User Manual

Complete Setup *(1_Setup Instructions)* before reading this manual

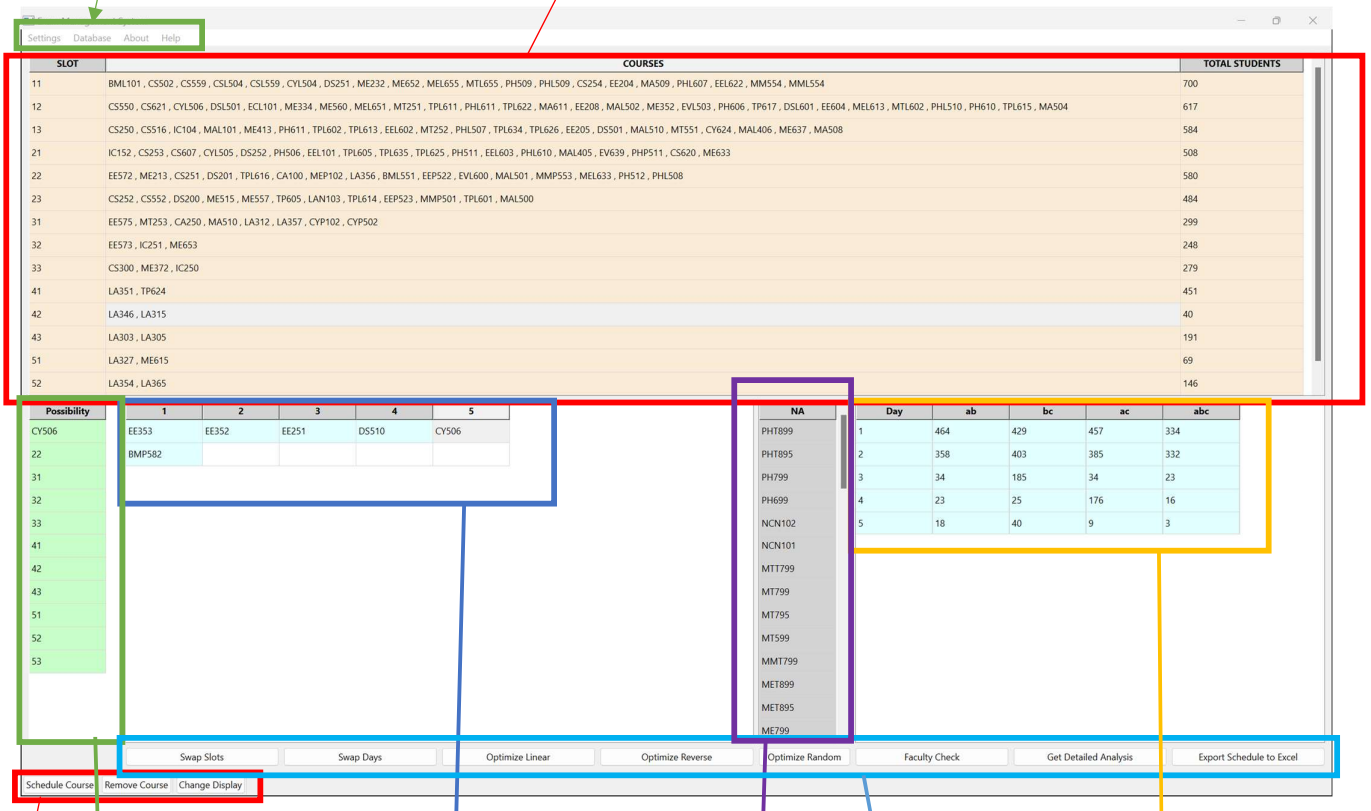
Part 1) *Understanding the main window*

Table 1 = Exam Schedule

This table contains the exam schedule:
A row like = **31 ; CS554 ; 127**
Would imply that CS554 will be conducted in the **3rd day's 1st slot** and ,

The total number of students giving exam on 3rd day's 1st slot = **127**"

Menu Bar



Status Bar

Tool Bar

Table 2 = This table consists of courses which have a slot defined in Time table but have not been scheduled by the software for exams.

These are basically the courses whose exam you want to conduct but have not been scheduled yet.

Table 4 = Scheduling Possibilities Table

When a course in table 2 is clicked then the scheduling possibilities of that course will be display in the table.

