README

This file describes the structure of the problem instances used in the computational study presented in [1]. This data set consists of 1000 files. Each file corresponds to one problem instance. The problem instances were all generated for an emergency patient ratio of 0.3 and a bed shortage probability of 0.1. The instances differ in which patients must be scheduled and the number of minor specialisms per ward. In what follows, we provide details on how to interpret the data in each file.

An example file looks as follows:

```
1  Seed: 0
2  M: 0
3  Weight_overtime: 1
4  Weight_undertime: 1
5  Weight_delay: 1
6  Days: 7
7  Specialisms: 4
8  THO 1.11 371;929;731;959;679;271;315
9  RHK 1.1 643;509;465;211;450;91;99
10 ABD 1.07 552;647;346;702;612;138;118
11 TRH 1.11 662;307;497;378;557;160;153
12 Wards: 4
13 THO 40 40.0 THO NONE 18;13;11;10;7;2;1 18.0;13.0;11.0;10.0;7.0;2.0;1.0
14 RHK 28 28.0 RHK NONE 15;14;11;11;10;9;8 15.0;14.0;11.0;11.0;10.0;9.0;8.0
15 ABD 38 38.0 ABD NONE 10;8;6;5;2;2;1 10.0;8.0;6.0;5.0;2.0;2.0;1.0
16 TRH 35 35.0 TRH NONE 10;8;6;5;3;3;3 10.0;8.0;6.0;5.0;3.0;3.0;3.0
17 Patients: 117
18 patient0 THO 0 0 7 190 1.2;1.1;1.1;1.0;0.9;0.9;0.8
19 patient1 THO 0 5 2 103 1.2;0.8
20 patient2 THO 0 0 4 125 1.2;1.1;0.9;0.8
21 patient3 THO 0 0 7 341 1.2;1.1;1.1;1.0;0.9;0.9;0.8
22 patient4 THO 1 1 6 378 1.2;1.1;1.0;1.0;0.9;0.8
23 patient5 THO 2 2 5 76 1.2;1.1;1.0;0.9;0.8
24 patient6 THO 3 4 3 100 1.2;1.0;0.8
25 patient7 THO 3 3 4 160 1.2;1.1;0.9;0.8
26 patient8 THO 3 3 4 292 1.2;1.1;0.9;0.8
27 patient9 THO 4 6 1 455 1.0
28 patient10 THO 4 4 1 264 1.0
29 ...
```

Line 1 shows the seed value used during the instance generation process. This parameter is typically not relevant when trying to solve the problem instance. Line 2 shows the number of minor specializations per ward. Lines 3, 4 and 5 show the weights of OT overtime, OT undertime and patient admission delay, respectively. Line 6 shows the number of days in the planning period. Line 7 shows the total number of specializations S. The following S lines provide details for each specializations according to the following format:

```
[Specialization id] [Workload scaling factor] [Available OT time per day]
```

A specialization's workload scaling factor is the factor applied to a patient's workload when they are admitted to a ward for which their specialization is a minor specialization. The available OT time is given as an array separated by semicolons.

Line 12[1] shows the total number of wards W. The following W lines provide details for each ward according to the following format:

```
[Ward id] [Bed capacity] [Workload capacity] [Major specialization] [Minor specializations] [Carryover patients] [Carryover workload]
```

In all instances, a ward can only have a single major specialization. However, there can be multiple minor specializations. If a ward has no minor specializations, the keyword `NONE` will be used. The carryover patients and workload represent the number of patients and workload present in the ward on each day in the planning period as a result of admissions in the preceding planning period.

Line 17[2] shows the total number of patients P. The remaining P lines in the file provide details for each patient according to the following format:

```
[Patient id] [Specialization] [Earliest admission] [Latest admission] [Length of stay] [Surgery duration] [Workload per day]
```

Similar to previous data, the workload is given per day of the patient's length of stay.

References

[1] Pieter Smet (2023) Generating balanced workload allocations in hospitals.

[1] In the example this line number shows the total number of wards, however, it actually depends on the number of specializations in the problem instance.

[2] The same comment as that provided for line 12 holds here as well.