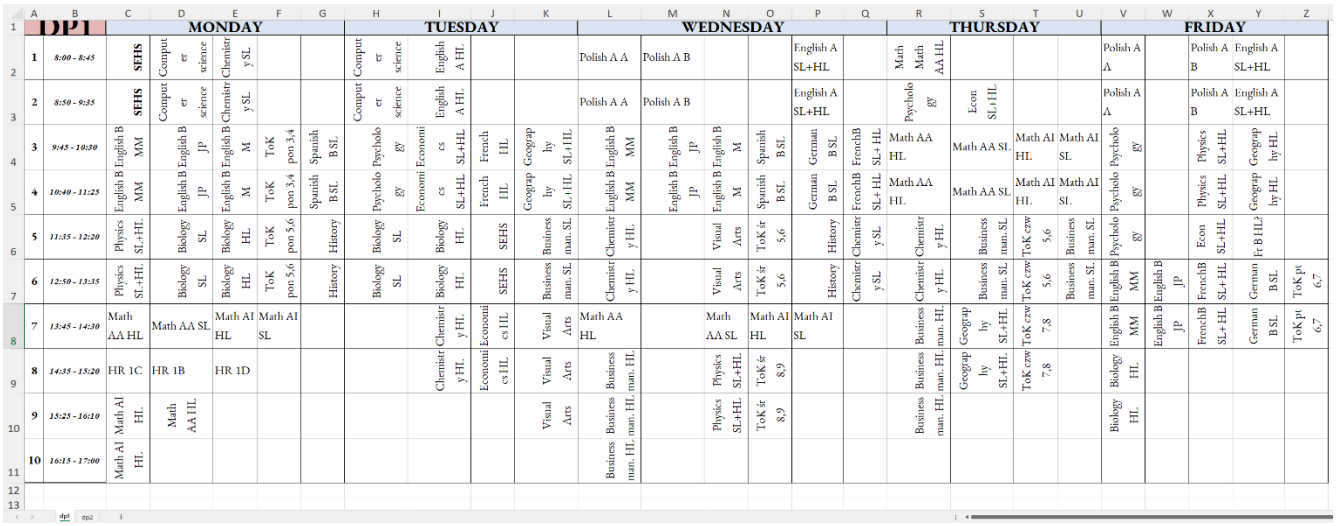
Criterion B: Design

Input data

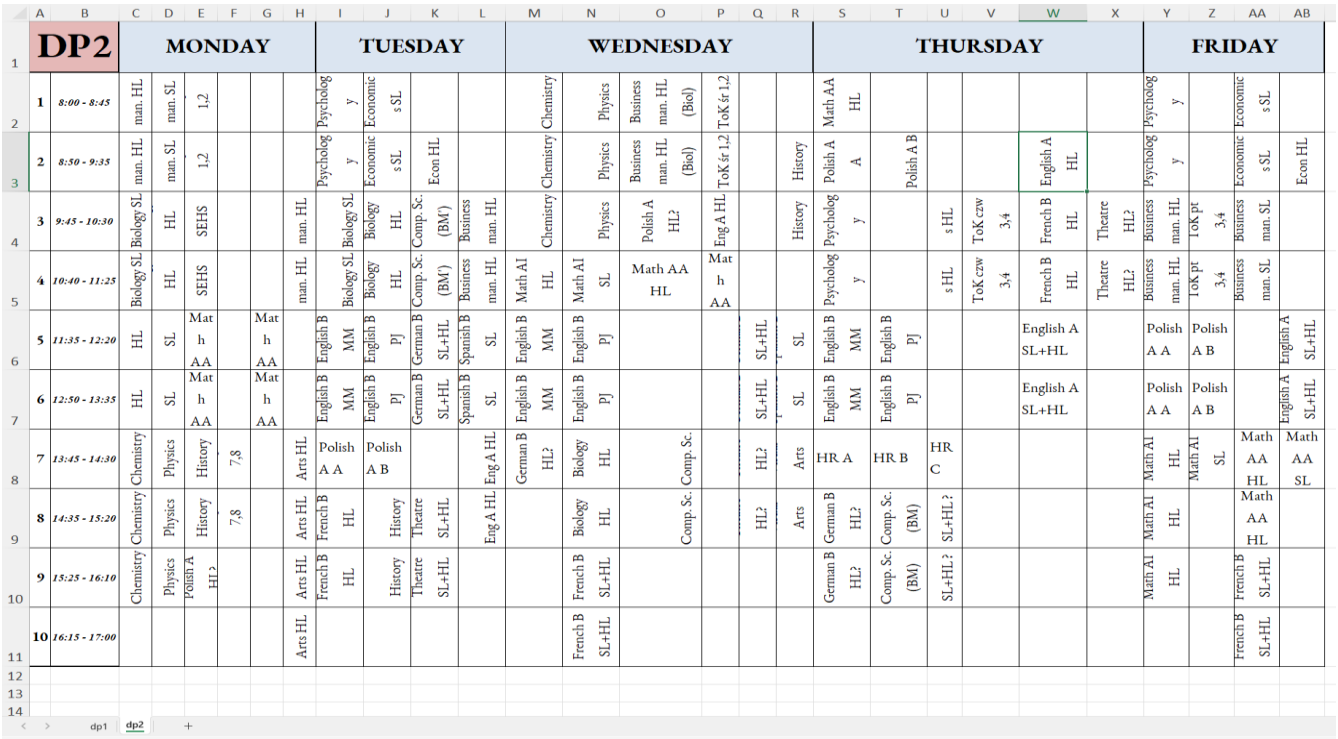
At the beginning, program must gather the already prepared schedule. Here is a form of input in form of excel file



DP1	MONDAY						TUESDAY						WEDNESDAY						THURSDAY						FRIDAY					
1	8:00 - 8:45	SEHS	Computer science	Chemistry SL			Computer science	English A HL				Polish A A	Polish A B			English A SL+HL		Math Math AA HL					Polish A A		Polish A B	English A SL+HL		
2	8:50 - 9:35	SEHS	Computer science	Chemistry SL			Computer science	English A HL				Polish A A	Polish A B			English A SL+HL		Psychology	Econ SL+HL				Polish A A		Polish A B	English A SL+HL		
3	9:45 - 10:30	English B MM	English B JP	English B M	ToK pon 3,4	Spanish B SL	Psychology	Economics SL+HL	French HL	Geography SL+HL			English B JP	English B MM		Spanish B SL	German B SL	FrenchB SL+ HL	Math AA HL	Math AA SL	Math AI HL	Math AI SL	Psychology		Physics SL+HL			
4	10:40 - 11:25	English B MM	English B JP	English B M	ToK pon 3,4	Spanish B SL	Psychology	Economics SL+HL	French HL	Geography SL+HL			English B JP	English B MM		Spanish B SL	German B SL	FrenchB SL+ HL	Math AA HL	Math AA SL	Math AI HL	Math AI SL	Psychology		Physics SL+HL			
5	11:35 - 12:20	Physics SL+HL	Biology SL	Biology HL	ToK pon 5,6	History	Biology SL	Biology HL	SEHS	Business man. SL	Chemistry HL			Visual Arts	ToK for 5,6		History	Chemistry SL	Chemistry HL	Business man. SL	ToK crw 5,6	Business man. SL	Psychology		Econ SL+HL			
6	12:50 - 13:35	Physics SL+HL	Biology SL	Biology HL	ToK pon 5,6	History	Biology SL	Biology HL	SEHS	Business man. SL	Chemistry HL			Visual Arts	ToK for 5,6		History	Chemistry SL	Chemistry HL	Business man. SL	ToK crw 5,6	Business man. SL	English B	English B JP	FrenchB SL+ HL			
7	13:45 - 14:30	Math AA HL	Math AA SL	Math AI HL	Math AI SL			Chemistry HL	Economics HL	Visual Arts		Math AA HL			Math AA SL	Math AI HL	Math AI SL		Business man. HL	Geography SL+HL	ToK crw 7,8		English B	English B JP	FrenchB SL+ HL		German B SL		ToK pt 6,7
8	14:35 - 15:20	HR 1C	HR 1B	HR 1D				Chemistry HL	Economics HL	Visual Arts	Business man. HL			Physics SL+HL	ToK for 8,9			Business man. HL	Geography SL+HL	ToK crw 7,8		Biology HL					ToK pt 6,7
9	15:25 - 16:10	Math AI HL	Math AA HL							Visual Arts	Business man. HL			Physics SL+HL	ToK for 8,9			Business man. HL	Geography SL+HL	ToK crw 7,8		Biology HL					
10	16:15 - 17:00	Math AI HL									Business man. HL																	

