

## HOMEBREW: PART 2

# How to install an older package



# INTRO

- In this tutorial, I will guide you through the process of installing version 69.1 of the icu4c package using Homebrew, specifically focusing on this older version.
- ICU4C, which stands for International Components for Unicode, provides robust and full-featured Unicode services.
- The Homebrew package icu4c provides libraries for Unicode support, internationalization, globalization, and more.

# PRESENTATION

- This presentation can be found at:  
[https://www.mobilefish.com/download/homebrew/brew\\_part2.pdf](https://www.mobilefish.com/download/homebrew/brew_part2.pdf)
- All my Homebrew videos and presentations can be found at:  
<https://www.mobilefish.com/developer/homebrew/homebrew.html>

# MACOS VERSION

- This presentation assumes macOS (Monterey) version 12.7.6 is installed on your MacBook.

# INSTALL RISC-V TOOLS

- Install the RISC-V tools for compiling, assembling and debugging programs (riscv-gnu-toolchain), along with the Spike simulator (riscv-isa-sim) and the proxy kernel (riscv-pk).

Type: **brew tap riscv-software-src/riscv**

Type: **brew install riscv-tools**

- Running the command “brew install riscv-tools” will download and setup the necessary tools, including:
  - RISC-V GNU Toolchain (brew install riscv-gnu-toolchain)
  - Spike (riscv-isa-sim) (brew install riscv-isa-sim)
  - RISC-V PK (Proxy Kernel) (brew install riscv-pk)

# BUILT SOURCE AND FORMULA INSTALLATION LOCATION

- To identify the source and installation path of each package:
- Type: **brew info riscv-tools**  
Installed: /usr/local/Cellar/riscv-tools/0.2  
Built from source on 2024-11-18 at 15:54:18  
From: <https://github.com/riscv-software-src/homebrew-riscv/blob/HEAD/riscv-tools.rb>
- Type: **brew info riscv-gnu-toolchain**  
Installed: /usr/local/Cellar/riscv-gnu-toolchain/main  
Built from source on 2024-11-16 at 15:53:47  
From: <https://github.com/riscv-software-src/homebrew-riscv/blob/HEAD/riscv-gnu-toolchain.rb>

# BUILT SOURCE AND FORMULA INSTALLATION LOCATION

- Type: **brew info riscv-isa-sim**

Installed: /usr/local/Cellar/riscv-isa-sim/main

Built from source on 2024-11-18 at 15:59:16

From: <https://github.com/riscv-software-src/homebrew-riscv/blob/HEAD/riscv-isa-sim.rb>

- Type: **brew info riscv-pk**

Installed: /usr/local/Cellar/riscv-pk/main

Built from source on 2024-11-16 at 15:56:02

From: <https://github.com/riscv-software-src/homebrew-riscv/blob/HEAD/riscv-pk.rb>

# MISSING ICU4C@69 LIBRARY

- After installing the RISC-V tools, I launched the Spike simulator.

Type: **spike --help**

- I got the following error:

```
dyld[35928]: Library not loaded: '/usr/local/opt/icu4c/lib/libicudata.69.dylib'
```

```
Referenced from: '/usr/local/Cellar/boost/1.76.0/lib/libboost_regex.dylib'
```

```
Reason: tried: '/usr/local/opt/icu4c/lib/libicudata.69.dylib' (no such file), '/usr/local/lib/libicudata.69.dylib' (no such file), '/usr/lib/libicudata.69.dylib' (no such file), '/usr/local/Cellar/icu4c@76/76.1_1/lib/libicudata.69.dylib' (no such file), '/usr/local/lib/libicudata.69.dylib' (no such file), '/usr/lib/libicudata.69.dylib' (no such file)
```

- From the information provided and a Google search of the initial error message (*Library not loaded: '/usr/local/opt/icu4c/lib/libicudata.69.dylib'*), I discovered that the icu4c@69 library is missing, specifically icu4c version 69.1.



# HOW TO FIX THIS MISSING ICU4C@69.1 LIBRARY

- First I try executing the command **brew install icu4c**, Homebrew automatically installs the latest version of this package.

