# Short Report

**To get the Resident Set Size**

```
In all the vm_areas associated with the pid:
    in all the pages in the vm_areas:
        Detect those pages which have present bit set
        Counting them gives the RSS.
```

**High Level Algorithm:**

1. Get the task struct of the process, pid given as command line argument using the function [ pid_task(find_vpid(pid), PIDTYPE_PID); ]

2. Check if the process exists (check if task_struct is NULL).
   If yes, print process details like process name (comm in task_struct).
   Else, report the error and exit.

3. Print the page size using the constant PAGE_SIZE.

4. Initialize the linked list to store the counts

5. repeat the following with a delay of 10 seconds,
   for "times" number of times (taken as command line argument).

```
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    reset rss_count = 0
    reset vm_count = 0;
    for each VM area associated with the selected process:
        for each page_address in the VM area (between vm_start and vm_end):
            a. extract the pte from the page_address
               (This can be done by going down the page_table levels pgd, pud and pmd).
            b. increment vm_count
            c. if the pte is present in the physical memory:
                   increment rss_count

    add rss_count to the linked list
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```

6. Free the linked list memory

7. Print the rss_count and vm_count to the syslog

**Experiment to test**

1. Start leafpad

2. Find the pid of leafpad (pidof leafpad)

3. Insert the kernel module rss.ko, with pid as pid of leafpad, and times as 1
   sudo insmod rss.ko pid=<pid> times=1

4. The VM size and RSS size is obtained from "/proc/<pid>/status"
   This was checked against the previous output,
   VM size was exact match and RSS was found to be very close.

5. The above experiment was repeated a few times with similar results.

**Test Results**

| | VM_Size | RSS |
|---|---|---|
| From proc/<pid>status: | 367116 kB | 20720 kB |
| From syslogd (lkm) : | 367116 kB | 20876 kB |

The VM size estimation is accurate, and RSS estimation is very close to the proc output