3-tk python3-pip

pip3 install tkDocViewer
```

7. Make a `waterlift_calc` folder in `/usr/share/`

```
mkdir /usr/share/waterlift-calc
```

8. Copy to the `/usr/share/waterlift-calc` downloaded files (except the logo)

```
cp gui.py math_lib.py manual_for_help_window.pdf
/usr/share/waterlift-calc
```

9. Copy to the `/usr/share/pixmaps` downloaded logo

```
cp waterlift_calc_logo.png /usr/share/pixmaps
```

10. Link the app to the system

```
ln -sf /usr/share/waterlift-calc/gui.py /usr/bin/-
waterlift-calc
```

11. In the `/usr/share/applications` make a `waterlift_calc.desktop` file

```
nano /usr/share/applications/waterlift_calc.desktop
```

and write to it the followind text:

```
[Desktop Entry]
Version=1.0
Type=Application
Name=WaterLift Calculator
Comment=Basic mathematical operations color calculator
Exec=/usr/bin/waterlift-calc
Icon=/usr/share/pixmaps/waterlift_calc_logo.png
Categories=Utility
Terminal=false
StartupNotify=true
StartupWMClass=gui
Name[cs]=WaterLift Calculator
```

Now the app should appear in *Show Applications*. If not, try to **log out** and **log in**.

3 Get started

3.1 Run WaterLift Calculator

- Go to the *Show Applications* and click *WaterLift Claculator*

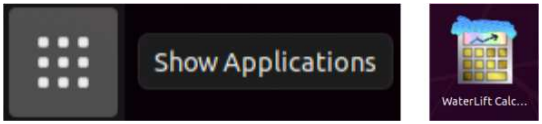

Figure 2: Run from the Show application

- Or use CLI command:

```
waterlift-calc
```

3.2 Overview of the user interface

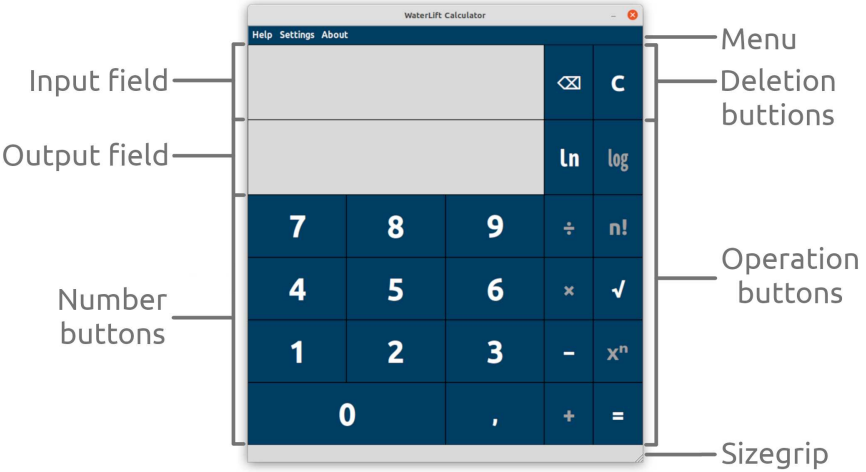

Figure 3: Main window

3.3 Appearance

We also provide 7 color themes for your better calculating experience.

Figure 4: Color scheme changing

3.4 Features

We have added some interesting features that can make your calculating much easier.

3.4.1 ”No zero part”

No need to write zero in decimal numbers, the calculator add it by itself.

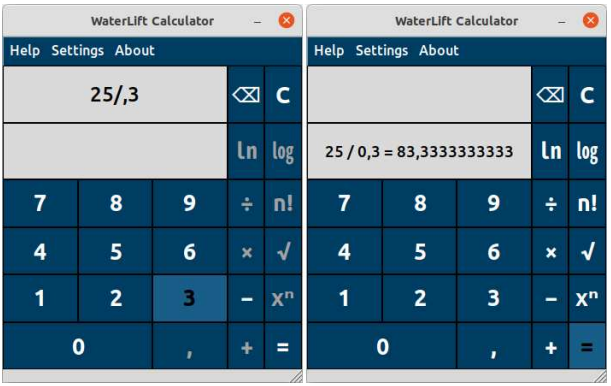

Figure 5: ”No zero part” feature

3.4.2 ”Continue the calculating”

After the evaluation of the last expression,

- press [=] to put the result into the input field

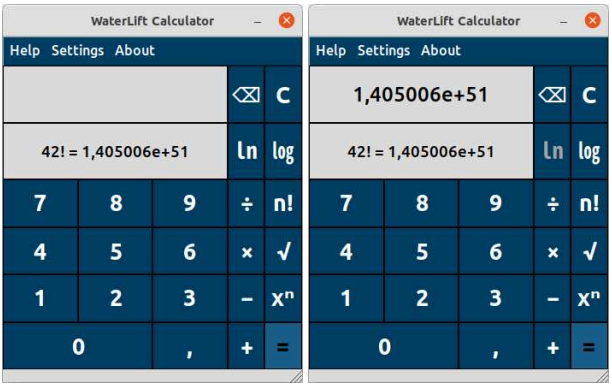

Figure 6: ”Continue the calculating” feature

- or press the operation sign (except √, log, ln) to put the result into the input field with it.

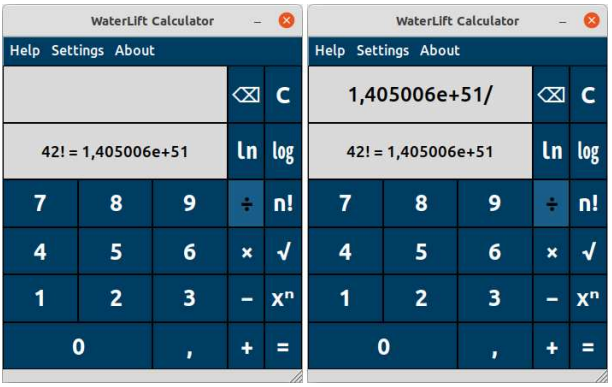

Figure 7: ”Continue the calculating” feature

3.4.3 ”Change the operation sign”

When you put an operation sign into the input field, you can change it by pressing another.

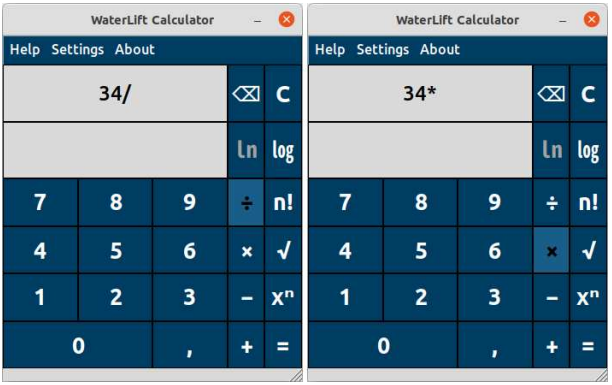

Figure 8: ”Change the operation sign” feature

3.4.4 Window size control

You can change the window size by clicking the left mouse button on the *sizegrip* and moving the mouse.

3.4.5 Inactive buttons

The buttons become inactive if their using is impossible in the current expression.

3.4.6 Keyboard input support

We provide keyboard support for all input buttons. You can find Keyboard bindings table on the page 11.

3.4.7 In-build user manual

You can always open a short version of this manual by clicking Help or pressing the H keyboard button.

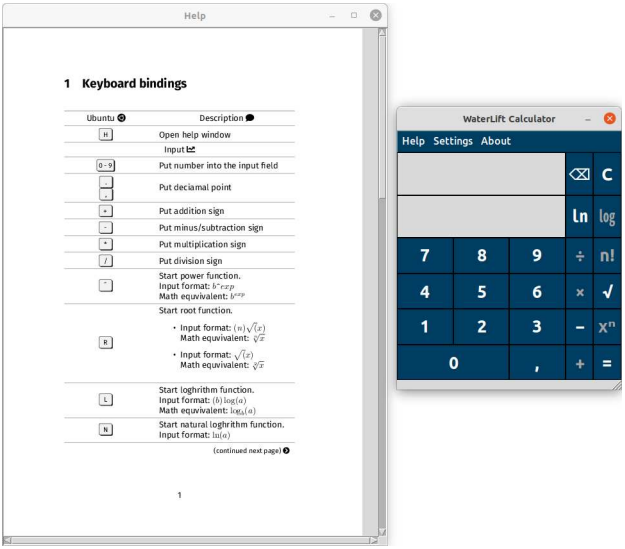

Figure 9: In-build user manual

3.5 Operation limitations

Operation	Limitation
+	No limitation
-	No limitation
*	No limitation
÷	$a \div b, b \neq 0$
^	$b^{exp}, exp \in \mathbb{N}$