If 32 is displayed in table 4 when course CY506 is clicked Then it implies that CY506 can be scheduled in the 3rd day's 2nd Slot

Table 3 = This table consists of courses which have "NA" or undefined slot in Time table and have not been scheduled by the software for exams

These are basically the courses whose exam you don't want to conduct

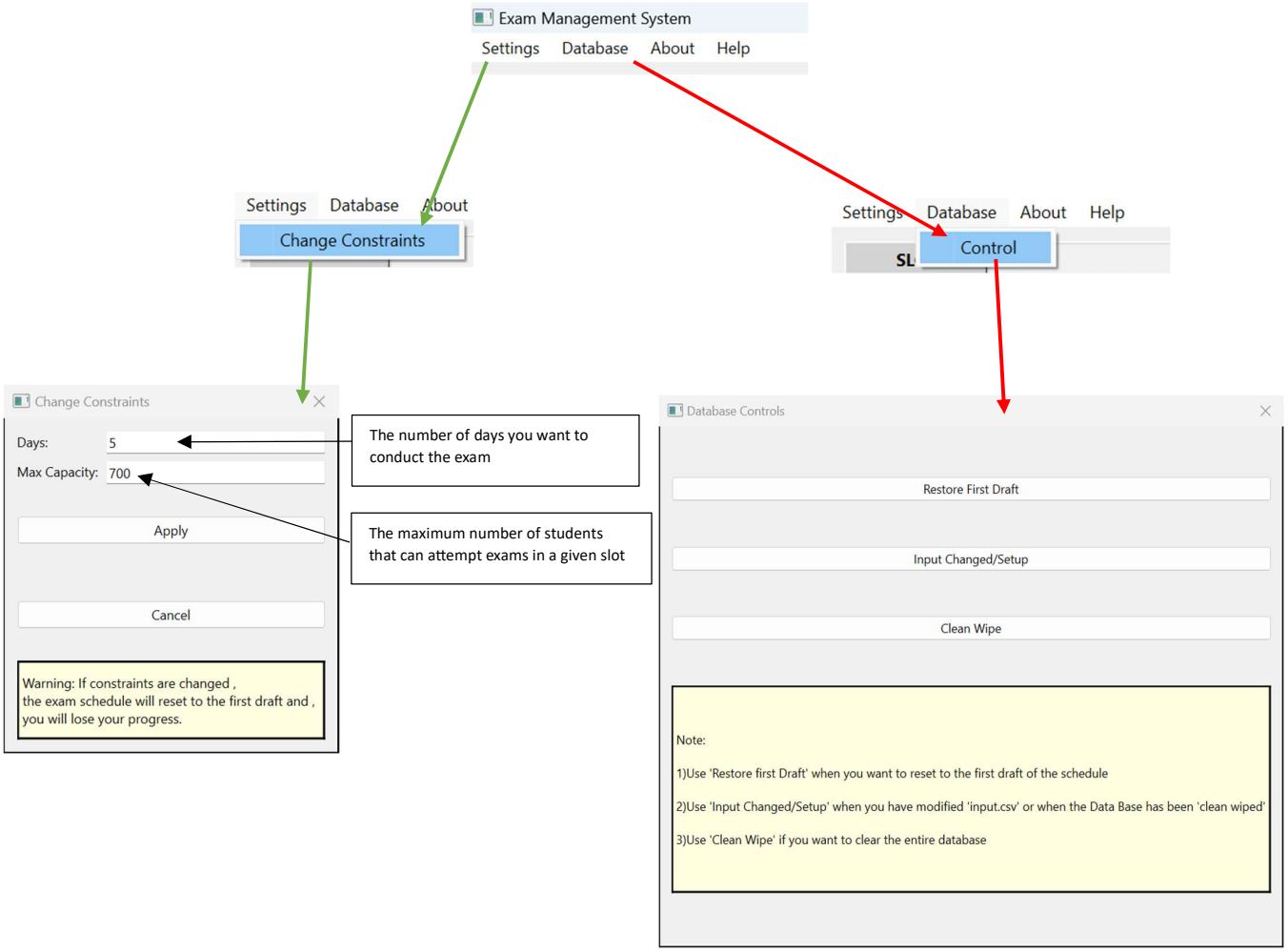
Table 3 = Analysis Table

*A row like = **2**(day) ; **34**(ab) ; **27**(bc) ; **45**(ac) ; **19**(abc)*

Would imply that on **2nd** day,

34 students are giving exam in the **1st and 2nd slot (ab)**
27 students are giving exam in the **2nd and 3rd slot (bc)**
45 students are giving exam in the **1st and 3rd slot (ac)**
19 students are giving exam in the **1st 2nd and 3rd slot (abc)**

