



Tracing Tools Integration

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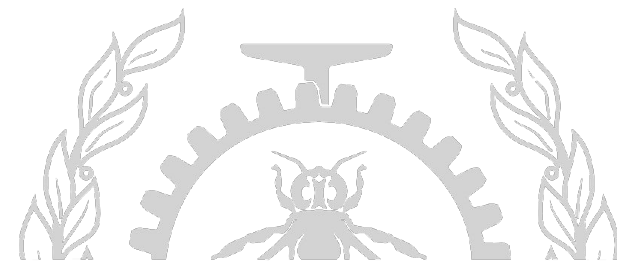
May 04, 2019

Polytechnique Montréal

Laboratoire **DORSAL**

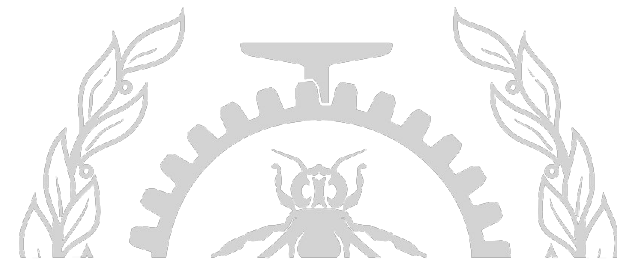
Agenda

- ❑ Introduction
- ❑ Uftrace (original version)
- ❑ Uftrace (Fork)
- ❑ Demonstration
- ❑ Limitations and problems



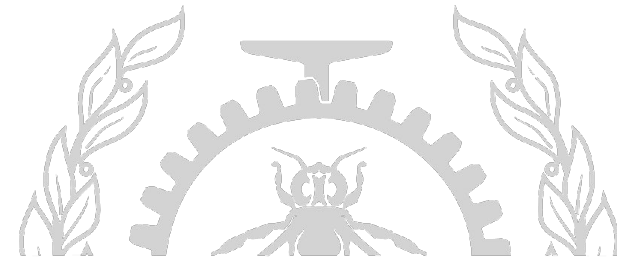
Uftrace

- ❑ Userspace tracing tool.
- ❑ Mainly static trace points (needs to be compiled with `-pg` option).
- ❑ Supports dynamic tracing (using `-mnop-mcount`).
- ❑ Can't attach to a target process (It forks and exec).

