OS Lab – 7
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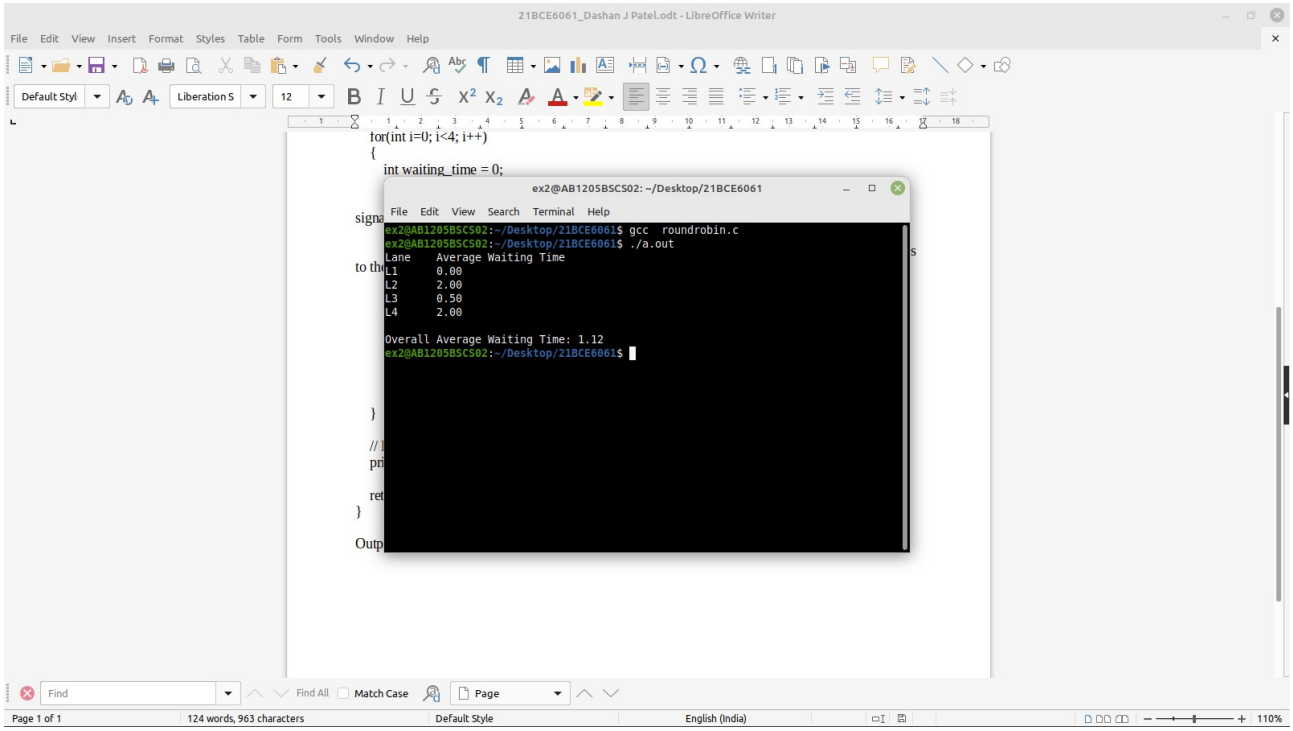
1.
Code-

```
#include<stdio.h>

int main()
{
   int lanes[4][3] = {{3,5}, {1,3}, {2,4}, {0,2}}; // Arrival and Crossing time for each lane
   int current_lane = 0, total_wait_time = 0;

   printf("Lane\tAverage Waiting Time\n");

   for(int i=0; i<4; i++)
   {
      int waiting_time = 0;
      if(i!=0) {
         waiting_time += (lanes[i-1][1]-lanes[i][0]); // Calculate waiting time before starting the
signal.
         if(current_lane != i-1) {
            waiting_time += 180; // If the previous lane is not adjacent to current lane, add 3 minutes
to the waiting time.
         }
      }

      // Print the average waiting time for the current lane
      printf("L%d\t%.2f\n", i+1, waiting_time/2.0);

      current_lane = i;
      total_wait_time += waiting_time;
   }

   // Print the overall average waiting time
   printf("\nOverall Average Waiting Time: %.2f\n", total_wait_time/8.0);

   return 0;
}
```

