Readme (Time Table Schedular)

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General Information

Description

This Readme file will help you how to run Time Table schedular program made by my team on your PC.

Prerequisites

In order to run this Timetable schedular system on your PC you need to install python3 (https://realpython.com/installing-python/) a link to install the same.

You also need to install Z3 library developed by Microsoft (https://github.com/Z3Prover/z3/releases) a link for the same.

After installing Z3 library do not forget to add that to the PATH variable on your PC.

Files and Scripts

Required Files

In order to run this schedular make one folder on your desktop name it as you wish and then add the **json** and **python script** file given by us to that same folder.

• 170030027.json

• 170030027.py

How to Run?

Just open the command prompt in the same folder you have created and type **"python 170030027.py"**

It will take few seconds to print the time table on your console but since its hard to interpret what's going on so it will also generate one csv file **"TimeTable.csv"** open it with Microsoft Excel to see the final output in a more aesthetic way.

Structure

Universe - x and y belongs to instances of Room class.

Relations involved – day() which maps the day variable of Room object to Mon,Tue,Wed,Thurs,Fri

- Course() which maps course variable of Room Object to rooms present in json file.
- Start_Time() which maps the starting time of the course to [8:30-12:30] Or [14:00 – 17:00]
- End_Time() which maps the starting time of the course to [8:30-12:30] Or [14:00 – 17:00]
- Faculty() which maps the faculty variable of Room object to one of the faculties present in json file.

- Batch() which maps the batch variable of Room object to one of the batches in json file.
- Room() which maps the class variable of Room object to one of the classes present in json file.

Constants involved - 'Monday', 'Tuesday', 'Wednesday', 'Thursday', 'Friday'

- 'CL1', 'CL2', 'CL3', 'LT1', 'LT2', 'LH2', 'LH1'
- ChoiceOfTime which has [Faculty, TimeNotPrefered]
- ChoiceOfDay which has [Faculty, DayNotPrefered]
- ChoiceOfRoom which has [Faculty, RoomNotPrefered]
- RestrictionOnRoom which has [Batch, RoomNotAllowed]

Propositions involved :-

1. For All x (day(x) == ('Monday' Or 'Tuesday' Or 'Wednesday' Or 'Thursday' Or 'Friday'))
2. For All x For All y (x != y And (course(x) == course(y) -> day(x) != day(y))
3. For All x ((start_Time(x) >= Institute_Start_Time) And (end_Time(x) <= Institute_end_Time) And (start_Time(x) < end_Time(x))
4. For All x (end_Time(x) – start_Time(x) == Duration)
5. For All x For All y (x!=y And day(x) != day(y) And(Batch(x) == Batch(y) Or Faculty(x) == Faculty(y) Or Room(x) == Room(y)) ->

   (start_Time(x) >= end_Time(y) Or start_Time(y) >= end_Time(x))

6. For All x (Room(x) == ('CL1' Or 'CL2' Or 'CL3' Or 'LT1' Or 'LT2' Or 'LH2' Or 'LH1'))
7. Faculty(x) € ChoiceOfTime.Faculty -> (start_Time(x) And end_Time(x) != ChoiceOfTime.Faculty.Time)
8. Faculty(x) € ChoiceOfDay.Faculty -> (day(x) != ChoiceOfDay.Faculty.Day)
9. Faculty(x) € ChoiceOfRoom.Faculty -> (Room(x) != ChoiceOfRoom.Faculty.Room)
10. Batch(x) € RestrictionOnRoom.Batch -> (Room(x) != RestrictionOnRoom.Batch.Room)

Explanation of variables in JSON file.

Variable	Explanation
Institute time	This variable stores the Time for which classes run in IIT Goa.
Classrooms	This stores the list of lists which includes [class name, capacity]
Courses	This store list of lists which includes [course name, capacity, [duration], faculty, [batches taking this course]]
Preference time not prefer	This includes [Faculty Name, [Time He/She do not like to prefer]]
Preference day not prefer	This includes [Faculty Name, [Day He/She do not like to prefer]]
Preference room not prefer	This includes [Faculty name, [Room He/She do not like to prefer]]
Preference of room batch not prefer	This includes [Batch name, [classes where particular batch can't have classes]]

Additional Information and Resources

To learn more about Z3 library follow the link (https://ericpony.github.io/z3py-tutorial/guide-examples.htm) and HAPPY CODING 😊

We are providing you the sample of csv file generated by us with little formatting done in Microsoft Excel in pdf format named “TimeTable_1.pdf”.

For Further queries drop an email on:

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