[Fig. 1] Example of the Input Excel file with schedule of DP1

Both for DP1 and DP2



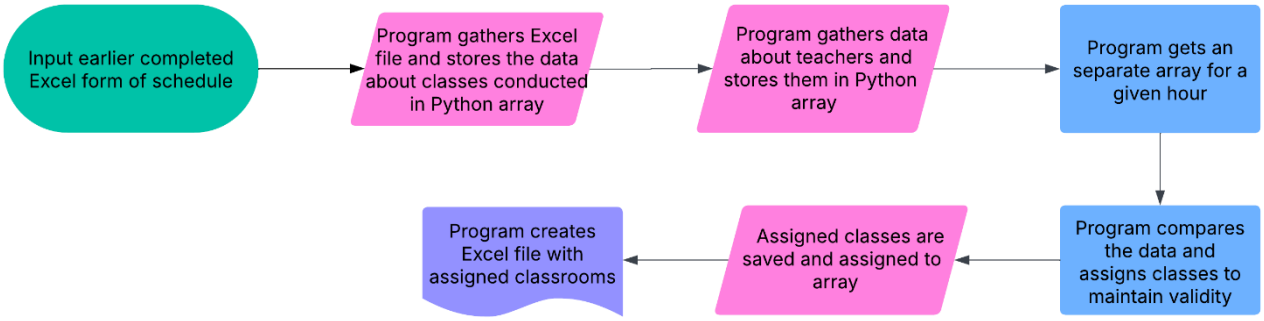
DP2	MONDAY						TUESDAY						WEDNESDAY						THURSDAY						FRIDAY					
1	8:00 - 8:45	man. HL	man. SL	1,2			Psychology	Economics SL				Chemistry	Physics	Business man. HL (Biol)	ToK for 1,2			Math AA HL					Psychology		Economics SL			
2	8:50 - 9:35	man. HL	man. SL	1,2			Psychology	Economics SL	Econ HL			Chemistry	Physics	Business man. HL (Biol)	ToK for 1,2		History	Polish A A	Polish A B			English A HL			Psychology		Economics SL	Econ HL		
3	9:45 - 10:30	Biology SL	HL	SEHS			man. HL	Biology SL	Biology HL	Comp. Sc. (BM)	Business man. HL	Chemistry	Physics	Polish A HL2	Eng A HL		History	Psychology		s HL	ToK crw 3,4	French B HL	Theatre HL2		Business man. HL	IOK pt 3,4	Business man. SL			
4	10:40 - 11:25	Biology SL	HL	SEHS			man. HL	Biology SL	Biology HL	Comp. Sc. (BM)	Business man. HL	Math AI SL	Math AA HL		Math AA			Psychology		s HL	ToK crw 3,4	French B HL	Theatre HL2		Business man. HL	IOK pt 3,4	Business man. SL			
5	11:35 - 12:20	HL	SL	Math AA		Math AA		English B MM	English B PJ	German B SL+HL	Spanish B SL	English B MM	English B PJ			SL+HL	SL	English B MM	English B PJ			English A SL+HL			Polish A A	Polish A B		English A SL+HL		
6	12:50 - 13:35	HL	SL	Math AA		Math AA		English B MM	English B PJ	German B SL+HL	Spanish B SL	English B MM	English B PJ			SL+HL	SL	English B MM	English B PJ			English A SL+HL			Polish A A	Polish A B		English A SL+HL		
7	13:45 - 14:30	Chemistry	Physics	History	7,8		Arts HL	Polish A A	Polish A B			German B HL2	Biology HL	Comp. Sc.	Comp. Sc.	HL2	Arts	HR A	HR B	HR C					Math AI HL	Math AI SL	Math AA HL	Math AA SL		
8	14:35 - 15:20	Chemistry	Physics	History	7,8		Arts HL	French B HL	History	Theatre SL+HL		Eng A HL		Comp. Sc.	Comp. Sc.	HL2	Arts	German B HL2	Comp. Sc. (BM)	SL+HL?					Math AI HL		Math AA HL			
9	15:25 - 16:10	Chemistry	Physics	Polish A HL2			Arts HL	French B HL	History	Theatre SL+HL			French B SL+HL					German B HL2	Comp. Sc. (BM)	SL+HL?					Math AI HL		French B SL+HL			
10	16:15 - 17:00						Arts HL						French B SL+HL															French B SL+HL		

[Fig. 2] Example of the Input Excel file with schedule of DP2

The gathering of teachers is later presented in prototypes.

Assigning algorithm

Flowchart of classroom to classes assigning algorithm is presented



[Fig. 3] Program general working idea

Pseudocode of data comparison and assignment is presented:

```
// class – given subject, lesson, lecture;  classroom – a place where class is conducted
// program gathers classes conducted for given hour in given day for both DP1 and DP2
ONE_HOUR_ARRAY
// program gathers teachers' classes and preferences
TEACHERS_ARRAY
// program gathers data about classrooms
CLASSROOMS_ARRAY
// assign homeroom classes as they stay primary in hierarchy of assignment
// homeroom hours are the most important
loop C from 0 to ONE_HOUR_ARRAY.length – 1
        // if statement looks for classes with HR – homeroom inside its name
        if ("HR ".isIn(ONE_HOUR_ARRAY[C].class())) then
                FOUND_CLASSROOM = !!! program searches for a class's classroom !!!
                ONE_HOUR_ARRAY[C].classroom = FOUND_CLASSROOM
        end if
end loop
// program sorts classrooms and classes by their size and assigns them respectively
```

[Fig. 4] Pseudocode of Classroom assignment algorithm v.1

Pseudocode for assignment algorithm continuation

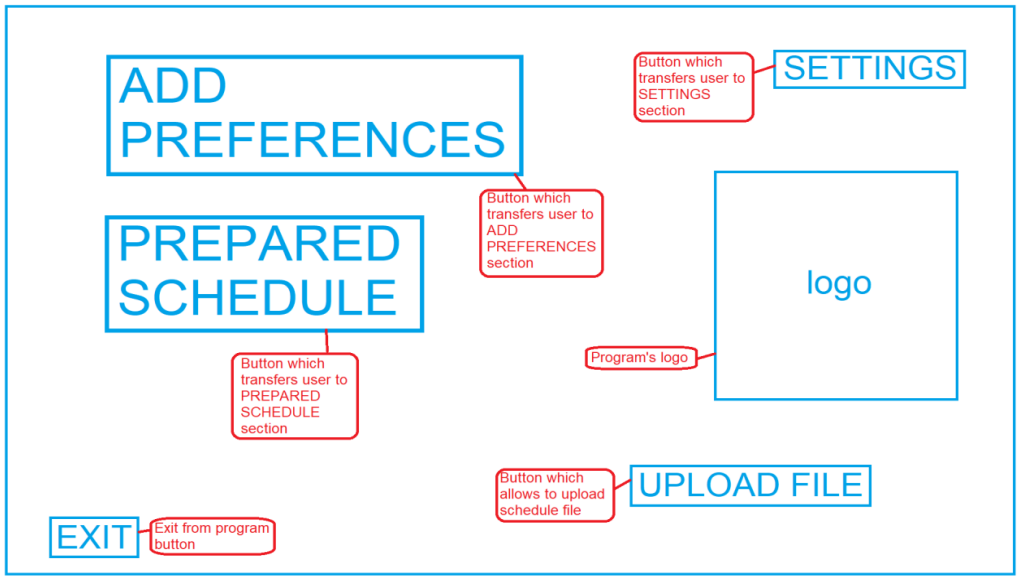
```
// I use bubble sort to sort the classes
loop T from 0 to ONE_HOUR_ARRAY.length – 1
        loop J from 0 to ONE_HOUR_ARRAY.length – 1 – T
                if (ONE_HOUR_ARRAY[J].size() > ONE_HOUR_ARRAY[J+1].size()) then
                        TEMP = ONE_HOUR_ARRAY[J]
                        ONE_HOUR_ARRAY[J] = ONE_HOUR_ARRAY[J+1]
                        ONE_HOUR_ARRAY[J+1] = TEMP
                end if
        end loop
end loop
// I use bubble sort to sort the classrooms
loop T from 0 to CLASSROOMS_ARRAY.length – 1
        loop J from 0 to CLASSROOMS_ARRAY.length – 1 – T
                if (CLASSROOMS_ARRAY[J].size() > CLASSROOMS_ARRAY[J+1].size()) then
                        TEMP = CLASSROOMS_ARRA [J]
                        CLASSROOMS_ARRAY[J] = CLASSROOMS_ARRAY[J+1]
                        CLASSROOMS_ARRAY[J+1] = TEMP
                end if
        end loop
end loop
// program assigns biggest available classrooms to biggest classes
loop T from 0 to ONE_HOUR_ARRAY.length – 1
        // the code assumes that there is less classes than classrooms for a particular hour
        if (CLASSROOMS_ARRAY[T].isEmpty()) then
                ONE_HOUR_ARRAY[T].classroom = CLASSROOMS_ARRAY[T]
        end if
end loop

!!! program searches for possible changes according to teachers' classroom preference and
screen availability preference !!!
!!! program prescribes assign classrooms to the main array with all classes !!!
```

[Fig. 5] Pseudocode of Classroom assignment algorithm v.2

PROGRAM'S PROTOTYPES OF THEIR WORKING:

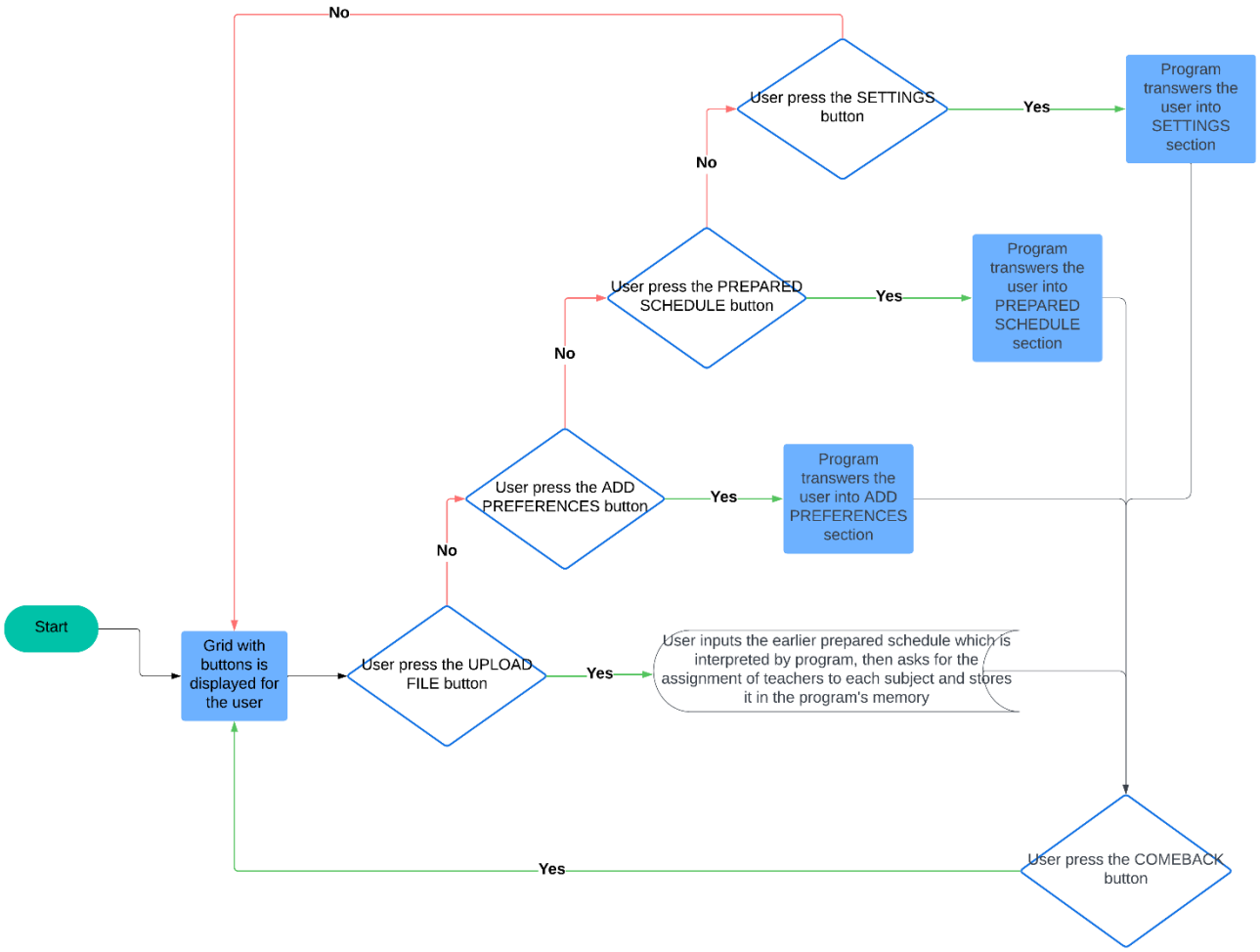
Prototype 1

The primary idea of the program.