√	• $\sqrt[n]{x}, n \neq 0$ • $\sqrt[n]{-x}, n \in \{2n+1 \mid n \in \mathbb{Z}\}$
log	$\log_b a, b > 0 \wedge b \neq 1, a > 0$
ln	$\ln a, a > 0$
!	$n!, n \in \mathbb{N}$

4 Keyboard bindings

Ubuntu	Description
H	Open help window
	Input
0 - 9	Put the number into the input field
. ,	Put decimal point
+	Put addition sign
-	Put minus/subtraction sign
*	Put multiplication sign

(continued next page)

(from previous page)

Ubuntu	Description
/	Put division sign
^	Start power function. Input format: $b\hat{}exp$ Math equivalent: b^{exp}
R	Start root function. • Input format: $n\sqrt{x}$ Math equivalent: $\sqrt[n]{x}$ • Input format: $\sqrt{x}$ Math equivalent: $\sqrt[2]{x}$
L	Start logarithm function. Input format: $(b)\log(a)$ Math equivalent: $\log_b(a)$
N	Start natural logarithm function. Input format: $\ln(a)$
!	Put factorial sign. Input format: $n!$
	Other
Enter =	Evaluate the expression
Delete BackSpace	Delete the last symbol from the input field. If the input field is empty, clear the output field.
C	Clear the input field. If the input field is empty, clear the output field.
Esc	Close the current window. If was pressed on the main window, the application will be closed.

5 Uninstallation

5.1 Via the installer

Open the downloaded installer and click Remove button

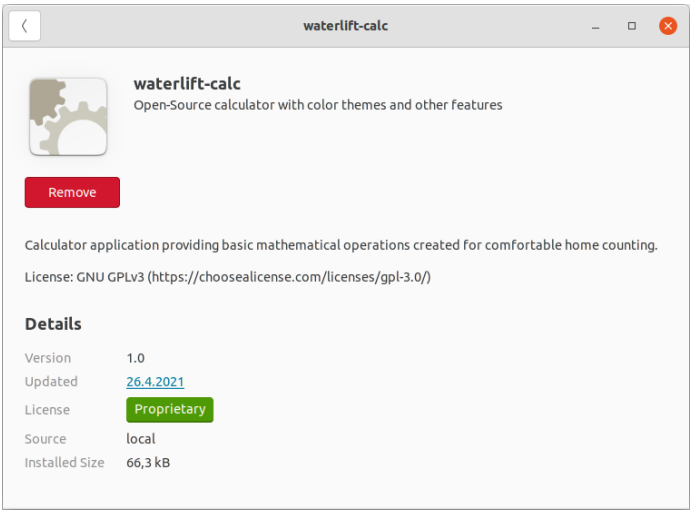

Figure 10: Uninstallation window

5.2 Via the CLI

```
sudo dpkg -r waterlift-calc
```

5.3 Manually

You can do all steps in any directory.

1. Give yourself superuser rights

   ```
   sudo -s
   ```

2. Remove all app's files by the following commands:

```
rm -r /usr/bin/waterlift-calc

rm -r /usr/share/waterlift-calc/*

rmdir /usr/share/waterlift-calc

rm -r /usr/share/pixmaps/waterlift_calc_logo.png

rm -r /usr/share/applications/waterlift_calc.desktop
```

You have successfully uninstalled the application.