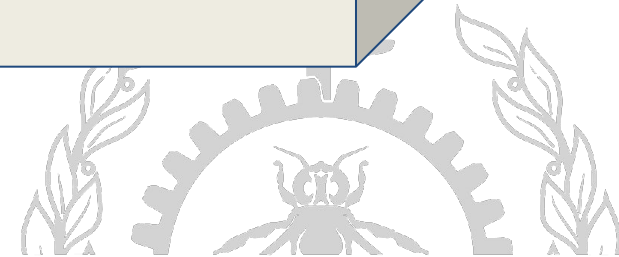
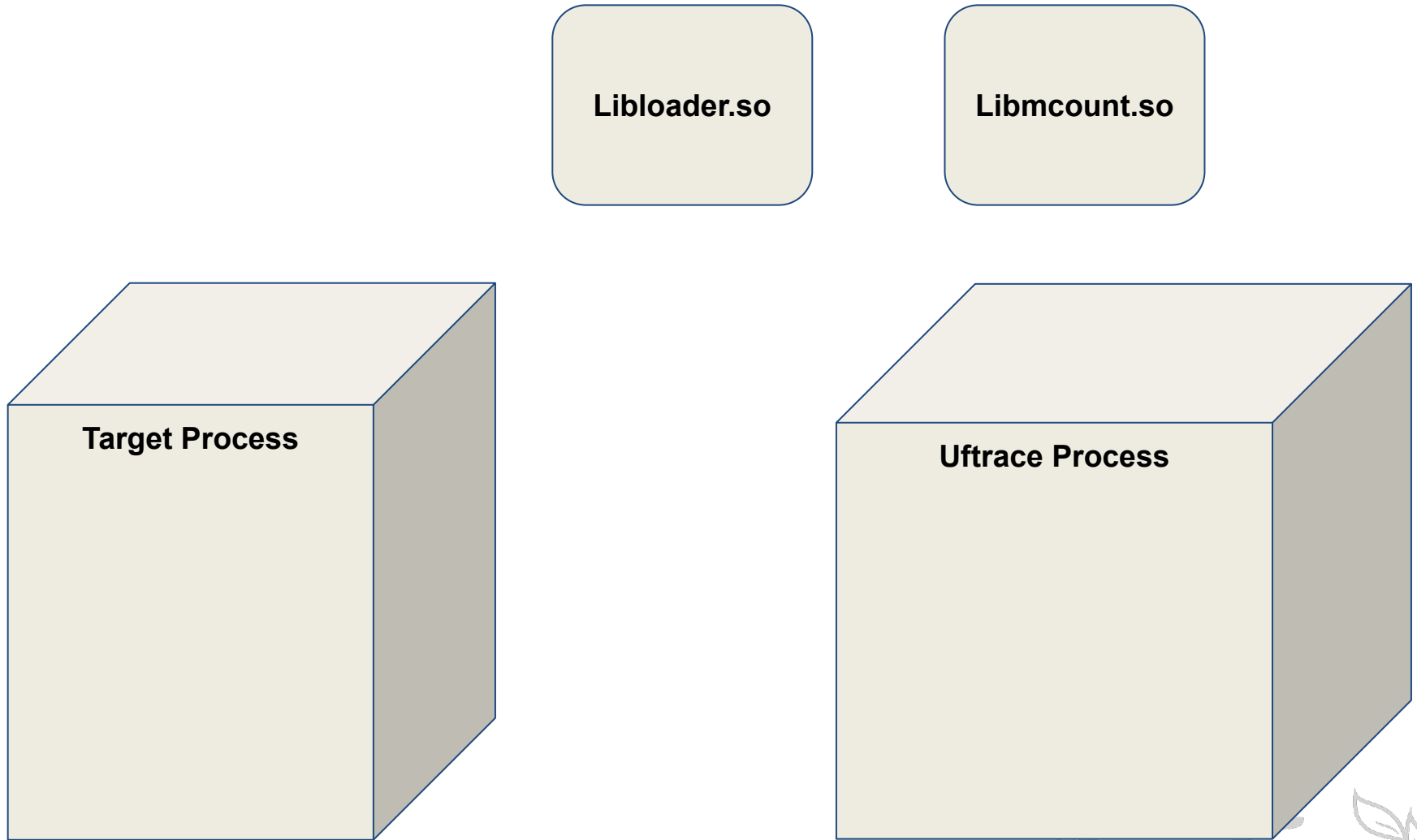