Type: **brew info icu4c**

- **Installed:** /usr/local/Cellar/icu4c@76/76.1\_1  
**Built from source on** 2024-11-16 at 14:21:45  
**From:** <https://github.com/Homebrew/homebrew-core/blob/HEAD/Formula/i/icu4c@76.rb>
- This is by design, because the package is tested against all the dependent formulas. Combining old and new software versions often leads to compatibility issues and potential disasters.

# HOW TO FIX THIS MISSING ICU4C@69.1 LIBRARY

- Next I tried commands **brew update** and **brew upgrade**.
- **brew update**  
This command updates your Homebrew installation by retrieving the latest version and its package definitions (formulae) from GitHub, guaranteeing that you have the most current information on available packages.
- **brew upgrade**  
This command upgrades all outdated packages installed on your system to their latest versions, utilizing the most recent formula.
- However this will not solve my problem, Spike still requires the icu4c@69.1 package.

# HOMEBREW FORMULA LOCATION

- Find the location where Homebrew stores its package build (.rb) files.

Type: **cd \$(brew --prefix)/Homebrew/Library/Taps/homebrew/homebrew-core/Formula**

- The package name is icu4c, which starts with the letter i.

The location of the icu4c build files is:

**\$(brew --prefix)/Homebrew/Library/Taps/homebrew/homebrew-core/Formula/i**

- In my situation, the following icu4c build files are found. Version 69.1 is missing.

**icu4c@74.rb**

**icu4c@75.rb**

**icu4c@76.rb**

# GET INSTALLED ICU4C VERSION

- To show information about the installed icu4c package, including its version:

Type: **brew info icu4c**

Output:

```
==> icu4c@76: stable 76.1 [keg-only]
```

```
C/C++ and Java libraries for Unicode and globalization
```

```
https://icu.unicode.org/home
```

```
Installed
```

```
/usr/local/Cellar/icu4c@76/76.1_1 (277 files, 80.4MB)
```

```
Built from source on 2024-11-16 at 14:21:45
```

```
From: https://github.com/Homebrew/homebrew-core/blob/HEAD/Formula/i/icu4c@76.rb
```

# INSTALL ICU4C VERSION 69.1

- Type: **cd ~**
- Create a local tap (**local-<packageName>**)  
Type: **brew tap-new \$USER/local-icu4c**

Output:

```
Initialized empty Git repository in /usr/local/Homebrew/  
Library/Taps/$USER/homebrew-local-icu4c/.git/
```

# INSTALL ICU4C VERSION 69.1

- The brew extract command retrieves a specific version of a formulae from the Homebrew core repository or other taps into your custom tap.
- It can install older package versions that are no longer available in the main repository.

# INSTALL ICU4C VERSION 69.1

- Extract an older version of icu4c, specifically version 69.1, into a local tap.

Type: **brew extract --version=69.1 icu4c \$USER/local-icu4c**

Output:

```
==> Searching repository history
```

```
==> Writing formula for icu4c at 69.1 from revision  
c278d3d to:
```

```
/usr/local/Homebrew/Library/Taps/$USER/homebrew-local-  
icu4c/Formula/icu4c@69.1.rb
```

# INSTALL ICU4C VERSION 69.1

- Install icu4c version 69.1.

Type: **brew install icu4c@69.1**

Output:

```
==> Fetching $USER/local-icu4c/icu4c@69.1
```

```
==> Downloading https://github.com/unicode-org/icu/releases/download/release-69-1/icu4c-69_1-src.tgz
```

```
==> Downloading from https://objects.githubusercontent.com/github-production-release-asset-2e65be/49
```

```
icu4c@69.1 is keg-only, which means it was not symlinked into /usr/local,  
because macOS provides libicucore.dylib (but nothing else).
```

```
If you need to have icu4c@69.1 first in your PATH, run:
```

```
echo 'export PATH="/usr/local/opt/icu4c@69.1/bin:$PATH"' >> /Users/$USER/.bash_profile  
echo 'export PATH="/usr/local/opt/icu4c@69.1/sbin:$PATH"' >> /Users/$USER/.bash_profile
```

```
For compilers to find icu4c@69.1 you may need to set:
```

```
export LDFLAGS="-L/usr/local/opt/icu4c@69.1/lib"  
export CPPFLAGS="-I/usr/local/opt/icu4c@69.1/include"
```

```
For pkg-config to find icu4c@69.1 you may need to set:
```

```
export PKG_CONFIG_PATH="/usr/local/opt/icu4c@69.1/lib/pkgconfig"
```

```
==> Summary
```

```
/usr/local/Cellar/icu4c@69.1/69.1
```



# INSTALL ICU4C VERSION 69.1

- The formula **icu4c@69.1.rb** is installed in:  
**/usr/local/Homebrew/Library/Taps/\$USER/homebrew-local-icu4c/Formula/**
- The brew search command is used to search for available formulas and casks that match a given search term. Command brew search icu4c will list all the formulas and casks related to "icu4c" that are available for installation.
- The check marks indicates which versions of the package are currently installed on your system.