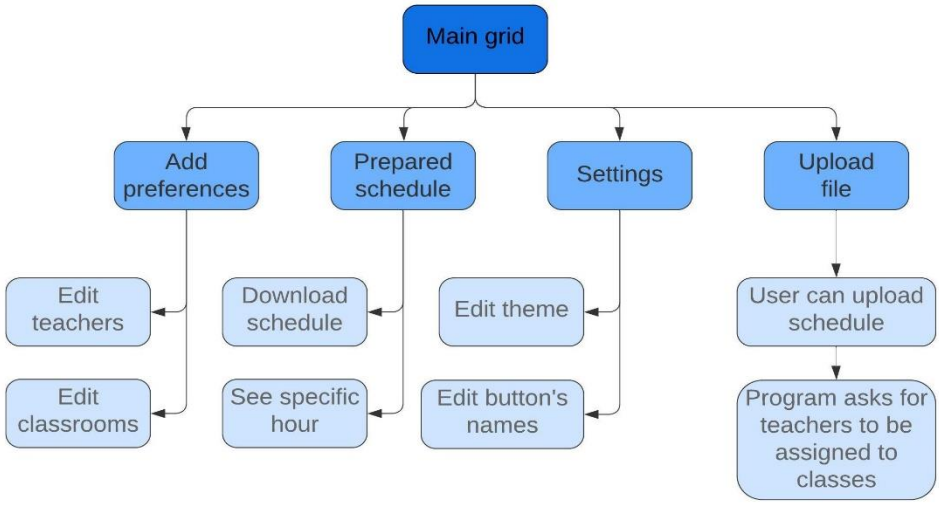
[Fig. 6] Prototype 1: Illustrative overview of Main Grid

General Flow Chart of program activities



[Fig. 7] Prototype 1: General flowchart of program functioning

The division for sections:



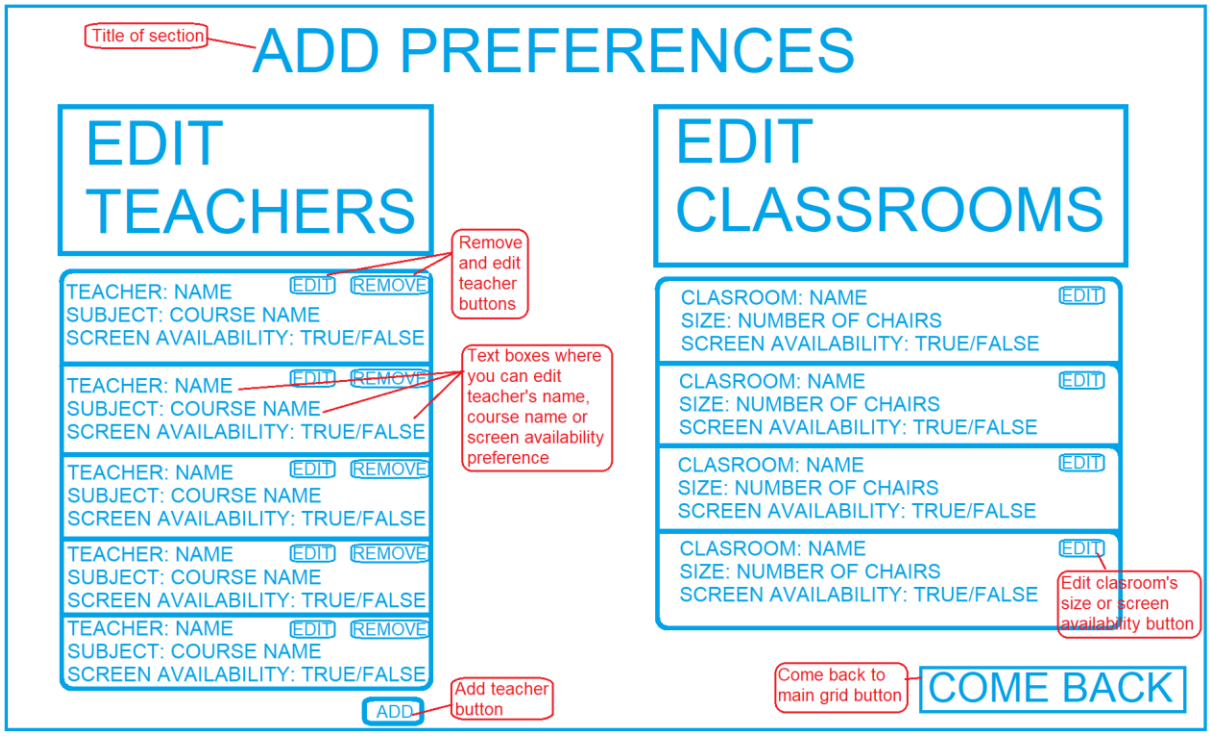
[Fig. 8] Prototype 1: Program divided into sections

Section Division

Program division into sections:

Section A (Add preferences)

Section A preview:

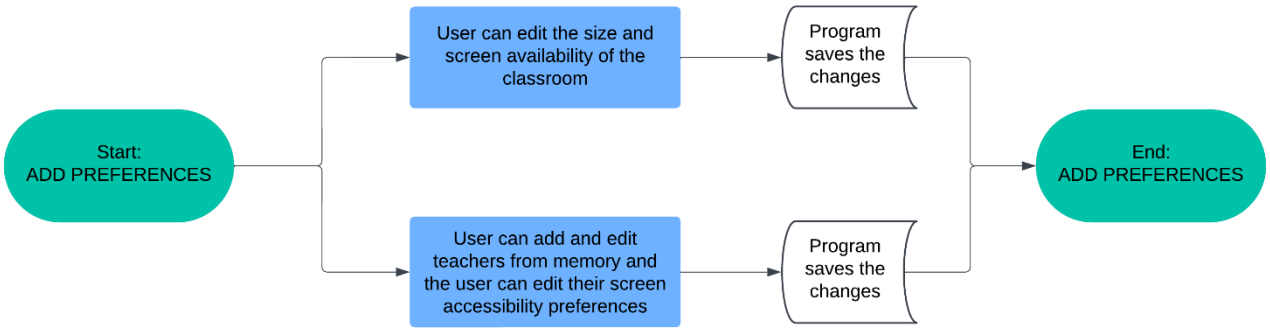


[Fig. 9] Prototype 1: Illustrative overview of Add preferences section

Info	Add preferences section is a place where the user can add and edit both teachers' preferences like screen availability, favorite classroom and course name, and classrooms' size, screen availability	
Choice	Edit teachers	Edit classrooms
Action/ input	User adds and edits teachers with their preferences regarding screen availability	User edits size of the classrooms and the screen availability
Result/ output	Program saves user's changes	Program saves user's changes

