הסברים מקדימים לסעיף 2:

הפקודה chrt יכולה להחליף policy וגם priority של process מסויים .
לכל policy יש min/max של priority שאפשר לקבוע לו , על מנת לראות זאת אפשר להריץ chrt -m .
כל policy אומר למתזמן המעבד לפעול בצורה שונה על process מסוים , להלן פירוט על ה policies האפשריים:

- **SCHED_IDLE:** Used for running very low priority background jobs.
- **SCHED_OTHER:** Uses Default Linux time-sharing scheduling algorithm or simply the standard round-robin time-sharing policy.
- **SCHED_RR** Uses Round Robin scheduling algorithm and is used as the default algorithm if not specified. It is an algorithm used for PREEMPTIVE scheduling.
- **SCHED_DEADLINE** policy contained inside the sched_dl scheduling class is basically an implementation of the Earliest Deadline First (EDF) scheduling algorithm, augmented with a mechanism (called Constant Bandwidth Server, CBS) that makes it possible to isolate the behavior of tasks between each other.
- **SCHED_BATCH**: Almost the same as the SCHED_OTHER, but the process is considered always the most cpu consuming.
- **SCHED_FIFO**: First in, first out, real time processes. It implements just one queue which holds the tasks in the order they come in.

הפקודה renice משנה את ה priority של תהליך שרץ בלבד , ולא יכולה לקבוע את ה policy של התזמון כמו chrt .

הפקודה taskset מאפשרת לנו להכיל או לקבל על process מסויים את ה affinity שלו. כלומר לאיזה cpu הוא קשור (במידה ויש כמה ליבות למעבד).

taskset is used to set or retrieve the CPU affinity of a running process given its pid, or to launch a new command with a given CPU affinity. CPU affinity is a scheduler property that "bonds" a process to a given set of CPUs on the system. The Linux scheduler will honor the given CPU affinity and the process will not run on any other CPUs. Note that the Linux scheduler also supports natural CPU affinity: the scheduler attempts to keep processes on the same CPU as long as practical for performance reasons. Therefore, forcing a specific CPU affinity is useful only in certain applications.

מקורות :

1. https://www.geeksforgeeks.org/chrt-command-in-linux-with-examples/#:~:text=14%2D03%2D2019,command%20with%20the%20given%20attributes.
2. https://linux-tips.com/t/how-to-use-chrt-command/268
3. man renice
4. man chrt
5. man taskset

סעיף 2:

טבלה שמראה איזה priority אפשר לתת לכל policy :

```
eliel@eliel-mint:~/Desktop/eliel/OSProjects/fwork_316519966/q3$ chrt -m
SCHED_OTHER min/max priority    : 0/0
SCHED_FIFO min/max priority     : 1/99
SCHED_RR min/max priority       : 1/99
SCHED_BATCH min/max priority    : 0/0
SCHED_IDLE min/max priority     : 0/0
SCHED_DEADLINE min/max priority : 0/0
eliel@eliel-mint:~/Desktop/eliel/OSProjects/fwork_316519966/q3$
```

במידה ונעביר priority לא תקין נקבל את השגיאה "sched_setscheduler error, please check chrt -m to see min/max of priorities"

העברה ל **SCHED_OTHER** למרות שזה ה default :

```
eliel@eliel-mint:~/Desktop/eliel/OSProjects/fwork_316519966/q3$ sudo ./set_policy 0 0
```

```
eliel@eliel-mint:~/Desktop$ ps -a | grep set_policy
 2438 pts/0    00:00:00 set_policy
eliel@eliel-mint:~/Desktop$ chrt -p 2438
pid 2438's current scheduling policy: SCHED_OTHER
pid 2438's current scheduling priority: 0
eliel@eliel-mint:~/Desktop$
```

העברה ל **SCHED_FIFO** :

```
eliel@eliel-mint:~/Desktop/eliel/OSProjects/fwork_316519966/q3$ sudo ./set_policy 1 33
```

```
eliel@eliel-mint:~/Desktop$ ps -a | grep set_policy
 2517 pts/0    00:00:00 set_policy
eliel@eliel-mint:~/Desktop$ chrt -p 2517
pid 2517's current scheduling policy: SCHED_FIFO
pid 2517's current scheduling priority: 33
eliel@eliel-mint:~/Desktop$
```

העברה ל **SCHED_RR** :

```
eliel@eliel-mint:~/Desktop/eliel/OSProjects/fwork_316519966/q3$ sudo ./set_policy 2 99
```

```
eliel@eliel-mint:~/Desktop$ ps -a | grep set_policy
 2525 pts/0    00:00:00 set_policy
eliel@eliel-mint:~/Desktop$ chrt -p 2525
pid 2525's current scheduling policy: SCHED_RR
pid 2525's current scheduling priority: 99
eliel@eliel-mint:~/Desktop$
```

העברה ל **SCHED_IDLE** :

```
eliel@eliel-mint:~/Desktop/eliel/OSProjects/fwork_316519966/q3$ sudo ./set_policy 5 0
```

```
eliel@eliel-mint:~/Desktop$ ps -a | grep set_policy
 2532 pts/0    00:00:00 set_policy
eliel@eliel-mint:~/Desktop$ chrt -p 2532
pid 2532's current scheduling policy: SCHED_IDLE
pid 2532's current scheduling priority: 0
eliel@eliel-mint:~/Desktop$
```

העברה ל **SCHED_DEADLINE** :

```
eliel@eliel-mint:~/Desktop/eliel/OSProjects/fwork_316519966/q3$ sudo ./set_policy 6 0
```

```
eliel@eliel-mint:~/Desktop/eliel/OSProjects/fwork_316519966/q3$ ps -a | grep set_policy
 2708 pts/0    00:00:00 set_policy
eliel@eliel-mint:~/Desktop/eliel/OSProjects/fwork_316519966/q3$ chrt -p 2708
pid 2708's current scheduling policy: SCHED_DEADLINE
pid 2708's current scheduling priority: 0
pid 2708's current runtime/deadline/period parameters: 10000000/30000000/30000000
eliel@eliel-mint:~/Desktop/eliel/OSProjects/fwork_316519966/q3$
```