

# .NET Daikon Front End – Online vs. Offline Use

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## 1 Distinction

The Front End can be run in an online or offline manner. Online means the program is modified in memory to have the necessary instrumentation IL added, and then immediately executed. Offline means the instrumentation code is added and the resulting binary is saved. Offline mode is useful for debugging instrumented programs and repeated executions of a program without readding instrumentation code.

## 2 Online Mode

This is the default mode. No changes are made to the disk for purposes of binary rewriting. The modified binary is executed in memory. The `FrontEndArgs` and `TypeManager` classes are set statically during the IL rewriting and declaration printing phase, and are available to `VariableVisitor`.

## 3 Offline Mode

To specify Offline Mode the user must supply the `-save-program` command, optionally in the form of `-save-program=filename` to save to a custom filename, if none is supplied the name `InstrumentedProgram.exe` is used. The `FrontEndArgs` and `TypeManager` classes must be stored during the first phase, and then loaded when the instrumented program is run.

### 3.1 Static Class Serialization

Offline mode introduces a variety of complexities when the instrumented program is executed. The flags supplied to the front-end must be preserved. To accomplish the `FrontEndArgs` objected constructed and used when the program was instrumented is serialized and stored on disk in the form of `program.name.args`. The `TypeManager` object used is stored in a similar fashion with the `.tm` extension.

### 3.2 Writing the `.dtrace` file

In offline mode the `.decls` portion of the `datatrace` file is written in the first phase (when the binary with instrumentation code is constructed). This portion is preserved when the instrumented

program is executed because it will append to the existing .dtrace file. The .decls portion would need to be preserved and restored for multiple simultaneous executions of the instrumented binary.