Uftrace Fork

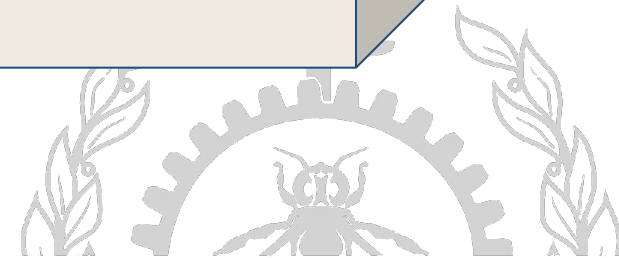
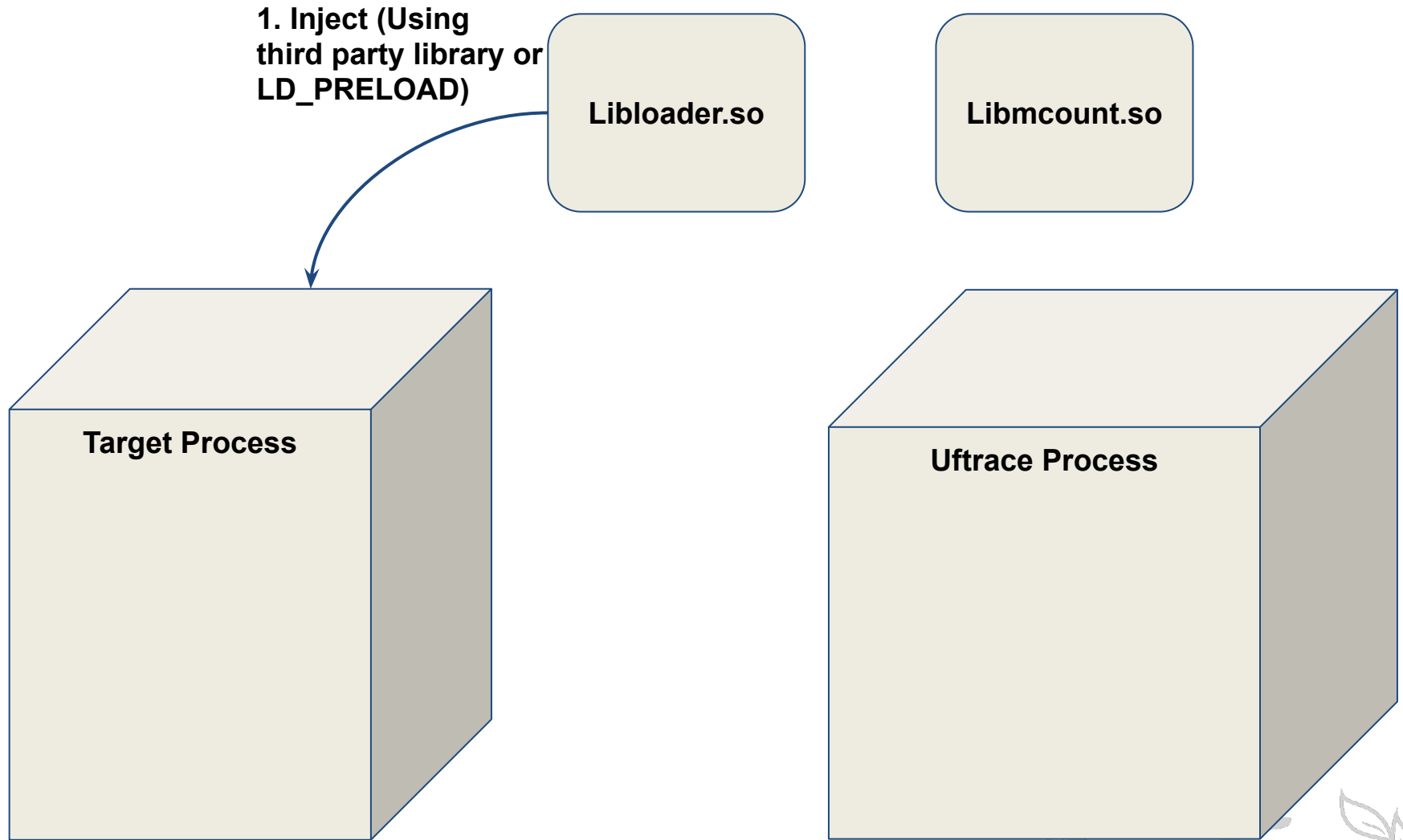
- ❑ Dynamic tracing with Fasttp (no recompilation needed).
- ❑ Can attach to a target process and start tracing on the fly (Only -g for debug info is needed).
 - ❑ Supports Fasttp, -pg (mcount) and -finstrument-functions (cyg profile)



