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* Task1a
  + Foreground: 976980 kB
  + Background: 976987 kB
* Task1b
  + Foreground: 540 kB
  + Background: 832 kB
* Task1c
  + Foreground: 540 kB
  + Background: 832 kB

Analysis

Linux allocates memory based on the size of the process that is being run. For example, task1b is a simple addition program that does not use much memory. Because of this, it only receives less than a 1MB. This shows the contrast to task1a, which uses a whole gigabyte of memory. It is based on the size of the process. There is also another factor to consider when deciding how much memory to allocate. When a process in running in the background, then more memory is allocated to those processes because it is not the main priority. Both size of the process and what else is running play into how much memory is allocated.

Testing Procedures:

* Task 1
* Task 2
* Task 3 (Provides an error message any time memory usage goes above threshold- even if it drops down and goes back above)
  + Run sysinfo() and calculate current percentage through (total RAM – free RAM) / total RAM
  + Run test 1
    - Allocates 2GB to a pointer in memory
  + Calculate current RAM usage with sysinfo()
  + Run test 2
    - Allocates 1.5GB to a pointer in memory
    - Calculate current RAM usage with sysinfo()
    - De - Allocates 1.5GB from a pointer in memory
    - Calculate current RAM usage with sysinfo()
  + Run test 3
    - Allocates 1GB to a pointer in memory
  + Calculate current RAM usage with sysinfo()
* Task 4 (Provides an error message any time memory usage goes above threshold and begins to kill processes to attempt to lower memory usage below threshold)
  + Run sysinfo() and calculate current percentage through (total RAM – free RAM) / total RAM
  + Run test 1
    - Allocates 2GB to a pointer in memory
  + Calculate current RAM usage with sysinfo()
  + Run test 2
    - Allocates 1.5GB to a pointer in memory
  + Calculat e current RAM usage with sysinfo()
  + Run test 3
    - Allocates 1GB to a pointer in memory
  + Calculate current RAM usage with sysinfo()