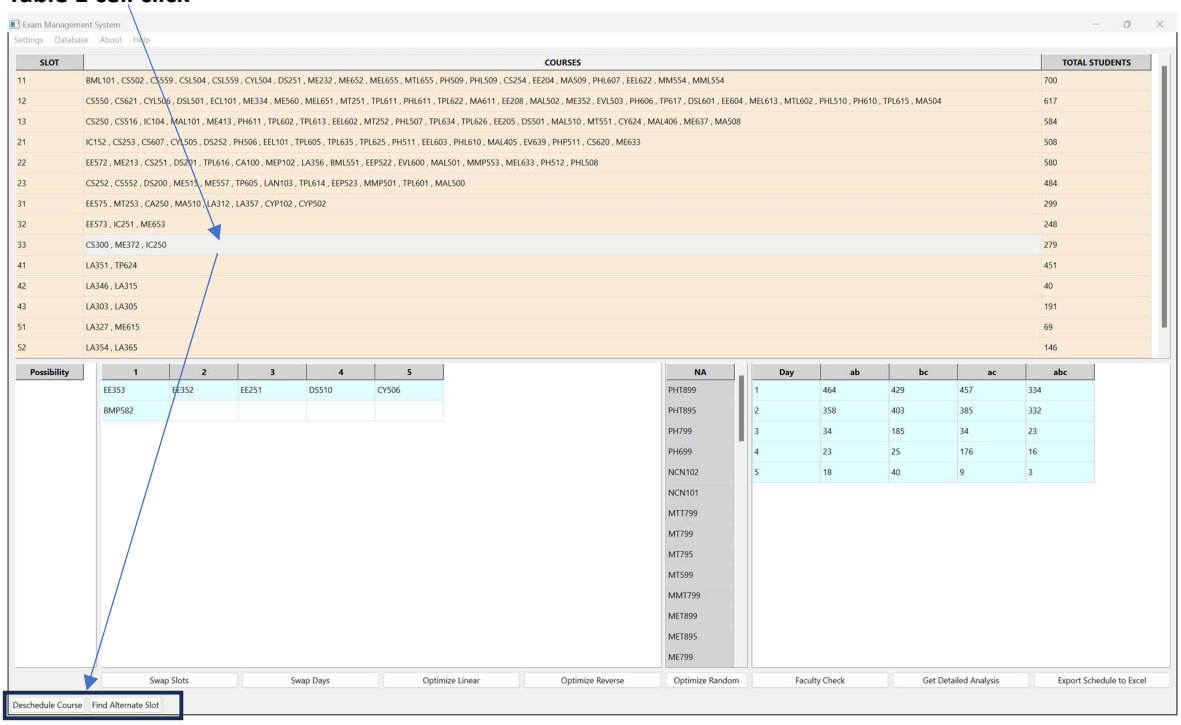
Part 2) *Understanding the Menu Bar*



Part 3) *Understanding the Status Bar*

The Status bar displays different buttons depending on the Table whose cell was clicked.

