

Nirbhay Sharma (B19CSE114)

Digital systems lab - 5

- Edf algorithm: Current Implementation is preemptive in nature so some of the ordering of the process may be shuffled but the process are shuffled before the deadline
- Rms algorithm: Current Implementation is preemptive in nature and the process are scheduled before the deadline

Code Input and Output

- Input: for providing input to the code just update the *inp* dictionary to provide the suitable C_i , D_i , and P_i
- Output format:
 - time -> process
 - so at each time stamp above format will show which process is scheduled at which time stamp
 - eg. (2 -> 0) shows 0th process is scheduled at 2nd time stamp

Run code

```
$ python3 scheduling_algo.py
```

Evaluation of both algorithms

Correct examples

```
inp = {'capacity':[3,2,2],  
       'deadline':[7,4,8],  
       'period':[20,5,10]  
}
```

eg. output: Edf and Rms

#####__EDF#####	#####__RMS#####
0 -> 1	priority: [1, 2, 0]
1 -> 1	0 -> 1
2 -> 0	1 -> 1
3 -> 0	2 -> 2
4 -> 0	3 -> 2
5 -> 2	4 -> 0
6 -> 2	5 -> 1
7 -> 1	6 -> 1
8 -> 1	7 -> 0
9 -> blank	8 -> 0
10 -> 1	9 -> blank
11 -> 1	10 -> 1
	11 -> 1

InCorrect Examples

```
inp = {'capacity':[1,2,3,4,4,5],
       'deadline':[4,6,8,10,12,14],
       'period':[4,6,8,10,12,14]}
}
```

eg output: Edf and Rms

```
→ lab5 python3 scheduling_algo.py
#####__EDF#####
cannot schedule 3
some of the process cannot be scheduled
#####__RMS#####
priority: [0, 1, 2, 3, 4, 5]
2 cannot be scheduled
some of the process cannot be scheduled
```

Reason for not scheduling

- In Edf a process is not scheduled if it is not completed before the deadline or the process arrives and still it has not completed similarly in Rms the process is not scheduled because it is not completed before its time period has arrived
- another reason for not scheduling a process in both the case is not satisfying the below conditions -
 - Edf: $U = \sum_{i=1}^k \frac{C_i}{T_i} \leq 1$
 - Rms: $\sum_{i=1}^k \frac{C_i}{T_i} \leq U = n(2^{\frac{1}{n}} - 1)$
 - if the above conditions are violated then also the process cannot be scheduled