


[Home](#)
[Examination Timetabling](#)
[Problem Model](#)
[Evaluation Function](#)
[Problem Instances](#)
[Input Format](#)
[Output Format](#)
[Validation](#)
[Upload Solutions](#)

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## Input Format

The problem instance files have the following format;

### Number of Exams:

Number of exams to be timetabled e.g. [Exams:2176]. As with all other entities the numbering of Exams starts at 0.

Sequence of lines detailing information regarding each exam:

The first number is the duration of the examination (specified in minutes). This is followed by the student numbers of those students taking the exam. Students numbers are integers starting with 0. The line ends with a return character and line feed and is comma separated.

### Number of Periods:

Number of Periods specified within the Timetabling Session e.g. [Periods:42]

### Sequence of lines detailing Period Dates, Times, Durations associated Penalty:

E.g. 31:05:2005, 09:00:00, 180, 0. The Date is in a standard date format. The time is in 24 hour format, the duration is in minutes and the penalty has a value which is a positive integer. It should be noted that 0 represents no penalty. In relation to other periods a relative value may be present here which indicates that a penalty is added when this period is used by placing an exam. The higher the relative value the least the period should be used.

### Number of Rooms:

Number of Rooms to be used e.g.. [Rooms:10]

### Sequence of lines detailing room capacity and associated penalty:

Room penalty has a value which is a positive integer. It should be noted that 0 represents no penalty. In relation to other rooms a relative value may be present here which indicates that a penalty is added when this room is used by placing an exam. The higher the relative value the least the room should be used.

E.g. 500, 7

Rooms are numbered in the order from the problem file, starting at zero

### Period Related Hard Constraints

This section begins with the tag [PeriodHardConstraints] and provides data on conditions which are necessary for a feasible solution. These are EXAM\_COINCIDENCE, EXCLUSION, and AFTER. It should be noted that not all these may be present for any one data set.

E.g.

0, EXAM\_COINCIDENCE, 1 Exam ♦0' and Exam ♦1' should be timetabled in the same period. If two exams are set associated in this manner yet 'clash' with each other due to student enrolment, this hard constraint is ignored.

0, EXCLUSION, 2 Exam ♦0' and Exam ♦2' should not be timetabled in the same period

0, AFTER, 3 Exam ♦0' should be timetabled after Exam ♦3'

### Room Related Hard Constraints

This section begins with the line [RoomHardConstraints] and provides data on conditions which are necessary for a feasible solution. This is

ROOM\_EXCLUSIVE. An exam must be timetabled in a room by itself e.g.

2, ROOM\_EXCLUSIVE Exam ♦2' must be timetabled in a room by itself.

### Institutional Model Weightings

This section begins with the line [InstitutionalWeightings] and provides information on values given to 'global' soft constraints.

TWOINAROW, 7

TWOINADAY, 5

PERIODSPREAD, 3

NONMIXEDDURATIONS, 10

FRONTLOAD, 100, 30, 5

These are all fully explained and illustrated in the evaluation section.

It should be noted that the format of the input file should not be altered in any way. In addition, it is recommended that competitors should ignore unknown lines in the provided format.

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