A) Table 1 cell click



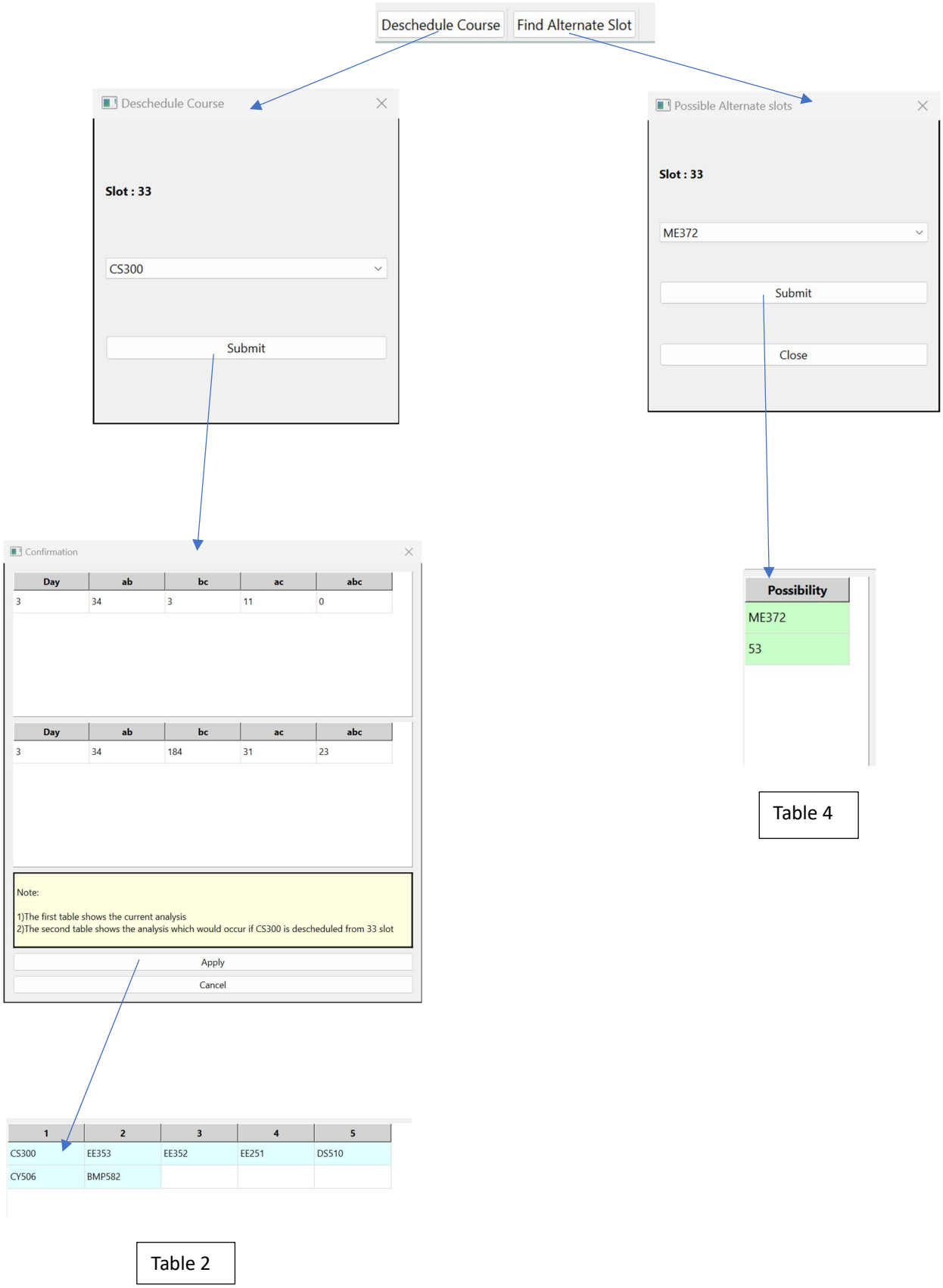
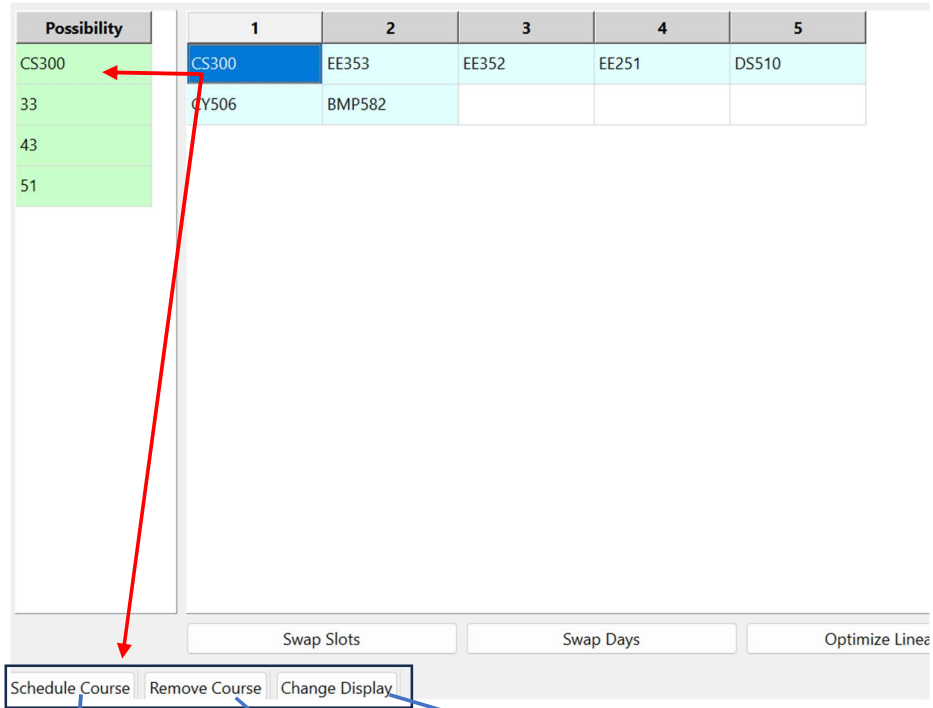
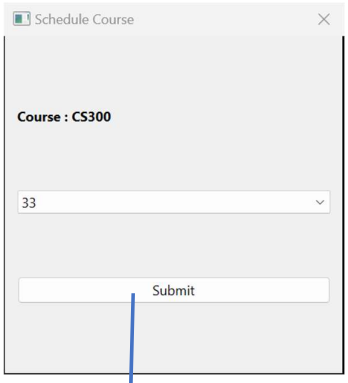