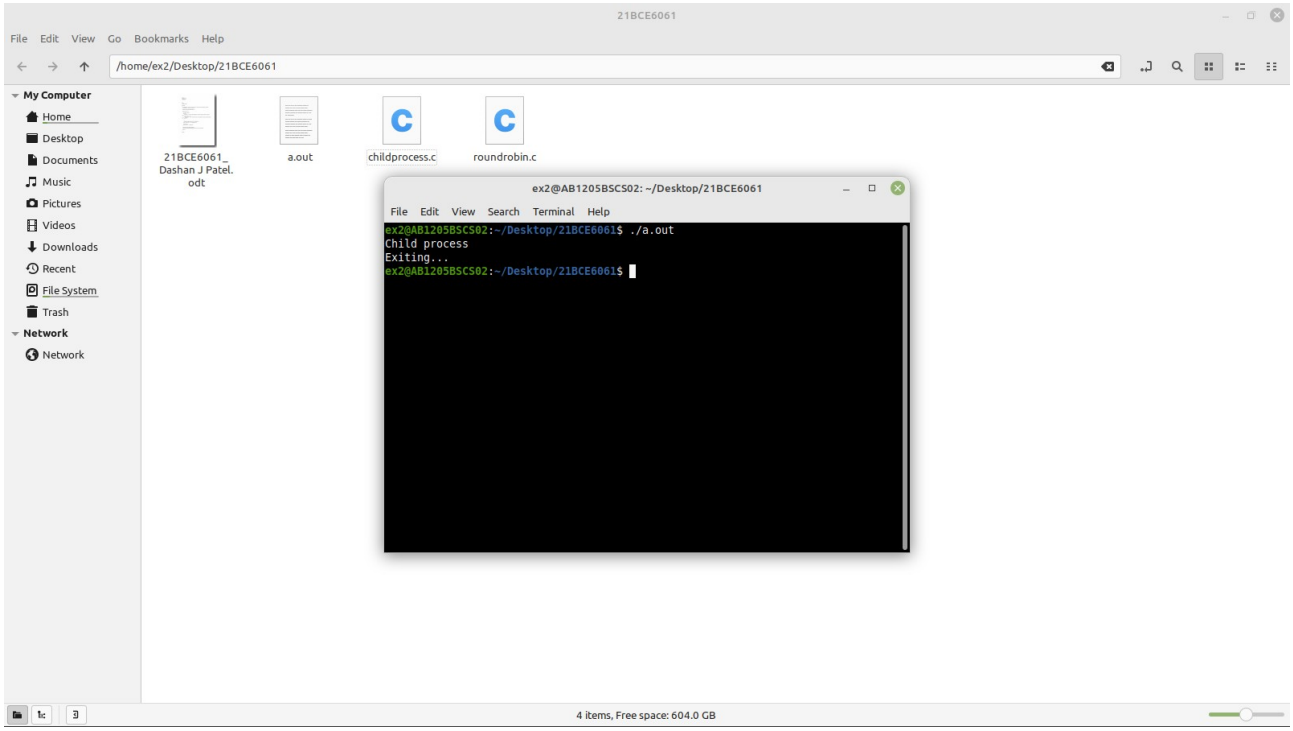
Output-



2.

```
#include<stdio.h>
#include<unistd.h>

int main() {
    pid_t pid = fork(); // Create a child process

    if(pid == 0) { // Child process
        printf("Child process\n");
        printf("Exiting...\n");
    }
    else { // Parent process
        sleep(5); // Wait for 5 seconds before terminating the parent process
    }

    return 0;
}
```

