■ MIDIBreakout Build from Source Guide

1) Dependencies

- **C++17 compiler** (for `std::filesystem`) - Windows: MinGW-w64 (Code::Blocks bundle) or MSVC 2019+
- Linux: g++ 9+ (or Clang with libstdc++) You must also download the **midifile** headers (Craig Stuart Sapp's library).

■ Required midifile components

Only these header files are required from `midifile/include/midifile/`:

- MidiFile.h
- MidiEvent.h
- MidiEventList.h
- MidiMessage.h
- Options.h (dependency of MidiFile.h)
- Binasc.h (helper for ASCII ↔ binary conversion)

■ Not needed

- No `.cpp` files from midifile (header-only use is sufficient) - No Makefiles, tests, or examples from the repo

Example folder layout:

```
third_party/
■■ midifile/
   ■■ include/
      ■■ midifile/
         ■■ MidiFile.h
         ■■ MidiEvent.h
         ■■ MidiEventList.h
         ■■ MidiMessage.h
         ■■ Options.h
         ■■ Binasc.h
```

2) Windows — Code::Blocks (MinGW-w64)

Steps to build:

```
1. File → New → Project… → Console application (C++)
2. Add `main.cpp` to the project
3. Add include path: $(PROJECT_DIR)\third_party\midifile\include
4. Compiler options: -std=c++17
5. Linker options (optional): -static-libstdc++ -static-libgcc
6. Build target: Release
```

3) Windows — MSVC (Developer Command Prompt)

Build command:

```
cl /std:c++17 /O2 /EHsc main.cpp /I third_party\midifile\include /Fe:MIDIBreakout.exe

If filesystem link errors occur, add:
/link /DEFAULTLIB:ucrt
```

4) Linux — g++

Install toolchain and build:

```
sudo apt-get update
sudo apt-get install -y g++ make

g++ -std=c++17 -O2 -Wall \
  -I third_party/midifile/include \
  main.cpp -o MIDIBreakout
```

5) Quick CLI Build (any platform with g++)

Minimal command:

```
g++ -std=c++17 -O2 -I third_party/midifile/include main.cpp -o MIDIBreakout
```

6) Troubleshooting

- `'filesystem' is not a namespace-name` → Compiler too old or missing `-std=c++17` - Linker errors (older libstdc++) → Add `-lstdc++fs` - Cannot find midifile headers → Ensure include path points to .../include, not repo root - Windows runtime DLLs missing → Add `-static-libstdc++ -static-libgcc` (MinGW) or install MSVC redistributable - Undefined references from midifile → Use latest headers, avoid adding `.cpp` files (headers are enough)