[Tab. 1] Prototype 1: Add preferences section functioning

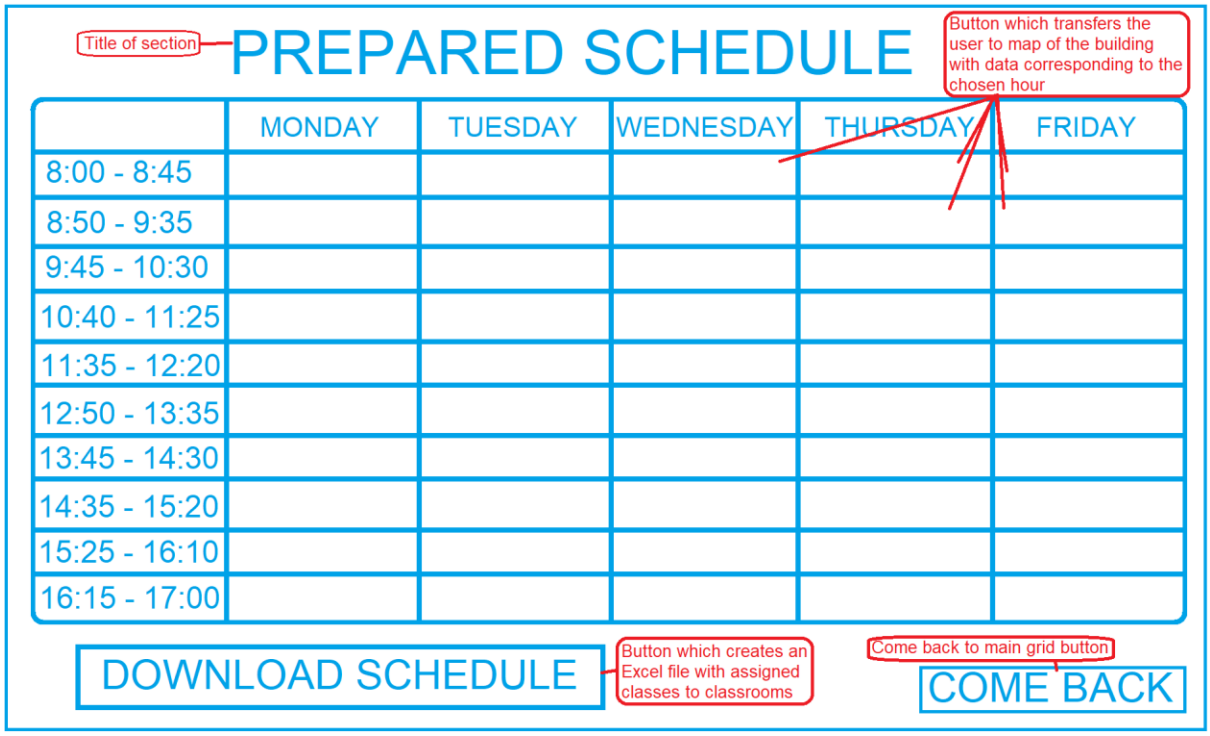
Flow chart of ADD PREFERENCES section



[Fig. 10] Prototype 1: Add preferences section flowchart of functioning

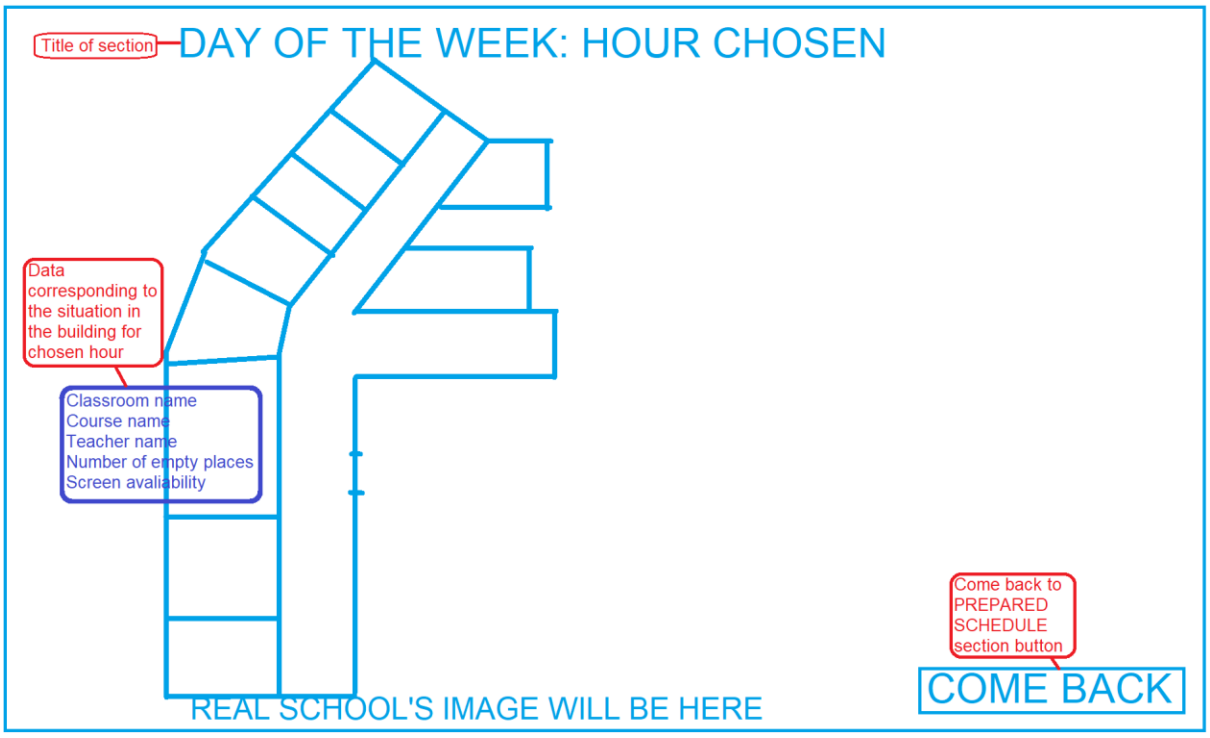
Section B (Prepared schedule)

Section B preview:



[Fig. 11] Prototype 1: Prepared schedule section overview

Program transfers user to School's map from PREPARED SCHEDULE.

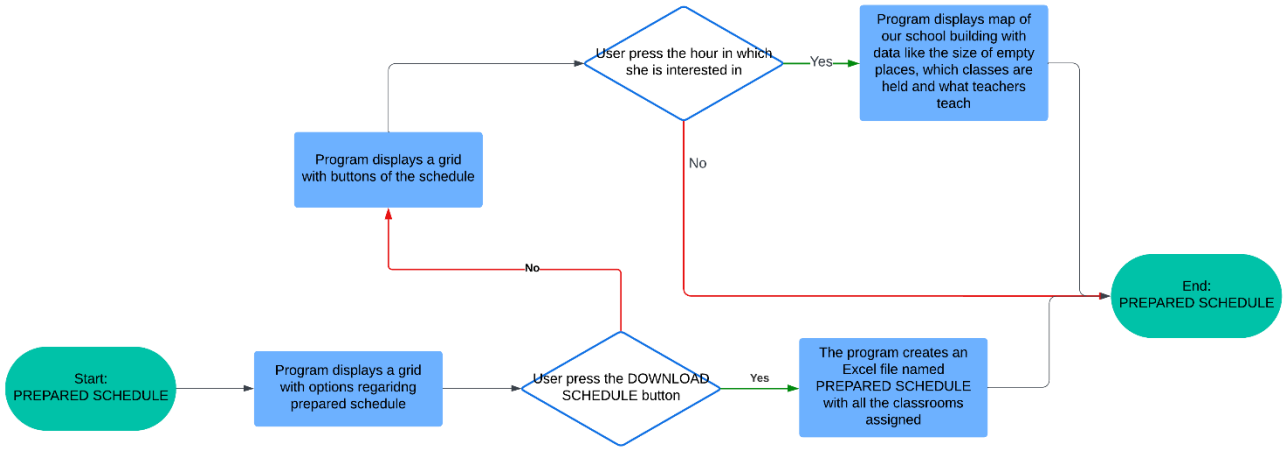


[Fig. 12] Prototype 1: See specific hour subsection of prepared schedule section overview

Info	Prepared schedule section is a place where the user can download already prepared schedule, and go to *See specific hour* subsection where she can see what classes take place, number of empty places, what teachers teach, and empty classrooms	
Choice	Download schedule	See specific hour
Action/ input	User presses the Download Schedule button	User presses each hour cell
Result/ output	Program creates an Excel file with assigned classrooms	Program transfers the user to a map of the whole school building, where each classroom is marked with the subject's name, the teacher holding the class, screen availability, and the number of free places

[Tab. 2] Prototype 1: Prepared schedule section functioning

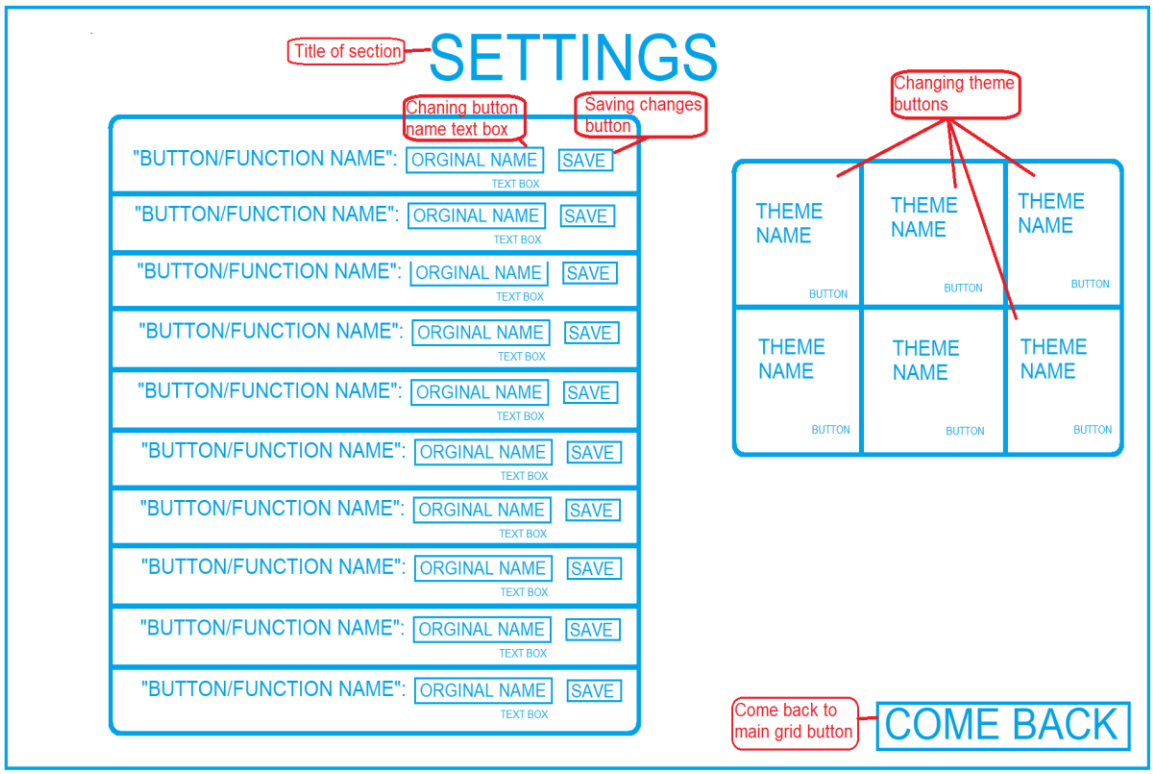
Flow chart of PREPARED SCHEDULE section



[Fig. 13] Prototype 1: Prepared schedule section flowchart of functioning

Section C (Settings)

Section C preview:

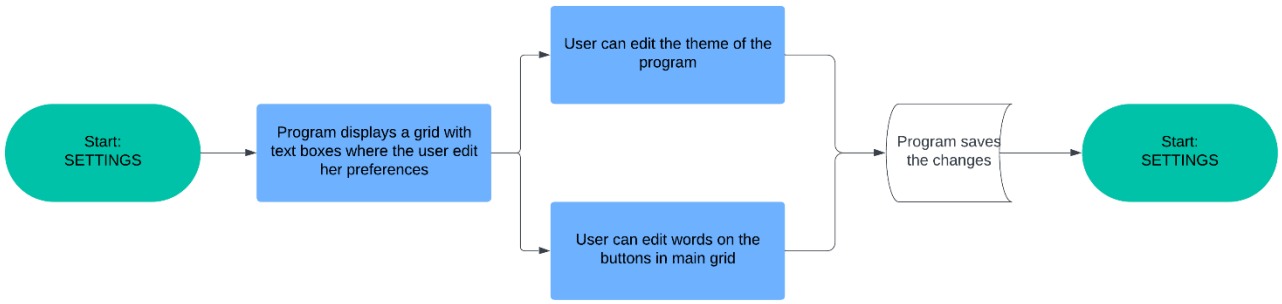


[Fig. 14] Prototype 1: Illustrative overview of Settings section

Info	Settings section is a place where the user can change labels on buttons and edit theme of the program	
Choice	Edit button's name	Edit theme
Action/ input	User edits the names of the buttons in the program, thus the program is more personalized	User presses a button with a preferred theme
Result/ output	Program stores edited names and changes button's names	Program saves chosen theme and changes it

[Tab. 3] Prototype 1: Settings section functioning

Flow chart of SETTINGS section



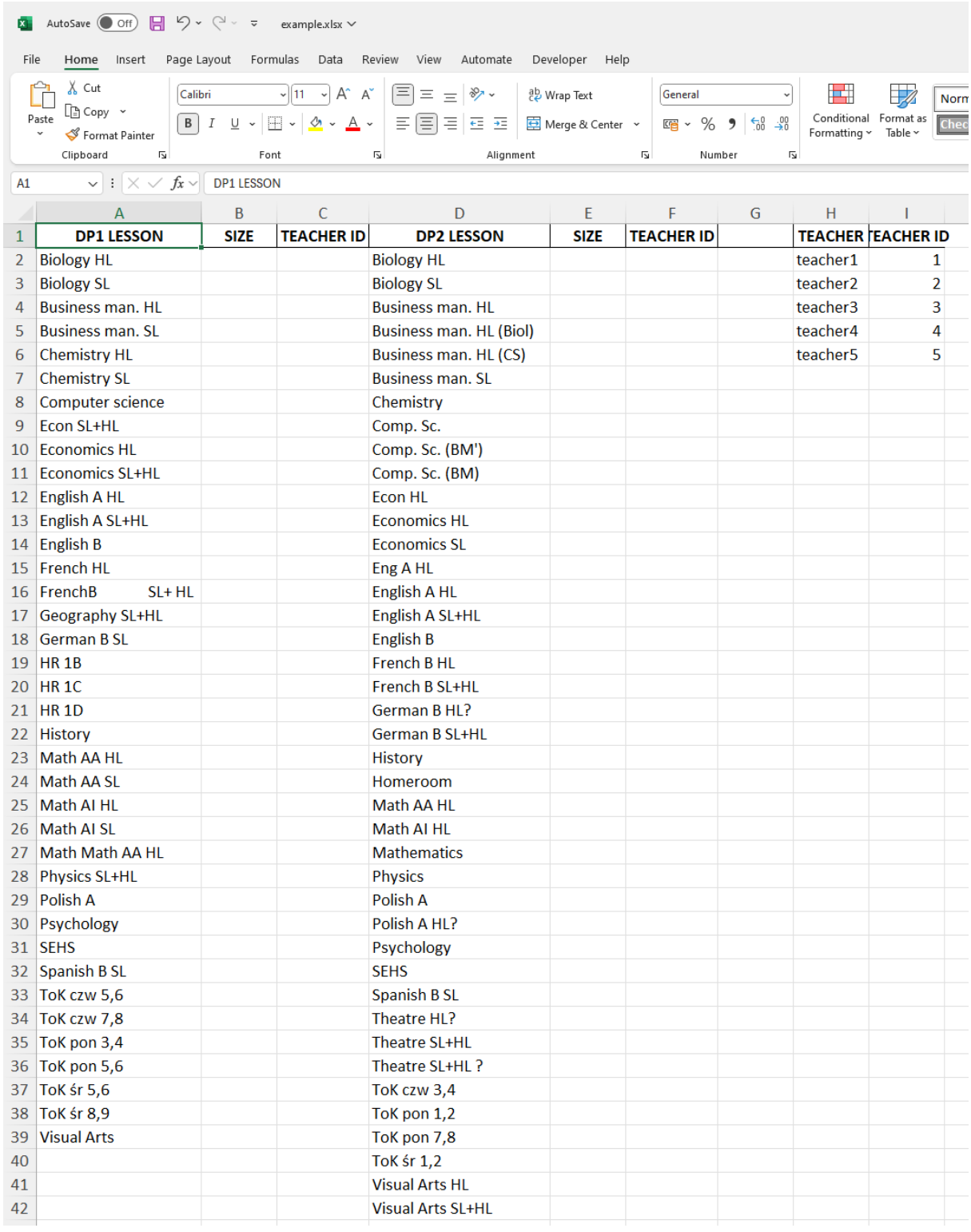
[Fig. 15] Prototype 1: Settings section flowchart of functioning

Section D (Upload file)

Section D preview:

[Fig. 16] Prototype 1: Illustrative overview of Upload file section

Program gathers schedule from usual file gathering system and stores the Excel in program's memory. Then returns an Excel file with all classes and teacher, so User can enter classes' sizes and teacher ID.



	A	B	C	D	E	F	G	H	I
1	**DP1 LESSON**	**SIZE**	**TEACHER ID**	**DP2 LESSON**	**SIZE**	**TEACHER ID**		**TEACHER**	**TEACHER ID**
2	Biology HL			Biology HL				teacher1	1
3	Biology SL			Biology SL				teacher2	2
4	Business man. HL			Business man. HL				teacher3	3
5	Business man. SL			Business man. HL (Biol)				teacher4	4
6	Chemistry HL			Business man. HL (CS)				teacher5	5
7	Chemistry SL			Business man. SL					
8	Computer science			Chemistry					
9	Econ SL+HL			Comp. Sc.					
10	Economics HL			Comp. Sc. (BM')					
11	Economics SL+HL			Comp. Sc. (BM)					
12	English A HL			Econ HL					
13	English A SL+HL			Economics HL					
14	English B			Economics SL					
15	French HL			Eng A HL					
16	FrenchB SL+ HL			English A HL					
17	Geography SL+HL			English A SL+HL					
18	German B SL			English B					
19	HR 1B			French B HL					
20	HR 1C			French B SL+HL					
21	HR 1D			German B HL?					
22	History			German B SL+HL					
23	Math AA HL			History					
24	Math AA SL			Homeroom					
25	Math AI HL			Math AA HL					
26	Math AI SL			Math AI HL					
27	Math Math AA HL			Mathematics					
28	Physics SL+HL			Physics					
29	Polish A			Polish A					
30	Psychology			Polish A HL?					
31	SEHS			Psychology					
32	Spanish B SL			SEHS					
33	ToK czw 5,6			Spanish B SL					
34	ToK czw 7,8			Theatre HL?					
35	ToK pon 3,4			Theatre SL+HL					
36	ToK pon 5,6			Theatre SL+HL ?					
37	ToK śr 5,6			ToK czw 3,4					
38	ToK śr 8,9			ToK pon 1,2					
39	Visual Arts			ToK pon 7,8					
40				ToK śr 1,2					
41				Visual Arts HL					
42				Visual Arts SL+HL					

[Fig. 17] Prototype 1: Upload file section's output Excel which seeks to be completed

Info	Upload file section is a place where user uploads the prepared schedule in the form of the earlier presented Excel form
Choice	Upload file
Action/ input	User uploads earlier prepared schedule without assigned classrooms to the program
Result/ output	Program reads the data provided and creates a table with teachers and their IDs and all subjects, then Program displays the table and asks the user to assign the teachers' ID to their corresponding course
Action/ input	User assigns classes' sizes and the teachers' ID to their course
Result/ output	Program reads data provided and stores them in program's memory

[Tab. 4] Prototype 1: Upload file section functioning

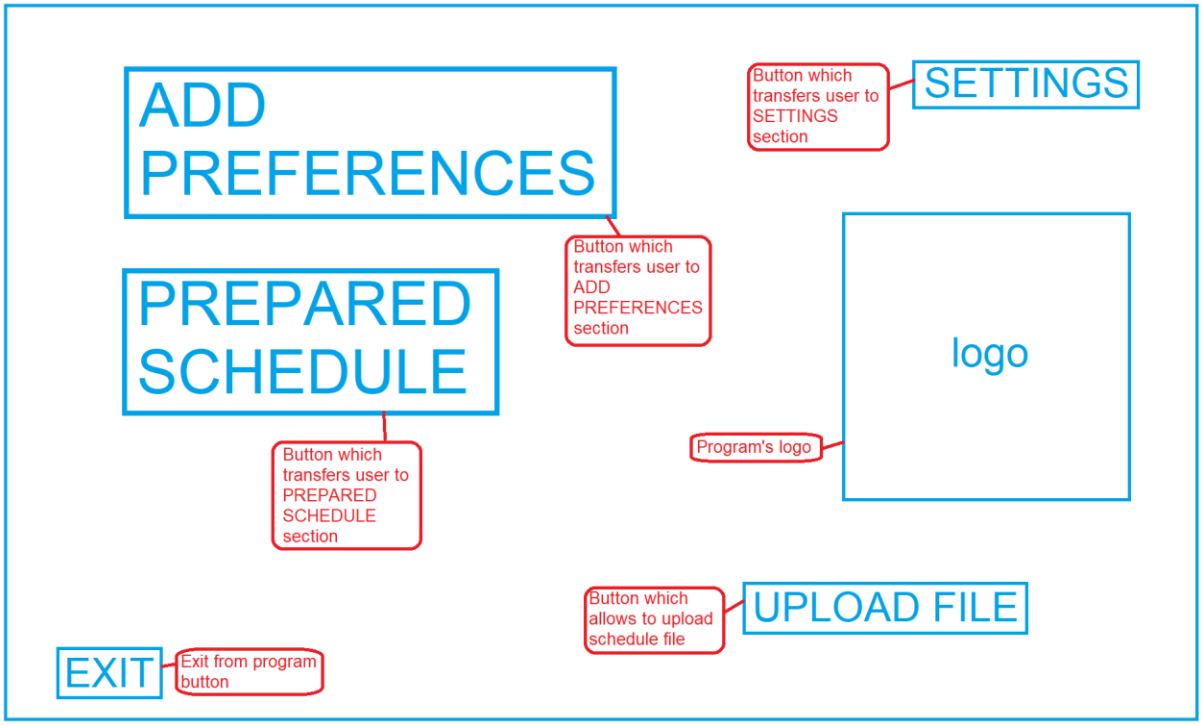
Prototype 2

After creating the first program idea overview, I was not satisfied at all. I did not like the fact that the user must enter the preferences regarding the sizes of the classrooms and which teacher's subjects by additional Excel file. Also, after third consultations with my client (See Appendix – Evidence 3 for details), I decided to restructure the program and create *Prototype 2*, as the primary one misses the needs of the user.