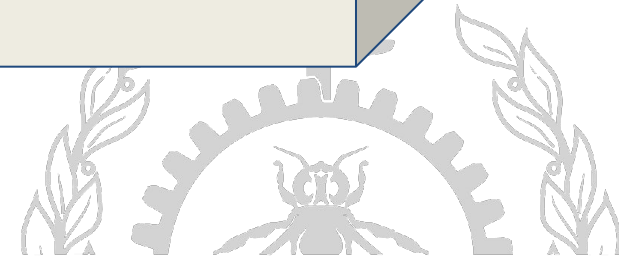
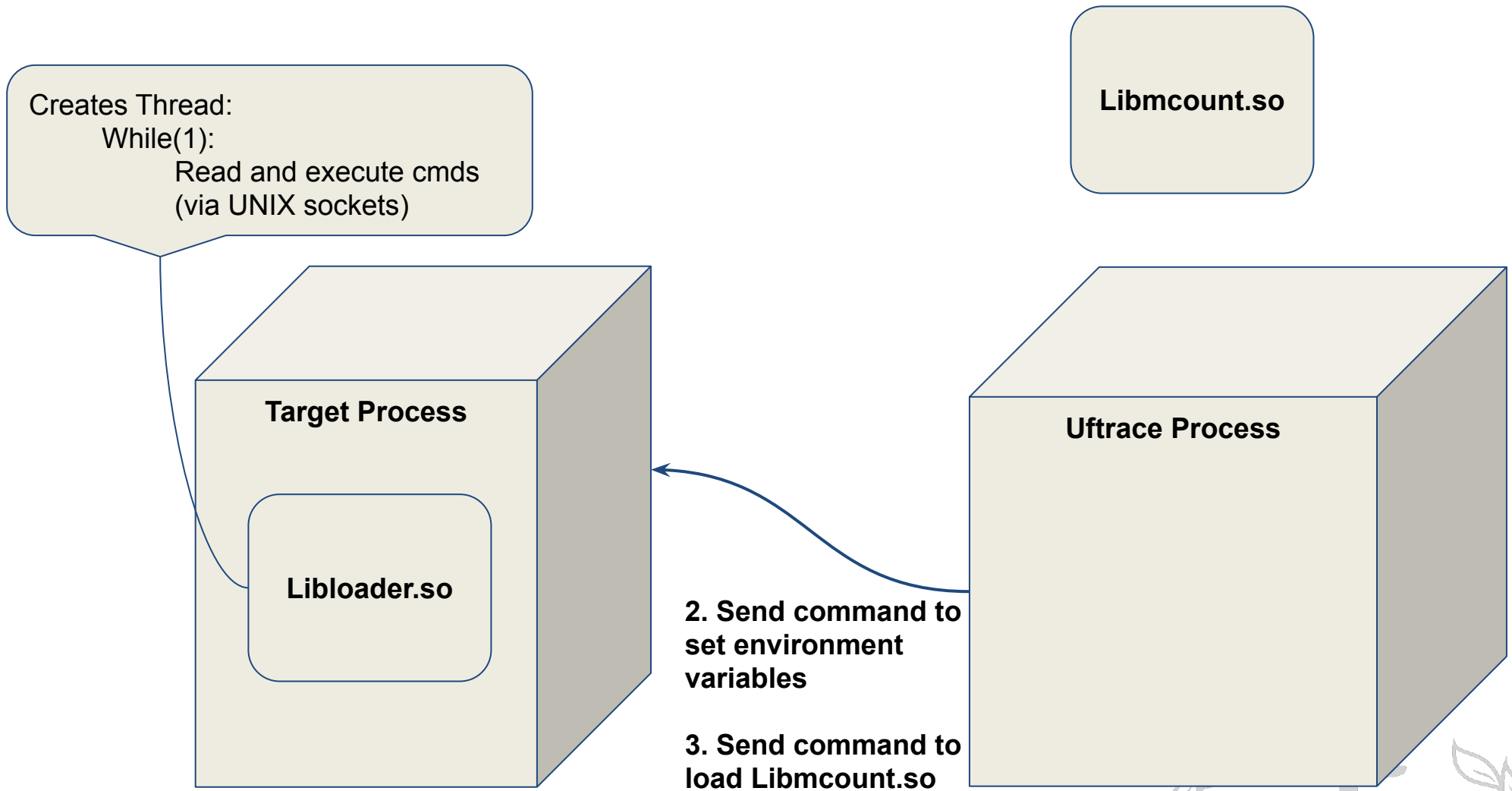
Uftrace Fork



