BAHIRDAR UNIVERSITY INSTITUTE OF TECHNOLOGY

SOFTWARE ENIGEENERING OPERATING SYSTEM

INDIVIDUAL ASSIGNMENT

Documentation for Installation of Raspberry Pi Os in aVirtual Environment(VMware workstation)

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SYSTEM CALL IMPLEMENTATION

1. Create a new root mount point

sudo mkdir -p /mnt/new_root

2. Mount the desired root filesystem

sudo mount /dev/sdX1 /mnt/new_root

3. Verify contents of the new root

ls /mnt/new_root

4. Bind mount essential filesystems

sudo mount --bind /dev /mnt/new_root/dev

sudo mount --bind /proc /mnt/new_root/proc

sudo mount --bind /sys /mnt/new_root/sys

5.Create a directory to hold the old root

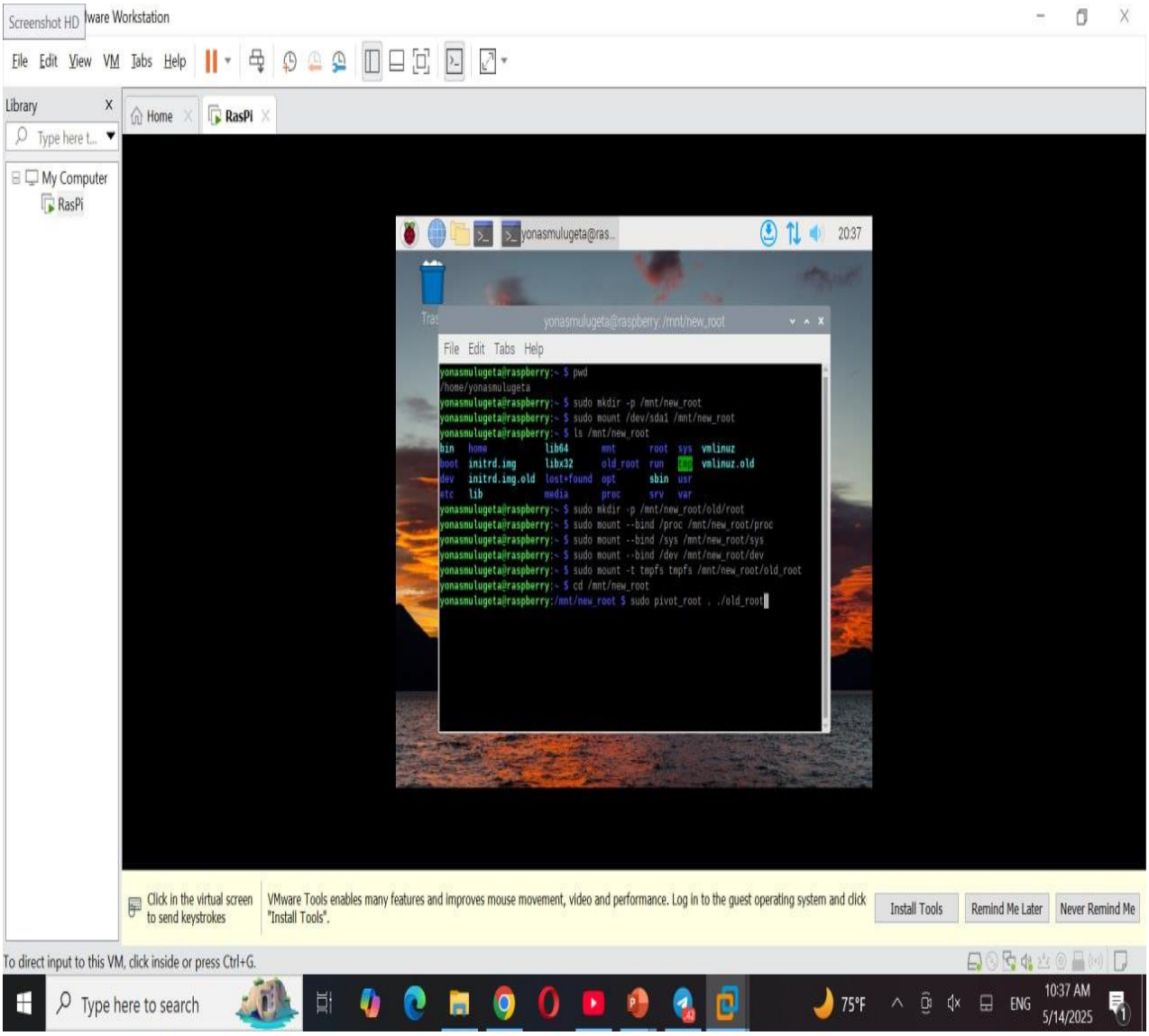
sudo mkdir /mnt/new_root/old_root

6. pivot_root operation

cd /mnt/new_root

sudo pivot_root . old_root

Click on terminal then write the above code

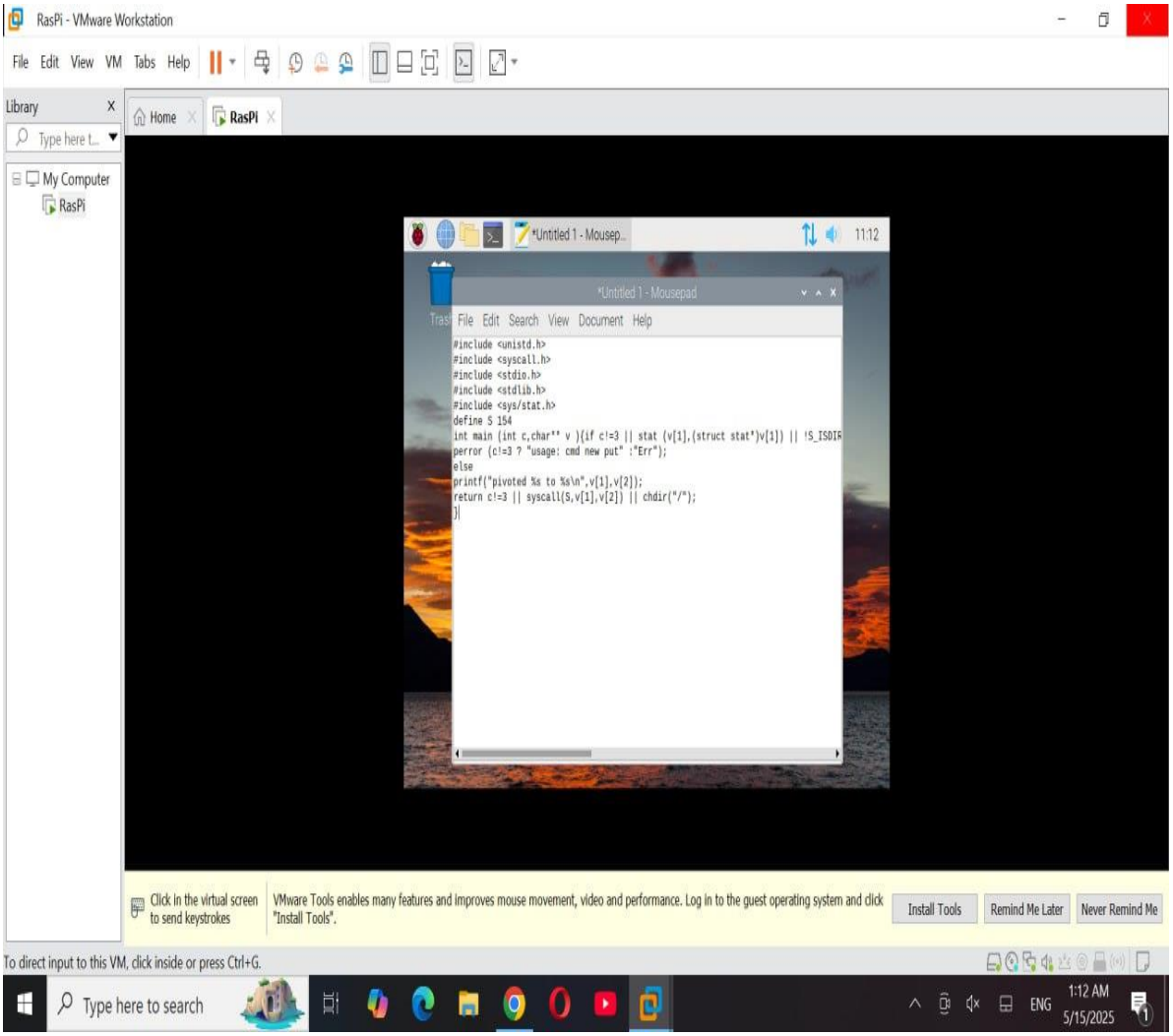


Here is a shorter and still functional version of the pivot_root code in C:

```c
#include <unistd.h>
#include <sys/syscall.h>
#include <stdio.h>
#include <sys/stat.h>

#define PIVOT_ROOT 155

int main(int c, char **v) {
   struct stat s;
   if (c != 3 || stat(v[1], &s) || !S_ISDIR(s.st_mode) || stat(v[2], &s) || !S_ISDIR(s.st_mode)) {
      return fprintf(stderr, "Usage: %s new_root put_old\n", v[0]), 1;
   }
   if (syscall(PIVOT_ROOT, v[1], v[2]) || chdir("/")) {
      perror("pivot_root");
      return 1;
   }
   printf("pivoted to %s, old root -> %s\n", v[1], v[2]);
   return 0;
}
```



Then save the file pivot_root.c and compile the file by using these commands

gcc -o pivotroot pivotroot.c

sudo mount /dev/sdX1 /mnt/new_root

sudo mount --bind /dev /mnt/new_root/dev

sudo mount --bind /proc /mnt/new_root/proc

sudo mount --bind /sys /mnt/new_root/sys

sudo mkdir /mnt/new_root/old_root

sudo ./pivot /mnt/new_root /mnt/new_root/old_root