# INSTALL ICU4C VERSION 69.1

- Type: **brew search icu4c**

Output:

**icu4c@74**

**icu4c@76 ✓**

**icu4c@75**

**\$USER/local-icu4c/icu4c@69.1 ✓**

# INSTALL ICU4C VERSION 69.1

- The icu4c version 69.1 is now installed.

To show information about the installed icu4c package version: 69.1.

Type: **brew info icu4c@69.1**

- ```
==> $USER/local-icu4c/icu4c@69.1: stable 69.1 [keg-only]
C/C++ and Java libraries for Unicode and globalization
http://site.icu-project.org/home
Installed
/usr/local/Cellar/icu4c@69.1/69.1 (260 files, 72.7MB)
  Built from source on 2024-11-18 at 15:09:47
From: /usr/local/Homebrew/Library/Taps/\$USER/homebrew-local-icu4c/Formula/icu4c@69.1.rb
License: ICU
==> Caveats
icu4c@69.1 is keg-only, which means it was not symlinked into /usr/local,
because macOS provides libicucore.dylib (but nothing else).

If you need to have icu4c@69.1 first in your PATH, run:
echo 'export PATH="/usr/local/opt/icu4c@69.1/bin:$PATH"' >> /Users/$USER/.bash_profile
echo 'export PATH="/usr/local/opt/icu4c@69.1/sbin:$PATH"' >> /Users/$USER/.bash_profile

For compilers to find icu4c@69.1 you may need to set:
export LDFLAGS="-L/usr/local/opt/icu4c@69.1/lib"
export CPPFLAGS="-I/usr/local/opt/icu4c@69.1/include"
```

# INSTALL ICU4C VERSION 69.1

- After installation of icu4c@69.1, i still got the same error when I launch the Spike simulator (spike --help).
- I tried the following methods (A and B) to fix this error but ALL failed.

## Method A (Failed)

Modify the .bash\_profile (see previous sheet)

```
echo 'export PATH="/usr/local/opt/icu4c@69.1/bin:$PATH"' >> /Users/$USER/.bash_profile
echo 'export PATH="/usr/local/opt/icu4c@69.1/sbin:$PATH"' >> /Users/$USER/.bash_profile
export LDFLAGS="-L/usr/local/opt/icu4c@69.1/lib"
export CPPFLAGS="-I/usr/local/opt/icu4c@69.1/include"
```

## Method B (Failed)

Type: **brew unlink icu4c@76**

```
Unlinking /usr/local/Cellar/icu4c@76/76.1_1... 0 symlinks removed.
```

Type: **brew link --overwrite --force icu4c@69.1**

```
Warning: Refusing to link macOS provided/shadowed software: icu4c@69.1
```

# INSTALL ICU4C VERSION 69.1

- In directory **/usr/local/opt** the following symbolic links can be found:

**icu4c@69.1 -> ../Cellar/icu4c@69.1/69.1**

**icu4c@76 -> ../Cellar/icu4c@76/76.1\_1**

- The method that fix the error is adding the following symbolic link:

Type: **ln -s /usr/local/opt/icu4c@69.1 /usr/local/opt/icu4c**

This will create the symbolic link:

**icu4c -> /usr/local/opt/icu4c@69.1**

# ICU4C SOURCE

- The icu4c code can be found at:

<https://github.com/unicode-org/icu>

In tags you can find all the release versions.

- Quick summary how to install icu4c@73.2

```
Type: brew extract --version=73.2 icu4c $USER/local-icu4c
```

```
Type: brew install icu4c@73.2
```

```
Type: cd /usr/local/opt/
```

```
Type: rm icu4c
```

```
Type: ln -s /usr/local/opt/icu4c@73.2 /usr/local/opt/icu4c
```