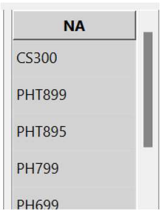
Table 4

Table 2

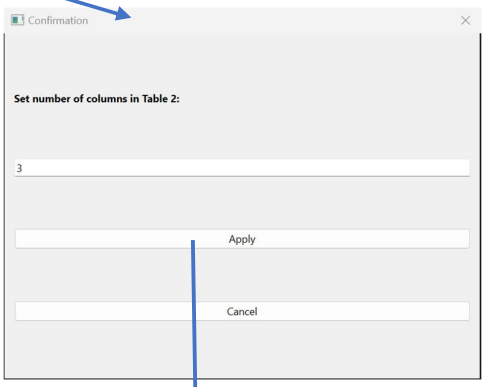
B) Table 2 Cell click

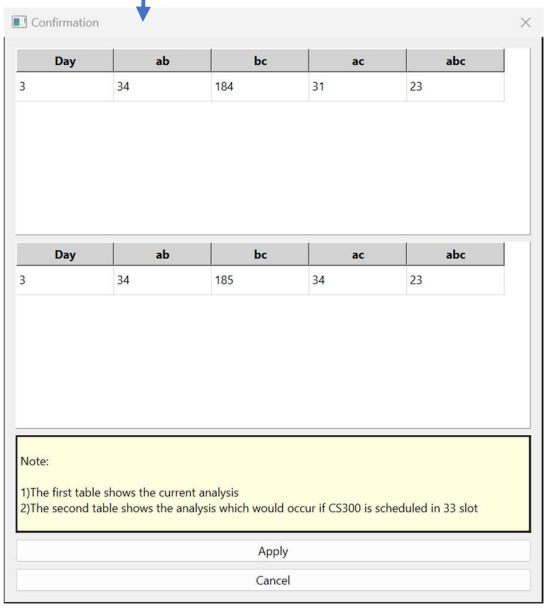


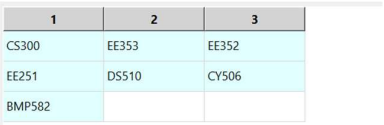




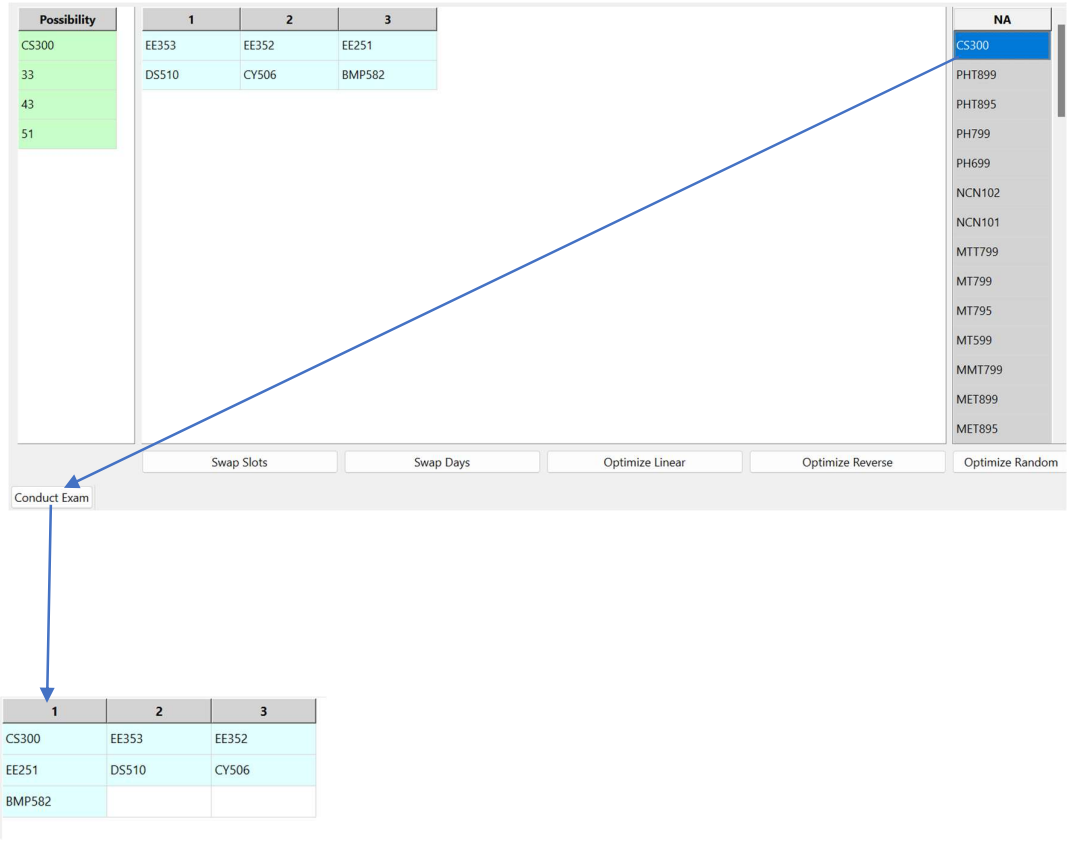
When you click 'Remove Course' The Course will get shifted to Table 3