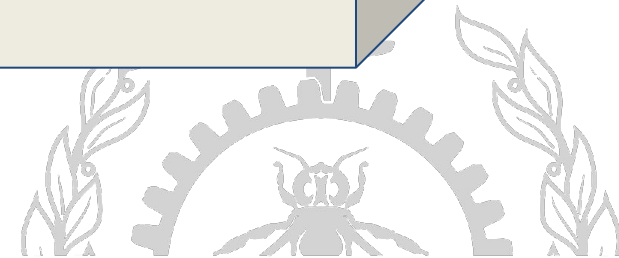
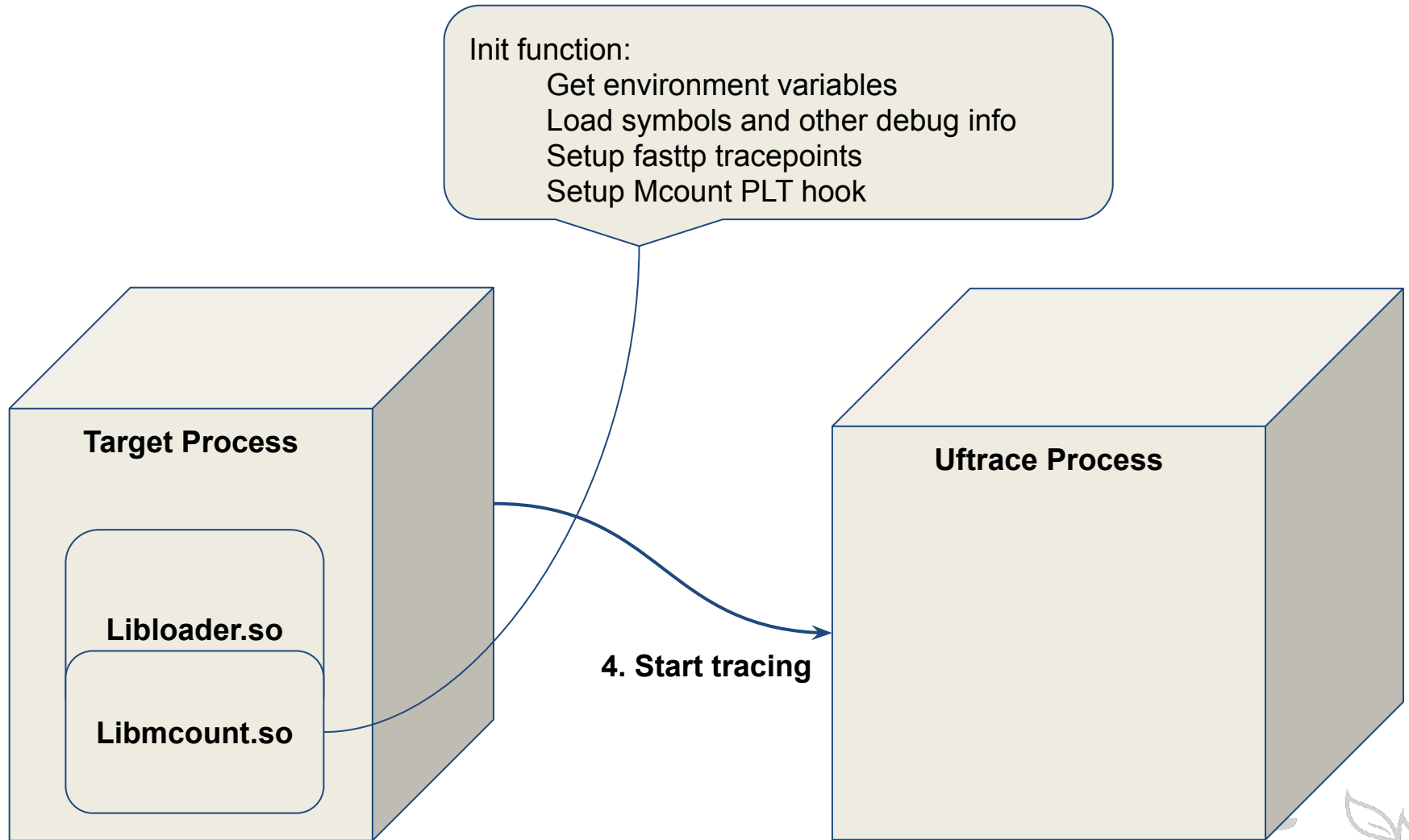
Uftrace Fork