Some characteristics of the program will stay unchanged, but the idea of gathering information about teachers' preferences changes completely.

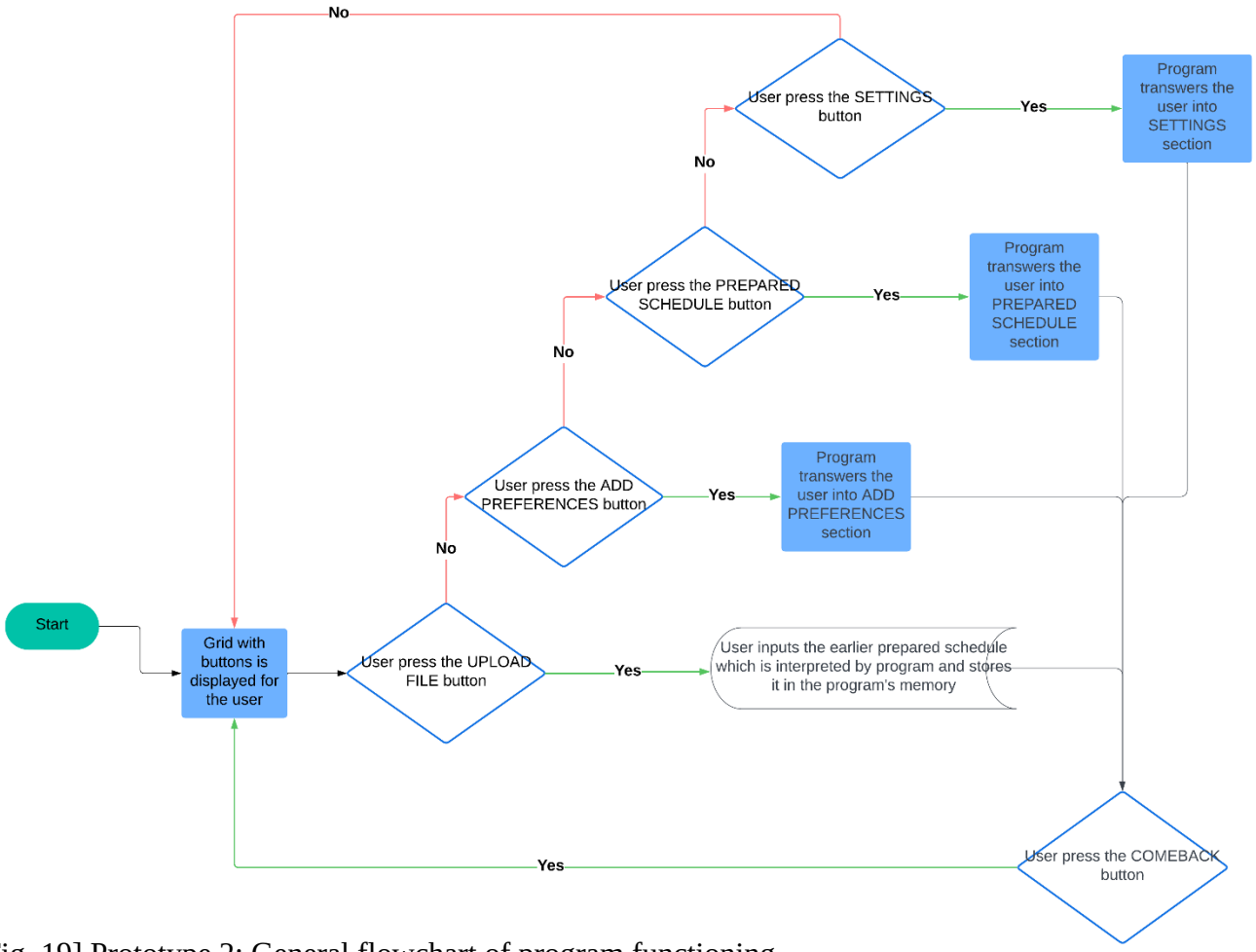
Program overview

Main grid preview:



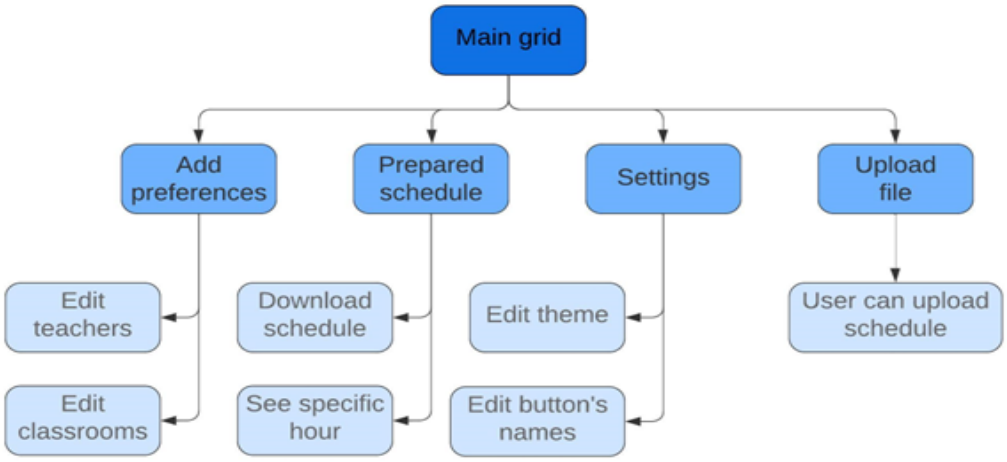
[Fig. 18] Prototype 2: Illustrative overview of Main Grid

General Flow Chart of program activities



[Fig. 19] Prototype 2: General flowchart of program functioning

Program activities divided into earlier described sections.



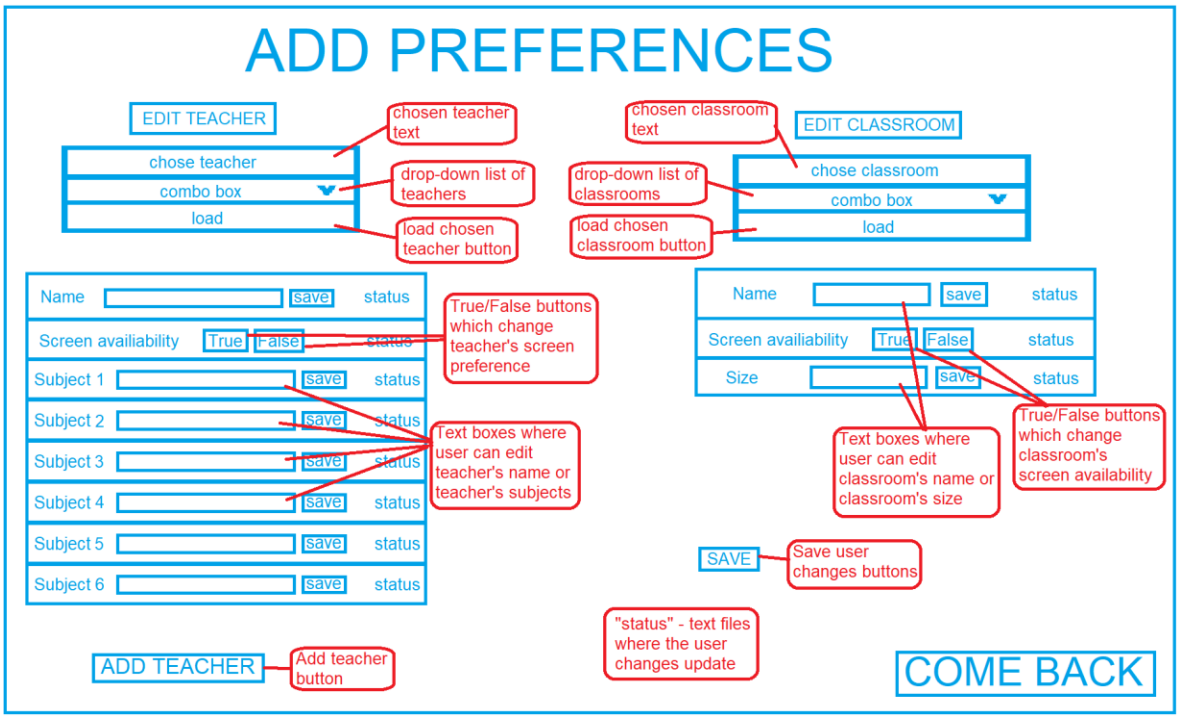
[Fig. 20] Prototype 2: Program divided into sections