C) Cell Click in Table 3



When you click Conduct Exam the course will get shifted to Table 2. Indicating that you want to conduct the exam for that course.

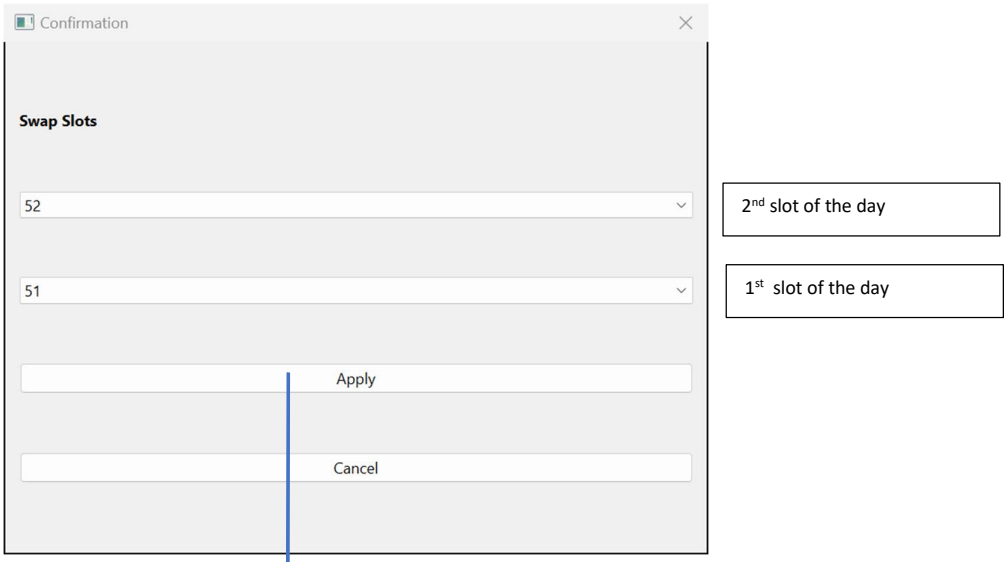
Part 4) ***Understanding the Tool Bar***

1) **<u>Swap Slots</u>** = Used to swap two exam slots (Example interchange 13 and 22).
The primary use of this is to change how students attempt exams throughout the day.
(Example transforming 'bc' value to 'ac' value by swapping the 2nd and 1st slot of the day.)

Day	ab	bc	ac	abc
1	464	429	457	334
2	358	403	385	332
3	34	184	31	23
4	23	25	176	16
5	18	40	9	3

bc = 40 means 40 students will have to give back to back exams in the 2nd and 3rd slot of the day

ac = 9 means 9 students will have to give exams in the 1st and 3rd slot of the day

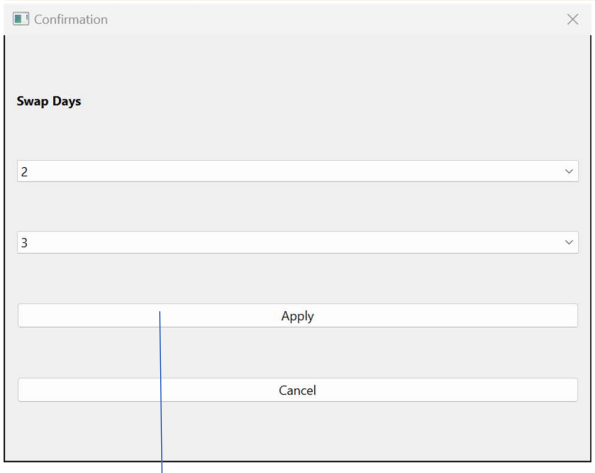


Day	ab	bc	ac	abc
1	464	429	457	334
2	358	403	385	332
3	34	184	31	23
4	23	25	176	16
5	18	9	40	3

2) <u>Swap Days =</u> This swaps entire days with each other.

