**Task 4 Analysis**

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### Strace analysis is given in “strace\_active\_anotated.txt”

### Pmap analysis:

* `pmap -X task4` (eXtended information)
* Full trace can be found in “pmap.txt”

| **Address Range** | **Permissions** | **Offset** | **Device** | **Inode** | **Size (KB)** | **Mapping** | **Explanation** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| aaaade0a0000 | r-xp | 0 | fd:00 | 584760 | 4 | task4 | Text Segment: Executable code of your program. Readable and executable but not writable to prevent code corruption. |
| aaaade0b1000 | r--p | 1000 | fd:00 | 584760 | 4 | task4 | Read-only Data: Contains read-only data like string literals. |
| aaaade0b2000 | rw-p | 2000 | fd:00 | 584760 | 4 | task4 | Data Segment: Initialized and uninitialized data (like global and static variables). Readable and writable. |
| aaab1bfca000 | rw-p | 0 | 00:00 | 0 | 132 | [heap] | Heap: Dynamic memory allocated during runtime (new, malloc). |
| ffffae540000 | r-xp | 0 | fd:00 | ... | ... | ... | Shared Libraries: Various shared libraries like libgcc\_s.so.1, libm.so.6, libc.so.6, libstdc++.so.6. These are mapped into the process's address space for code sharing and dynamic linking. |
| ffffae7ae000 | rw-p | 0 | 00:00 | 0 | 48 |  | Anonymous Mappings: Likely used for runtime's internal data structures or thread stacks. |
| ffffaea0b000 | r-xp | 0 | fd:00 | ... | 172 | ... | Dynamic Linker (ld-linux-aarch64.so.1): Loads the shared libraries needed by the program during runtime. |
| ffffaea42000 | r--p | 0 | 00:00 | 0 | 8 | [vvar] | Kernel Variables: Read-only variables exported by the kernel. |
| ffffaea44000 | r-xp | 0 | 00:00 | 0 | 4 | [vdso] | Virtual Dynamic Shared Object: Optimizes certain system calls. |
| fffff109c000 | rw-p | 0 | 00:00 | 0 | 132 | [stack] | Stack: Memory used for function calls, local variables, etc. Grows downwards. |