* Segmentation / Non-Contiguous Memory Allocation

- **What is Segmentation ?**

A memory technique where a program is divided into different parts (segments) based on logical meaning.

Example :- like a program is divide into -

1. Main function.
2. Library function.
3. Stack.
4. Data section.

Each segment as a number and an offset (distance from start).

<Segment number, offset>.

- **Why we need this ?**

Paging divides the program into fixed-size without caring about what the program actually is.

Segmentation, on the other hand, follow user's logical view.

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- **Advantages**

1. No internal fragmentation (Since each segment has exact size needed).
2. Easier for programmers (Keeps related things together).
3. Segment table is smaller than page table.

- **Disadvantages**

1. Causes external fragmentation.
2. Segment sizes vary, so swapping becomes harder.