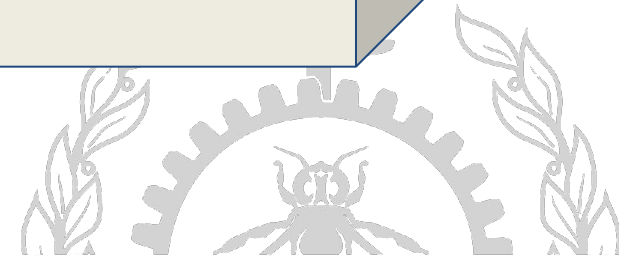
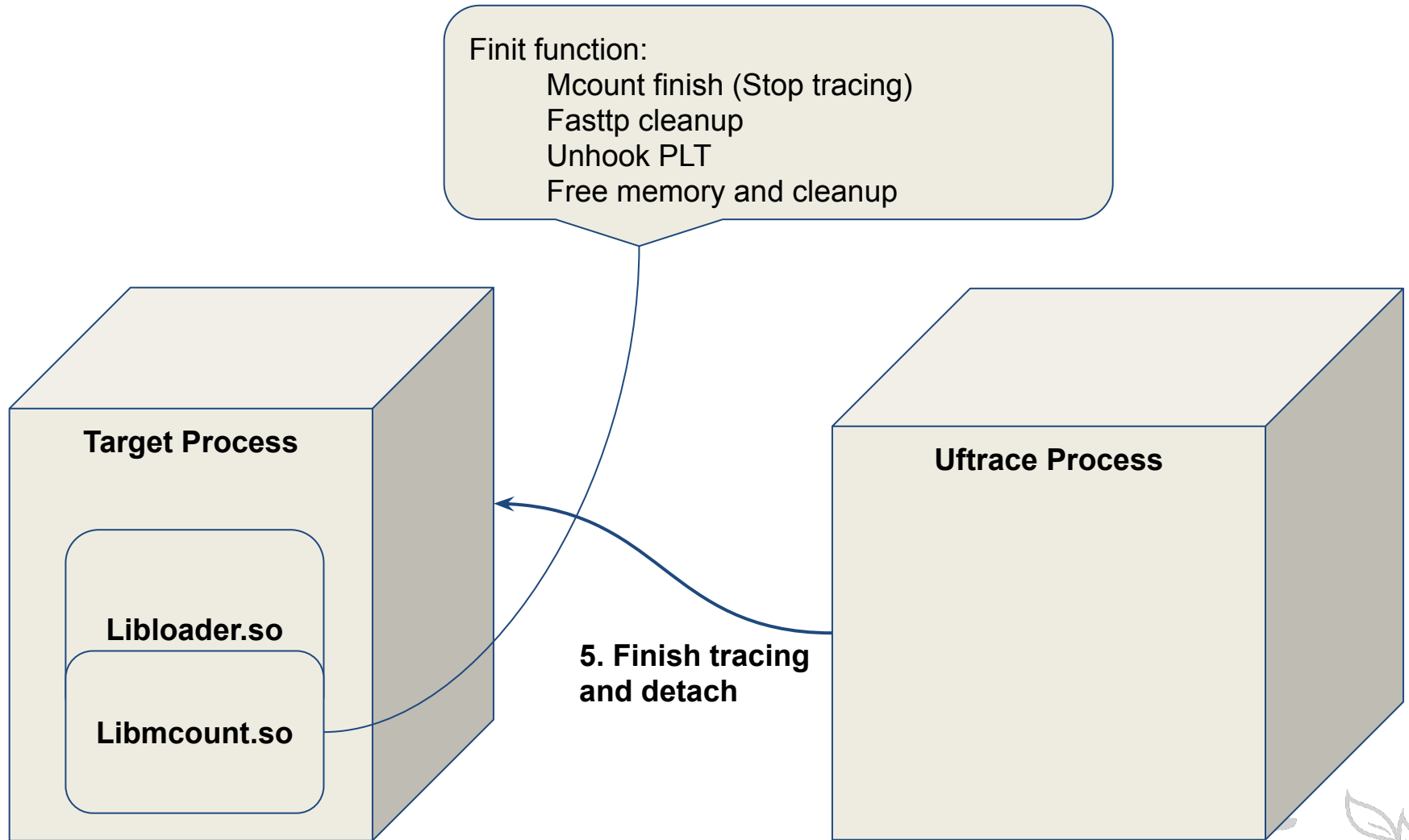
Uftrace Fork



