

Schedule simulator project

To build:

```
./gcc main.c LinkedList.c -o project
```

To use:

```
./project [input file] [Algorithm] [quant if necessary]
```

Algorithms implemented:

- FCFS [First Come First Served]
- SJF [Shortest Job First]
- SRTM [Shortest Remaining Time First]
- LJF [Longest Jobs First]
- LRJF [Longest Remaining Job First]
- RR [Round Robin] (needs quant time)
- PR [Priority Scheduling]
- RRP [Round Robin Priority] (needs quant time)
- MPF [Maximum Priority First]
- HRN [Highest Ratio Next]
- HRNP [Highest Ratio Next Preemptive]

Script for generating input data:

```
import random

num_proc = 100

def generate_cpu_burst(mean):
    return int(random.expovariate(1/mean))

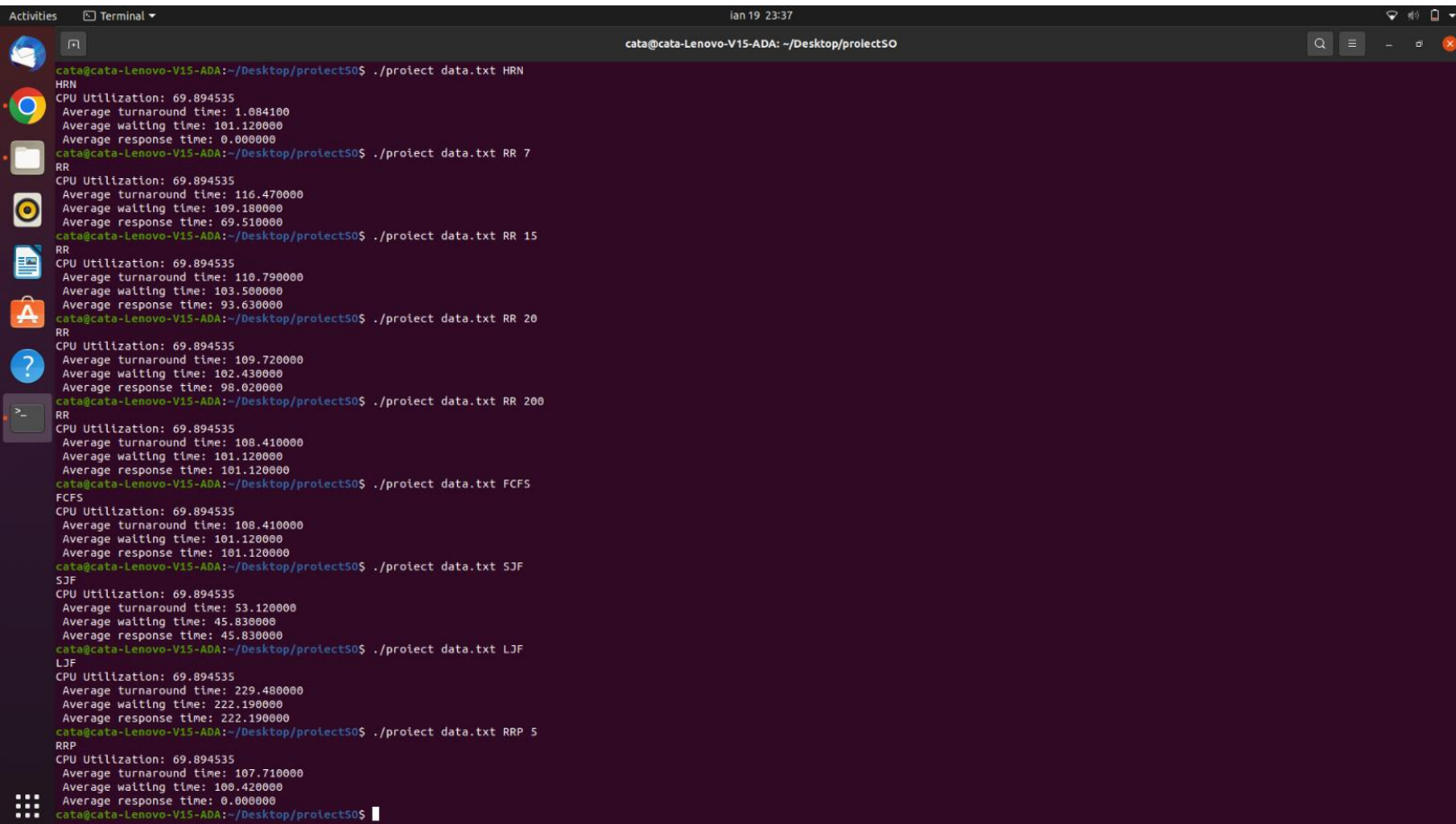
def generate_arrival_time(mean):
    return int(random.expovariate(1/mean))

def generate_priority(mean):
    return int(random.expovariate(1/mean))

with open("dataset.txt", "w") as f:
    lst = [[generate_arrival_time(250), 1 + generate_cpu_burst(7),
generate_priority(10)] for i in range(1, num_proc + 1)]
    lst.sort(key = lambda x : x[0])
```

```
for i in range(len(lst)):
    print(i, lst[i][0], lst[i][1], lst[i][2], file=f)
```

Demo usage:



```
Activities Terminal
cata@cata-Lenovo-V15-ADA: ~/Desktop/project50
cata@cata-Lenovo-V15-ADA:~/Desktop/project50$ ./project data.txt HRN
HRN
CPU Utilization: 69.894535
Average turnaround time: 1.084100
Average waiting time: 101.120000
Average response time: 0.000000
cata@cata-Lenovo-V15-ADA:~/Desktop/project50$ ./project data.txt RR 7
RR
CPU Utilization: 69.894535
Average turnaround time: 116.470000
Average waiting time: 109.180000
Average response time: 69.510000
cata@cata-Lenovo-V15-ADA:~/Desktop/project50$ ./project data.txt RR 15
RR
CPU Utilization: 69.894535
Average turnaround time: 110.790000
Average waiting time: 103.500000
Average response time: 93.630000
cata@cata-Lenovo-V15-ADA:~/Desktop/project50$ ./project data.txt RR 20
RR
CPU Utilization: 69.894535
Average turnaround time: 109.720000
Average waiting time: 102.430000
Average response time: 98.020000
cata@cata-Lenovo-V15-ADA:~/Desktop/project50$ ./project data.txt RR 200
RR
CPU Utilization: 69.894535
Average turnaround time: 108.410000
Average waiting time: 101.120000
Average response time: 101.120000
cata@cata-Lenovo-V15-ADA:~/Desktop/project50$ ./project data.txt FCFS
FCFS
CPU Utilization: 69.894535
Average turnaround time: 108.410000
Average waiting time: 101.120000
Average response time: 101.120000
cata@cata-Lenovo-V15-ADA:~/Desktop/project50$ ./project data.txt SJF
SJF
CPU Utilization: 69.894535
Average turnaround time: 53.120000
Average waiting time: 45.830000
Average response time: 45.830000
cata@cata-Lenovo-V15-ADA:~/Desktop/project50$ ./project data.txt LJF
LJF
CPU Utilization: 69.894535
Average turnaround time: 229.480000
Average waiting time: 222.190000
Average response time: 222.190000
cata@cata-Lenovo-V15-ADA:~/Desktop/project50$ ./project data.txt RRP 5
RRP
CPU Utilization: 69.894535
Average turnaround time: 107.710000
Average waiting time: 100.420000
Average response time: 0.000000
cata@cata-Lenovo-V15-ADA:~/Desktop/project50$
```