Section Division

Section C remain unchanged

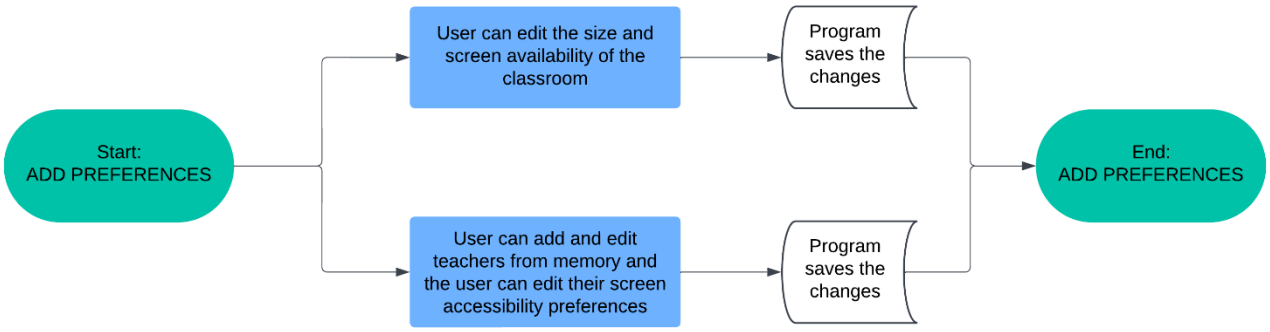
Section A (Add preferences)

Section A preview:



[Fig. 21] Prototype 2: Illustrative overview of Add preferences section

Flow chart of ADD PREFERENCES section



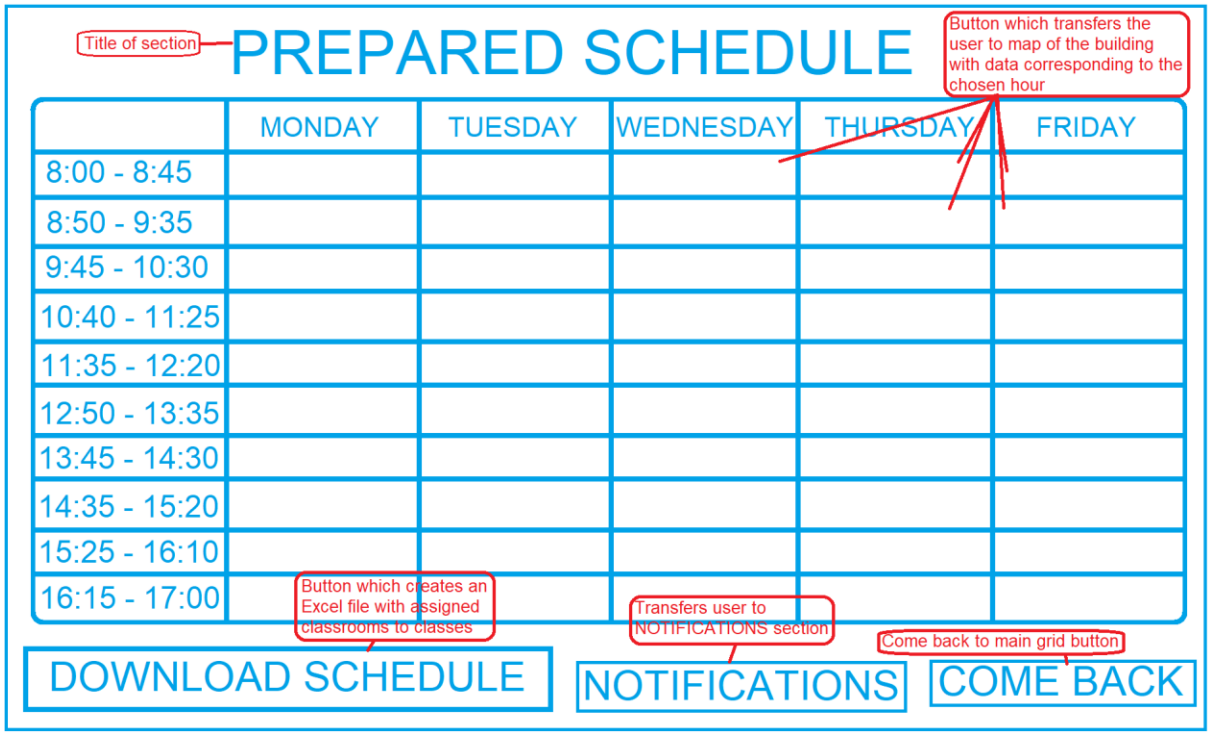
[Fig. 22] Prototype 2: Add preferences section flowchart of functioning

Info	Add preferences section is a place where the user can add and edit teachers' preferences regarding screen availability preference and what classes the teacher teach, but also user can edit classrooms' sizes and screen availability	
Choice	Edit teachers	Edit classrooms
Action/ input	User adds and edits teachers with their preferences regarding screen availability, classes held and their sizes inside the program	User edits size of the classrooms and the screen availability inside the program
Result/ output	Program saves user's changes	Program saves user's changes

[Tab. 5] Prototype 2: Add preferences section functioning

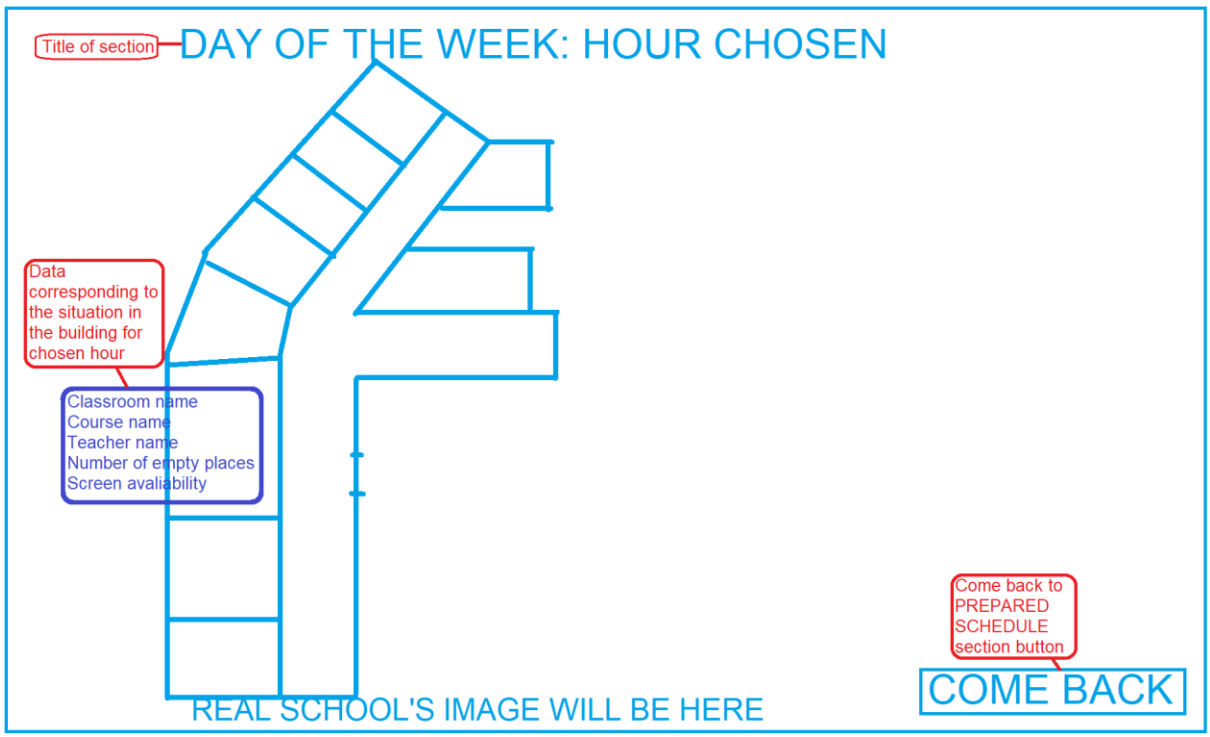
Section B (Prepared schedule)

Section B preview:



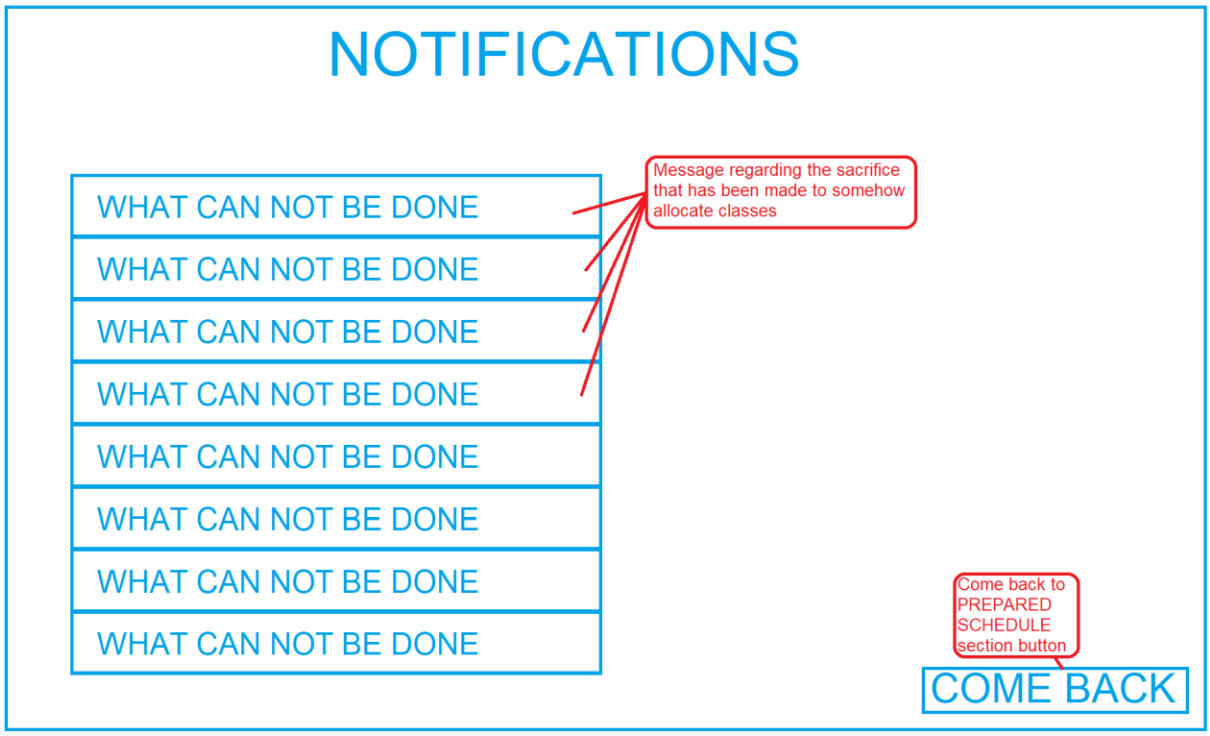
[Fig. 23] Prototype 2: Illustrative overview of Prepared schedule section

Program transfers user to School's map from PREPARED SCHEDULE.