Example – swapping day 2 with day 3

21	IC152 , CS253 , CS607 , CYL505 , DS252 , PH506 , EEL101 , TPL605 , TPL635 , TPL625 , PH511 , EEL603 , PHL610 , MAL405 , EV639 , PHP511 , CS620 , ME633
22	EE572 , ME213 , CS251 , DS201 , TPL616 , CA100 , MEP102 , LA356 , BML551 , EEP522 , EVL600 , MAL501 , MMP553 , MEL633 , PH512 , PHL508
23	CS252 , CS552 , DS200 , ME515 , ME557 , TP605 , LAN103 , TPL614 , EEP523 , MMP501 , TPL601 , MAL500
31	EE575 , MT253 , CA250 , MA510 , LA312 , LA357 , CYP102 , CYP502
32	EE573 , IC251 , ME653
33	ME372 , IC250



21	EE575 , MT253 , CA250 , MA510 , LA312 , LA357 , CYP102 , CYP502
22	EE573 , IC251 , ME653
23	ME372 , IC250
31	IC152 , CS253 , CS607 , CYL505 , DS252 , PH506 , EEL101 , TPL605 , TPL635 , TPL625 , PH511 , EEL603 , PHL610 , MAL405 , EV639 , PHP511 , CS620 , ME633
32	EE572 , ME213 , CS251 , DS201 , TPL616 , CA100 , MEP102 , LA356 , BML551 , EEP522 , EVL600 , MAL501 , MMP553 , MEL633 , PH512 , PHL508
33	CS252 , CS552 , DS200 , ME515 , ME557 , TP605 , LAN103 , TPL614 , EEP523 , MMP501 , TPL601 , MAL500

3,4,5) **Optimize Linear , Optimize Reverse and Optimize Random=**

In this context Optimization means minimizing the number of students who have to give 3 exams in a day.

The optimization algorithm used is a Greedy algorithm which is looping through the exam slots.

Linear = travelling through exam slots from top to bottom (11 -> 12 -> 13 -> 21.....)

Reverse = travelling through exam slots from bottom to top (.... 53 -> 52 ->51 -> 43 ->....)

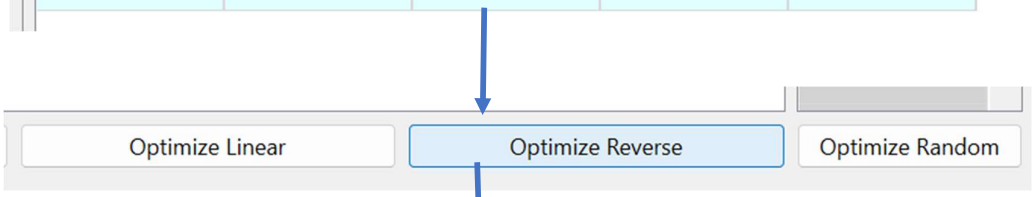
Random = travelling through exam slots in a random order.

As the greedy algorithm used gives an approximate answer, it thus may give different output for Linear , Reverse and Random .Thus it is recommended to use hit and trial method to determine which type is giving the best output.

During Testing it was found;

For 6 days = Optimize Reverse gives the best output

Day	ab	bc	ac	abc
1	464	429	457	334
2	358	403	385	332
3	34	185	34	23
4	23	25	176	16
5	18	40	9	3
6	0	0	0	0



Day	ab	bc	ac	abc
1	464	0	0	0
2	358	0	0	0
3	24	185	56	1
4	0	0	184	0
5	23	19	13	0
6	23	36	5	1

6) **Faculty Check**

Clicking this button will create an excel file (in the 'Faculty_Check_Reports' folder) which contains the information about faculties who have more than 1 Course in a particular exam slot.

