

# ClashFree

Save time, stay organized

Automated Time-Table Builder and Validation  
Tool



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# INTRODUCTION

Have you ever found yourself struggling to build and validate time tables?

That's where ClashFree comes in with powerful features to avoid scheduling conflicts

Keeping a well-organized and error-free time table can often be a daunting task

Optimize your time, and stay on top of your scheduling tasks and deadlines

# What is Time table Validation ?

- Validating a time table is all about ensuring that the scheduling resources do not conflict .
- A professor cannot conduct two lectures simultaneously !  
Nor can a lecture hall host two lectures at the same time !

## What ClashFree does for you....

- Provides a workspace that allows you to design a timetable and check for conflicts in it as you go !
- Clash free offers a user friendly interface to drag and drop content into time table cells , leaving the validation task onto a single button press.

# We are better!

## Manual Time table generation

- No Automation
- Full control on scheduling (customized)
- Leads to a schedule with human considerations
- Extremely laborious and unorganized and difficult to collaborate.
- Prone to human error.

## Clash free

- Semi automated approach
- Full control on scheduling. (customized)
- As only validation is automated, it retains the human touch of manual approach
- Well organized and speedy workspace (drag and drop)
- Less prone to human error as critical task of validation is automated.

## Time table generation software

- Fully automated
- No control on scheduling (feeble chance for customization.)
- Schedule lacks human considerations. (A Prof might be engaged for 4 consecutive lectures !)
- Well organized and collaboration friendly approach.
- Technically error free, but cannot be followed rigorously since lack of human considerations :)

# Validation Algorithm

## Input :

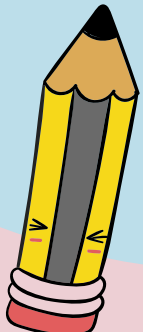
1. Teacher , Room number , Subject will be provided in the left pane whenever these details are imported using a pdf or csv file.
2. Validation button click, to check whether any clash is taking place or not.

## Output:

1. If the timetable is perfect with no clashes for any given time slot- no cell will be highlighted
2. If there is a clash either in teacher or room number for a given time slot of the day then that particular cell will be highlighted in red for rectification
3. Export Button clicked - export the clash-free timetable into pdf format.

# Validation Algorithm

- Teacher names, subjects and room number details are first set into the left pane of the viewport for drag and drop functionality
- Each time slot is traversed row-wise to collect all the cells which are having clashes in either the Teacher or Room Number into a list
- The invalid cells will be rendered in red colour, showing that there is a clash among them; whereas the rest are rendered in white colour
- After some alteration is made on the timetable by the scheduler, the process is repeated until we obtain a timetable free of clashes.
- The clash-free timetable is exported in the PDF format using export functionality.



# Pseudocode

```
# Libraries Used in this Project
import customtkinter
import tkinter
import tabula
import math
import csv
import reportlab
```

```
def Validation_Algorithm(clash):
    invalidCells = []
    for r in range(1, len(clash) + 1):
        for c in clash[r]:
            if len(clash[r][c]) > 1:
                invalidCells.append([r, clash[r][c]])
    return invalidCells
```

```
def Accumulate_Cells(table):
    timetableCells = table

    clash = {}
    for r in range(1, len(timetableCells) + 1):
        clash[r] = {}

    for r in range(1, len(timetableCells) + 1):
        for c in range(len(timetableCells[r])):
            w = timetableCells[r][c]
            teacherName = str(w.getTeacherName())
            roomNumber = str(w.getRoomNumber())

            if teacherName not in clash[r]:
                if (teacherName != ""):
                    clash[r][teacherName] = [c]
            else:
                if (teacherName != ""):
                    clash[r][teacherName].append(c)

            if roomNumber not in clash[r]:
                if (roomNumber != ""):
                    clash[r][roomNumber] = [c]
            else:
                if (roomNumber != ""):
                    clash[r][roomNumber].append(c)

    return clash
```

Validate		Select Class to export! ▾	Select Day! ▾	SE1	SE2	SE3	SE4	TE1	TE2	TE3
		Export								
Teachers and Rooms		Subjects	8:00-9:00							
Prof. M.S. Wakode		DS&BDA								
Prof. S. P.Shintre		WT								
Prof. A. D Bundele		ELE II CC	9:00-10:00							
Prof. S.S.Shevetekar		HON AI								
Prof. Y.A.Handge		ELE II AR VR								
Prof. S.P.Shintre		LP II	10:15-11:15							
Prof. P. R Makker		ELE II IS								
Prof. V. S Gaikwad		AI								
Prof. P. J Jambhulkar		HON SML	11:15-12:15							
Prof. B. P Masram		WTL								
Prof. U. S. Pawar		HON EAC								
Prof. R. Kumar		DS&BDAL	13:00-14:00							
Prof. Dr. G.V. Kale										
Prof. P.S. Shahane										
Prof P. R Navghare			14:00-15:00							

1. Select Day!

Classes

Timings



Validate

Select Class to export! ▾

Select Day! ▾

Export

Teachers and Rooms

Prof. M.S. Wakode

Prof. S. P.Shintre

Prof. A. D Bundele

Prof. S.S.Shevetekar

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Subjects

DS&BDA

WT

ELE II CC

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LP II

ELE II IS

AI

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HON EAC

DS&BDAL

8:00-9:00

9:00-10:00

10:15-11:15

11:15-12:15

13:00-14:00

14:00-15:00

SE1

SE2

SE3

SE4

TE1

TE2

TE3

2. Add Subject

3. Add Teacher

4. Add Room

5. Validate  
to check for  
clashes

6. Select  
class and  
export time  
table

Validate	Select Class to export!	Select Day!	SE1	SE2	SE3	SE4	TE1	TE2	TE3
	Export								
<b>Teachers and Rooms</b>	<b>Subjects</b>								
Prof. M.S. Wakode	DS&BDA								
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Prof P. R Navghare		14:00-15:00							

**Time  
for the  
live  
demo!**



# Applications are endless...!

## Watchmen scheduling

Ensure that a watchman is not allotted multiple buildings at the same time!

## Cab driver scheduling

Each car is allotted to a particular driver for some time without conflicts!

## Airport scheduling

Flights can be scheduled on multiple runways without any clashes!

## Badminton court scheduling

Courts can be booked according to time slot!

## Exam scheduling

Exams of different subjects can be scheduled in different classes without clash