Random Test Data Generation Software Executable

Started 25/02/2026

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SETU

1. Delivery Format

The software is delivered as a **VS Code Extension** packaged in the standard `.vsix` format — a self-contained, platform-independent installer that works on **Windows**, **Linux**, and **macOS**. This fulfils the requirement that the software must be runnable by any supervisor without relying on a specific development environment.

Packaged file: `random-test-data-generation-1.0.0.vsix`

2. Installation Instructions

Step 1: Install Visual Studio Code

Download and install VS Code from https://code.visualstudio.com if not already installed.

Step 2: Install the Extension

Option A — Via VS Code UI:

1. Open VS Code
2. Open the Extensions sidebar (`Ctrl+Shift+X`)
3. Click the ··· menu (top-right corner of the Extensions panel)
4. Select **"Install from VSIX..."**
5. Navigate to and select the provided `random-test-data-generation-1.0.0.vsix` file
6. Reload VS Code when prompted

Option B — Via Command Line:

```
code --install-extension random-test-data-generation-0.1.0.vsix
```

Step 3: Install Runtime Prerequisites

The extension itself requires no additional dependencies to install and activate. However, to build and execute the generated Google Test test cases, the following tools must be available on the host system:

Tool	Minimum Version	Purpose
C/C++ Compiler (g++ or clang++)	Any recent version	Compiles the generated test files
CMake	≥ 3.14	Builds the test project
Google Test (GTest)	Any recent version	Testing framework used by generated tests

Ubuntu / Debian / WSL:

```
sudo apt update
sudo apt install -y build-essential cmake libgtest-dev
cd /usr/src/gtest
sudo cmake .
sudo make
sudo cp lib/*.a /usr/lib/
```

macOS:

```
brew install cmake googletest
```

Verify installation:

```
g++ --version     # Should display compiler version
cmake --version   # Should display version ≥ 3.14
```

3. How to Run the Software

1. Open any `.c` source file in VS Code
2. Place the cursor inside a C function
3. Trigger test generation using one of the following methods:

- **Keyboard shortcut:** `Ctrl+Shift+T` (`Cmd+Shift+T` on macOS)
- **Right-click context menu:** Select *"Generate Tests for This Function"*
- **Command Palette:** `Ctrl+Shift+P` → type *"C Test Generator: Generate Tests for This Function"*

4. The extension generates a `_test.cpp` file and a `CMakeLists.txt` in the same directory as the source file
5. Fill in expected values via the interactive webview UI when prompted
6. Click **"Build & Run"** to compile and execute the tests — results appear in the VS Code output panel

4. Portability Statement

This software does not run "just on my laptop." It is distributed as a standard .vsix installer that can be installed on any machine running VS Code. The following properties confirm its portability:

- **No source code compilation required** — The extension is pre-bundled (TypeScript compiled to JavaScript, WASM binaries included)
- **No Node.js or npm required** — All dependencies are packaged inside the `.vsix`
- **No internet connection required** — The extension works fully offline after installation

- **Self-contained** — The `.vsix` file is approximately 700 KB and contains everything needed to run the extension

The only external requirements (C++ compiler, CMake, Google Test) are standard development tools that are prerequisites of the problem domain — C test generation — not of the extension itself.

5. Reproducible Build

To rebuild the .vsix from source (for verification purposes):

```
git clone https://github.com/S5in/C_Random_Test_Data_Generation
cd C_Random_Test_Data_Generation
npm install
npm install -g @vscode/vsce
vsce package
```

This produces an identical .vsix package.

6. Iteration Versioning

Each iteration produces a new .vsix with an incremented version number, installable using the same process described above.

Iteration	Version	File
Iteration 1	`1.0.0`	`random-test-data-generation-1.0.0.vsix`
Iteration 2	`2.0.0`	(future release)
Iteration 3	`3.0.0`	(future release)