Example

	A	B	C	D	E	F	G
1	Slot	Instructor					
2							
3	11	Dr. I. Vinod Kumar Reddy	CS502	CSL504			
4	11	Dr. Gaganraj Gupta	CS559	CSL559			
5	11	Dr. Soumya Gangopadhyay	ME652	MEL655	MTL655		
6	11	Dr. Sudhanwa Patra	PH509	PHL509			
7	11	Dr. Md Mehboob Alam	MM554	MML554			
8	12	Dr. Rajesh Kumar Mundotiya	CS550	DSL501	DSL601		
9	12	Dr. Dhiman Saha	CS621	TPL611			
10	12	Dr. Rahul Jain	ME560	MEL651			
11	22	Dr. Purnendu Das, Dr. Kaushik Bandhopadhyay	CA100	MEP102			
12	22	Dr. Sesha Vempati	PH512	PHL508			
13	53	Ms. Hao Yu Lu	LA312	LA357			
14	62	Dr. Pawan Kumar Mishra	IC104	MAL101			
15	62	Dr. Kaushik Bandhopadhyay, Dr. Purnendu Das	MT252	MT551			
16							
17							

7) **Get Detailed Analysis**

This creates a detailed report about the data in Table 5 (Analysis)

Day	ab	bc	ac	abc
1	464	0	0	0
2	358	0	0	0
3	24	185	56	1
4	0	0	184	0
5	23	19	13	0
6	23	36	5	1

The report excel file can be found in 'Analysis_Reports_Folder'

Sheet 1 only gives the report about the students who have to give exams in all 3 slots of the day

	A	B	C	D	E	F
1	Day 1					
2						
3						
4	Day 2					
5						
6						
7	Day 3					
8		12140890	CS300	CS554	EE573	
9						
10						
11	Day 4					
12						
13						
14	Day 5					
15						
16						
17	Day 6					
18		12141430	CS250	LA346	ME615	
19						

Sheet 2 gives detailed report about all the students who have to give 2 or 3 exams in the day

	A	B	C	D	E	F
1	ID	a	b	c	Day	
2						
3						
4	12342030	BML101	ECL101		1	
5	12342070	BML101	ECL101		1	
6	12342330	BML101	ECL101		1	
7	12041310	CS502	MT251		1	
8	12140800	ME652	ME334		1	
9	12340300	BML101	ECL101		1	
10	12311190	MEL655	MEL651		1	
11	12041710	CS559	CS621		1	
12	12140340	CS254	CS550		1	
13	12341340	BML101	ECL101		1	

8) **Export Schedule to Excel**

Creates an excel file which represents the exam schedule.(File can be found in the ‘Schedules’ folder)

This file can be modified and then sent to the students.

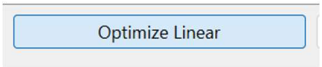
	A	B	C	D	E	F
1	Slot	Total Students	Courses			
2						
3	11	700	BML101			
4			CS502			
5			CS559			
6			CSL504			
7			CSL559			
8			CYL504			
9			DS251			
10			ME232			
11			ME652			
12			MEL655			
13			MTL655			
14			PH509			
15			PHL509			
16			CS254			
17			EE204			
18			MA509			
19			PHL607			
20			EEL622			
21			MM554			
22			MML554			
23						
24						
25	12	617	CS550			
26			CS621			
27			CYL506			
28			DSL501			
29			ECL101			
30			ME334			
31			ME560			

Part 5) Steps to create an optimal Exam Schedule

1) Complete Setup
2) Verify Constraints by Settings > Change Constraints
3) Perform one manual verification to ensure that all the “oblique” courses are scheduled in the same exam slot.
4) Apply one of the three optimizations
5) Shift any special case courses from Table 3 to Table 2
6) Generate Faculty Report –>(De schedule any excess courses if necessary)
7) Schedule all the courses of Table 2 while keeping the faculty report in mind
8) Once all the courses are scheduled Generate Analysis report and Faculty Report
9) Perform manual optimizations based on the Analysis Report while keeping the faculty report in mind.
10) Once all the manual optimizations are done, perform ‘Swap Slots’ and ‘Swap Days’ operations for finishing touches.
11) Export Schedule to excel -> Do necessary modifications to the file -> Send the schedule to the students.

Additional Notes :

1) Commands like ‘Restore First Draft’ , ‘Optimize’ and ‘Get Analysis Report’ take some time to execute , please be patient while executing those instructions. (Optimization may take upto 2 mins)
2) Only Single Click the buttons, if after clicking a button it stays blue in colour it means the code is being executed .



In this situation DO NOT click anywhere on the window , if extra clicks are performed the window will hang and not respond

About :