seL4 Emulation Runtime Library Implementation

When the roottask started by the seL4 kernel, it will do some environment setup beforing entring the main function. In the original seL4runtime the most important functionalities are:

- Obtain the bootinfo: the seL4 kernel passes the bootinfo as an argument to the roottask, including the first usable slot in cnode, ipc buffer address, etc.
- Set up the TLS region: the TLS region is used for storing IPC buffer's pointer and per seL4 thread error, CAmkES uses TLS for bookkeeping as well.

Reimplementation:

- Obtain the bootinfo: instead of passing as an function argument, we use map a share memory to access the bootinfo frame.
- Setup TLS: instead of kernel set up the TLS region for us, we setup the TLS region by ourselves. (e.g. using **`FSGSBASE`** instruction family on x86 if avalaible, otherwise use Linux process control syscalls)
- Emulation library internal setup: specific routine of the emulation library, including handshaking with the kernel emulator, mapping the IPC buffer frame and bootinfo frame using share memory, as well as setup the **`SIGSEGV`** signal handlers. (Explain in the later slides)