List Scheduling Demo

As an instance Example 5.1.2 from [Pinedo2001] book is shown.

This demo shows the list scheduling algorithm (listsch.m), while the LPT rule is used.

Taskset declaration

```matlab
% Processing times
T=taskset([7 7 6 6 5 5 4 4 4])
% Name of the tasks
T.Name={'t1' 't2' 't3' 't4' 't5' 't6' 't7' 't8' 't9'};
```

Set of 9 tasks

List scheduling algorithm call

```matlab
TS=listsch(T,problem('P|prec|Cmax'),4,'LPT')
```

Set of 9 tasks
There is schedule: List Scheduling
Solving time: 0.125s

Cmax of the schedule

```matlab
schparam(TS,'Cmax')
```

ans =

  15

Draw the Gantt chart

Please note that there is a different order of tasks t5, t6 and t7, t8 in comparison with [Pinedo2001]. List scheduling algorithm implemented in TORSCHE doesn’t change the order of task in the list with the same processing time in this case.

```matlab
plot(TS)
```
List Scheduling Demo (Optimal solution by ILP)

As an instance Example 5.1.2 from [Pinedo2001] book is shown.

This demo shows an Integer Linear Programming based scheduling algorithm for P||Cmax problem.

**Taskset declaration**

```matlab
% Processing times
T = taskset([7 7 6 6 5 5 4 4 4])
% Name of the tasks
T.Name = {'t1' 't2' 't3' 't4' 't5' 't6' 't7' 't8' 't9'};
```

Set of 9 tasks

**The scheduling algorithm call**

```matlab
TS = algpcmax(T, problem('P||Cmax'), 4)
```

Set of 9 tasks
There is schedule: Parallel scheduling without preemption

**Cmax of the schedule**

```matlab
schparam(TS,'Cmax')
```

ans =
12

**Draw the Gantt chart**

```matlab
plot(TS)
```
The Number of Tardy Tasks Minimization

As an instance Example 3.3.3 from [Pinedo2001] book is shown.

This demo shows the Hogen's scheduling algorithm for number tardy tasks minimization.

Taskset declaration

```matlab
% Processing times
T=taskset([7 8 4 6 6])
% Due dates
T.DueDate=[9 17 18 19 21];
% Name of the tasks
T.Name={'t1' 't2' 't3' 't4' 't5'};
```

Set of 5 tasks

Hodgson's algorithm function call

```matlab
TS=alg1sumuj(T,problem('1||sumUj'))
```

Set of 5 tasks
There is schedule: Hodgson's algorithm for 1||sumUj

Sum Uj of the schedule

```matlab
schparam(TS,'sumuj')
```

ans =

```
2
```

Draw the Gantt chart

```matlab
plot(TS)
```