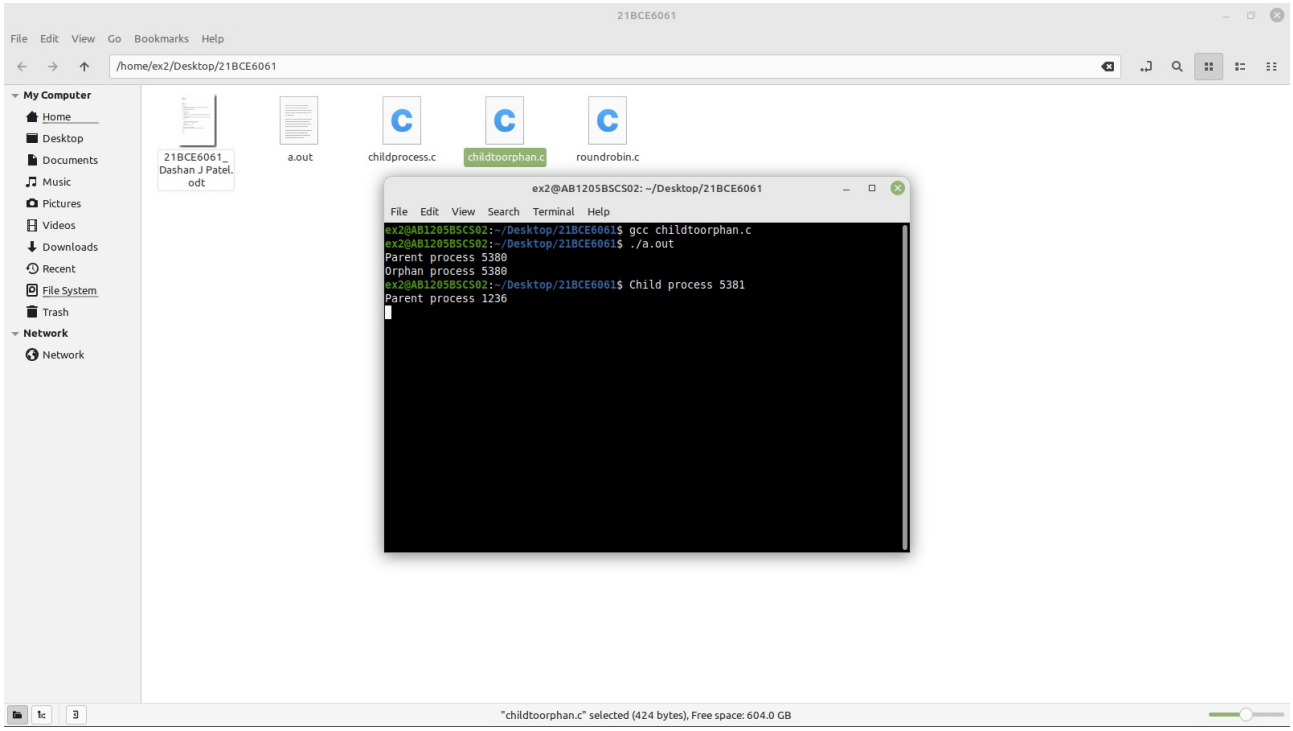
Output-



3.

```
#include <stdio.h>
#include <unistd.h>

int main() {
    pid_t pid = fork();

    if (pid == 0) { // child process
        sleep(5);
        printf("Child process %d\n", getpid());
        printf("Parent process %d\n", getppid());
    } else { // parent process
        printf("Parent process %d\n", getpid());
        sleep(2); // wait for 2 seconds
        printf("Orphan process %d\n", getpid());
    }

    return 0;
}
```

Ouput-


21BCE6061
File Edit View Go Bookmarks Help
/home/ex2/Desktop/21BCE6061
My Computer
Home
Desktop
Documents
Music
Pictures
Videos
Downloads
Recent
File System
Trash
Network
Network
21BCE6061_ Dashan J Patel. odt
a.out
childprocess.c
childtoorphan.c
roundrobin.c
ex2@AB1205BSCS02: ~/Desktop/21BCE6061
File Edit View Search Terminal Help
ex2@AB1205BSCS02:~/Desktop/21BCE6061$ gcc childtoorphan.c
ex2@AB1205BSCS02:~/Desktop/21BCE6061$ ./a.out
Parent process 5380
Orphan process 5380
ex2@AB1205BSCS02:~/Desktop/21BCE6061$ Child process 5381
Parent process 1236
"childtoorphan.c" selected (424 bytes), Free space: 604.0 GB