



**Ain Shams University**  
**Faculty of Engineering**  
**Computer and Systems Engineering Department**

**CSE 322: Operating systems – 3<sup>rd</sup> Year CSE**  
**2<sup>nd</sup> Semester 2020/2021**

**Memory Allocation**

**Link: [https://github.com/Bassant-Yasser/Memory\\_Managment](https://github.com/Bassant-Yasser/Memory_Managment)**

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Test cases:

Example 1:

The screenshot shows the 'Form1' window with the following configuration:

- Memory size:** 200
- Allocation policy:** First fit (selected), Best fit, Worst fit
- Holes:** starting address, size (empty)
- Process:** num of segments, segments (empty)
- Buttons:** Enter, Clear, Add, Allocate, Deallocate, External compaction
- Which one you want to add?:** Hole, Process
- Memory map (0-200):** Old Process 0 (0-20), Hole 0 (20-70), Old Process 1 (70-100), Hole 1 (100-150), Old Process 2 (150-200)

After adding a process

The screenshot shows the 'Form1' window after adding a process. The configuration is as follows:

- Memory size:** 200
- Allocation policy:** First fit (selected), Best fit, Worst fit
- Holes:** starting address, size (empty)
- Process:** num of segments: 2, segments: Code: 30, Data: 50
- Buttons:** Enter, Clear, Add, Allocate, Deallocate, External compaction
- Which one you want to add?:** Hole, Process
- Memory map (0-200):** Old Process 0 (0-20), P0: Code (20-50), Hole 0 (50-70), Old Process 1 (70-100), P0: Data (100-150), Old Process 2 (150-200)

After applying external compaction

The screenshot shows a memory management simulation window titled "Form1". The interface includes several input fields and buttons for managing memory. On the left, there are fields for "Memory size" (set to 200), "starting address", and "size", along with an "Enter" button. Below these are fields for "Holes" (starting address and size) and an "Add" button. In the center, there are fields for "Process" (num of segments: 2, segments: Code:30, Data:50), an "Allocate" button, a dropdown menu, and a "Deallocate" button. On the right, there is a "Clear" button and a vertical bar representing memory layout. The vertical bar shows a stack of memory segments: "Old Process 0" (0-20), "P0: Code" (20-50), "Old Process 1" (50-80), "P0: Data" (80-130), "Old Process 2" (130-180), and "Hole 0" (180-200). The "Hole 0" segment is highlighted in blue. A button labeled "Extrenal compaction" (with a typo) is located below the vertical bar.

Example 2:

After adding 1 hole

The screenshot shows the same memory management simulation window "Form1" after adding a new hole. The "Memory size" field is now set to 1000. The vertical bar on the right shows a new memory layout: "Hole 0" (0-200) in blue, followed by "Old Process 0" (200-1000) in black. The "Hole 0" segment is highlighted in blue. The "Extrenal compaction" button is still present. At the bottom left, there is a label "Which one you want to add ?" with two buttons: "Hole" and "Process". The "Hole" button is currently selected, indicated by a mouse cursor.

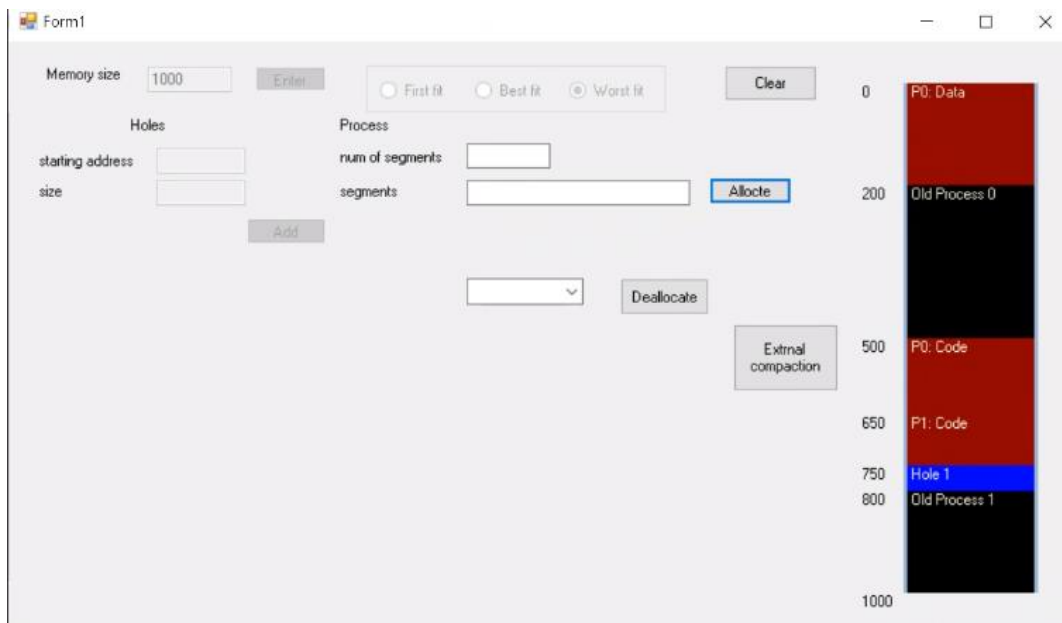
After adding the second hole

The screenshot shows a memory management simulation window titled "Form1". The interface includes a "Memory size" field set to 1000, an "Enter" button, and three radio buttons for allocation algorithms: "First fit", "Best fit", and "Worst fit". A "Clear" button is also present. Below these are input fields for "Holes" (starting address and size) and "Process" (num of segments and segments), with "Add" and "Allocate" buttons. A "Deallocate" button is also visible. A dropdown menu is labeled "Which one you want to add?" with "Hole" and "Process" options. An "External compaction" button is located at the bottom right. On the right side, a vertical bar represents the memory layout from address 0 to 1000. It shows "Hole 0" (blue) from 0 to 200, "Old Process 0" (black) from 200 to 500, "Hole 1" (blue) from 500 to 800, and "Old Process 1" (black) from 800 to 1000.

After adding 1 process

The screenshot shows the same memory management simulation window "Form1" after adding a process. The "Worst fit" radio button is now selected. The "num of segments" field is set to 1. The "Allocate" button is highlighted. The memory layout on the right shows "P0: Data" (red) from 0 to 200, "Old Process 0" (black) from 200 to 500, "P0: Code" (red) from 500 to 650, "Hole 1" (blue) from 650 to 800, and "Old Process 1" (black) from 800 to 1000. A mouse cursor is pointing at the "P0: Code" segment.

After adding second process



After applying external compaction