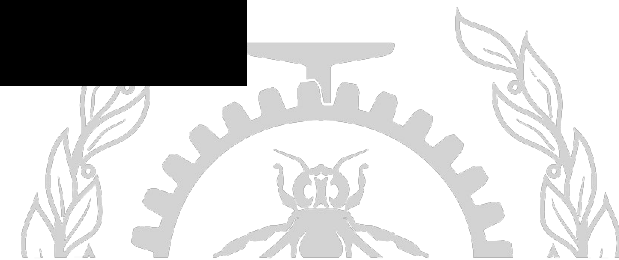
Uftrace Fork



Uftrace Fork

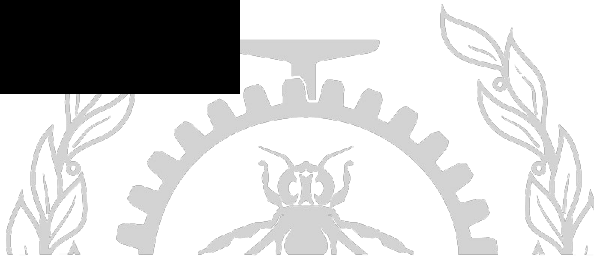


Demonstration 1



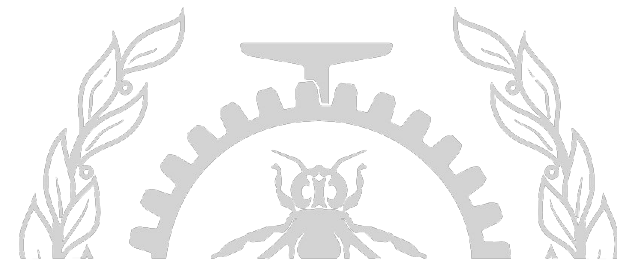
Demonstration 2

The image shows a terminal window with a dark background. The top part of the terminal displays system logs with timestamps and messages such as "signal 2 (SIGINT) received, exiting" and "worker process 14017 exited with code 0". Below the logs, several terminal commands are entered, including "ps -ef | grep nginx" and "ps -ef | grep httpd". The bottom part of the terminal shows the output of these commands, listing running processes and their details.



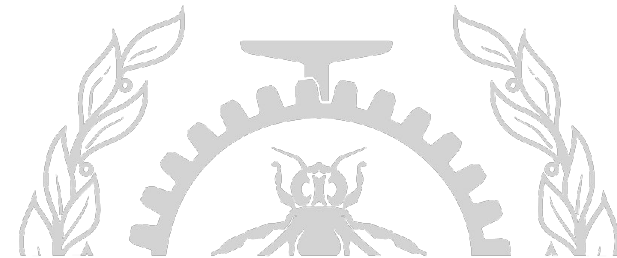
Limitations and Problems

- ❑ Difficult installation due to the complicated installation of Fasttp dependency.
 - ❑ Downgrade from C++17 to a fairly old C++ version
- ❑ Tested and stable enough under Ubuntu environment.
- ❑ Unfreed memory in the original version in libmcount's finit function (Memory leaks).
 - ❑ Reserve resources to free unfreed memory.



Near Future Work

Unregister a dynamic probe in a performant way (Stop the world).



Questions?

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[**https://github.com/AnsBal/uftrace**](https://github.com/AnsBal/uftrace)