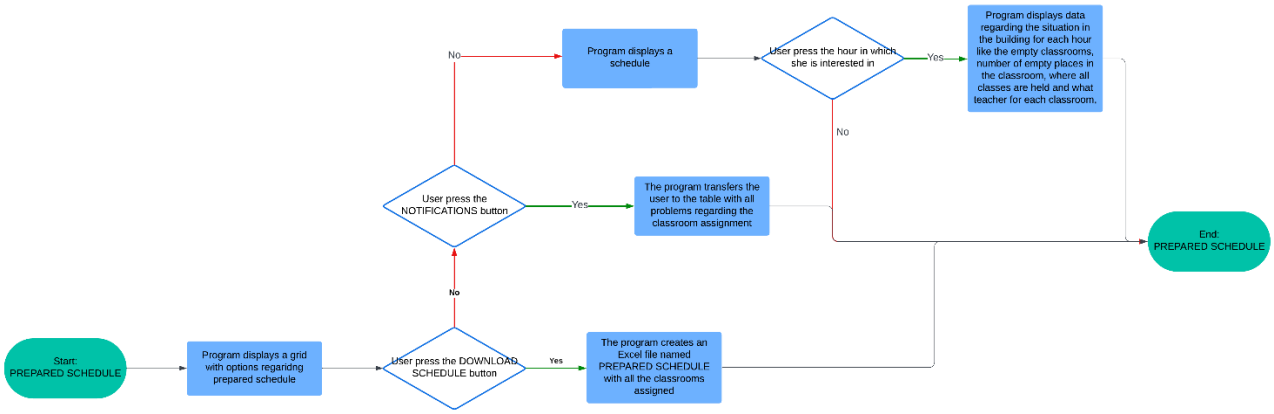
[Fig. 24] Prototype 2: See specific hour subsection of prepared schedule section overview

Program transfers user to NOTIFICATIONS subsection from PREPARED SCHEDULE.



[Fig. 25] Prototype 2: Notifications subsection of prepared schedule section overview

Flow chart of PREPARED SCHEDULE section



[Fig. 26] Prototype 2: Prepared schedule section flowchart of functioning

Info	Prepared schedule section is a place where the user can download schedule with assign classrooms, see notifications regarding the imperfections regarding classroom assignment, and see situation in the building for specific hour		
Choice	Download schedule	Notifications	See specific hour
Action/ input	User presses the Download Schedule button	User presses the Notification button	User presses each hour cell
Result/ output	Program creates an Excel file with assigned classrooms with respect to provided requirements	Program displays the table with notifications regarding the problems in assignment of classes, (for example, that not every teacher can have the class in its favorite classroom)	Program transfers the user to a map of the whole school building, where each classroom is marked with the subject's name, the teacher holding the class, screen availability, and the number of free places

[Tab. 5] Prototype 2: Prepared schedule section functioning

Section C

Remains unchanged.

Section D (Upload file)

Program transfers user to UPLOAD FILE from main grid.

[Fig. 27] Prototype 2: Illustrative overview of Upload file section

Program gathers schedule from usual file gathering system and stores the Excel in program's memory.

Info	Upload file section is a place where user uploads the prepared schedule in the form of the earlier presented Excel form
Choice	Upload file
Action/ input	User uploads earlier prepared schedule without assigned classrooms to the program
Result/ output	Program reads the data provided and stores it in the program's memory

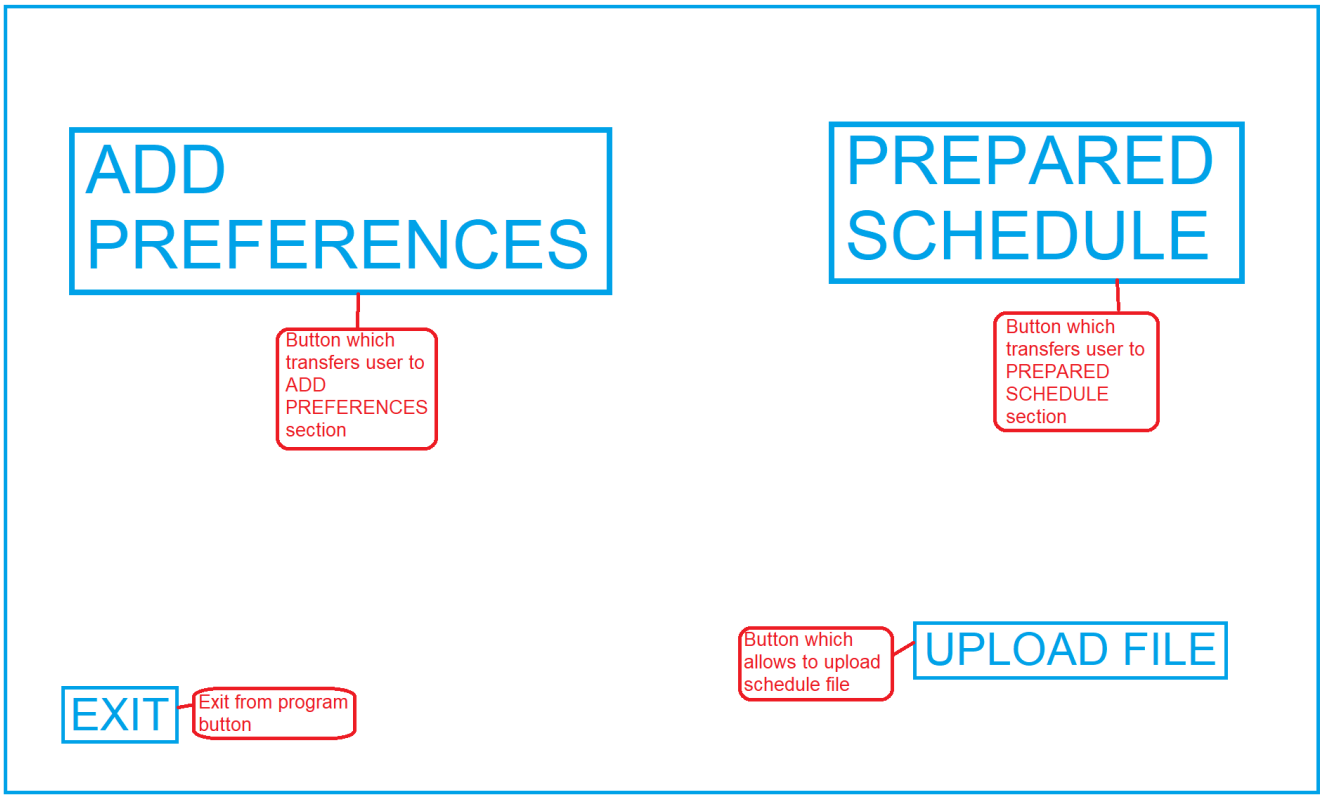
[Tab. 6] Prototype 2: Upload file section functioning

Prototype 3

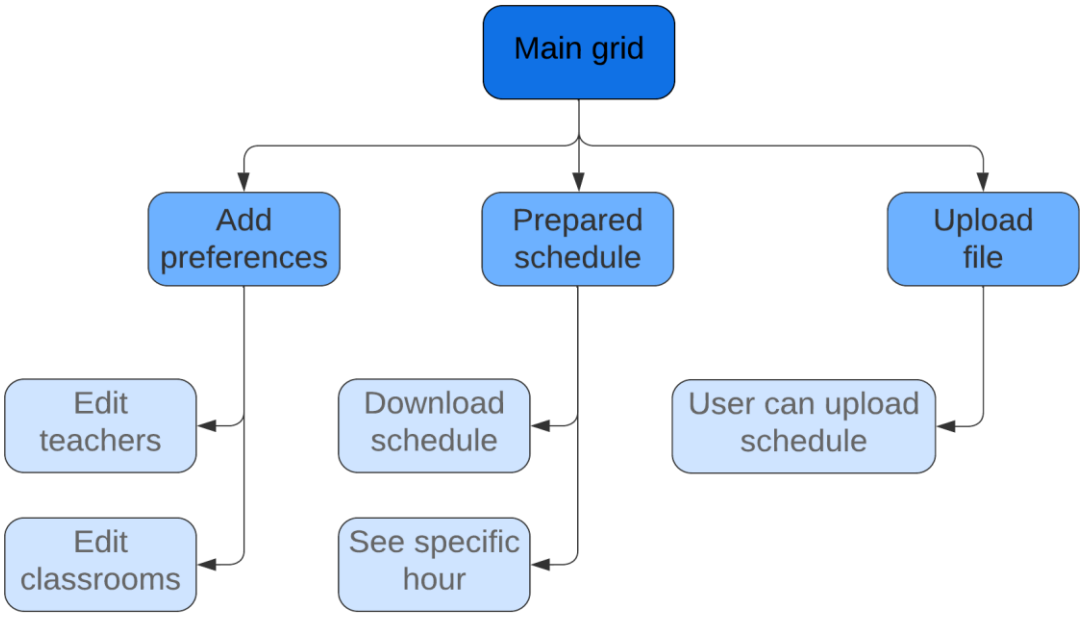
After creating transitions between windows and sharing the changed idea with my Client (See Appendix – Evidence 4 and 5 for details), I created the third and the last prototype of the program. Also, I decided to use object-oriented programming as the program having only transition functions between windows already seemed complex.

The last prototype resigns from the SETTINGS section and after further consultations includes more personalized ADD PREFERENCES section.

Program overview



[Fig. 28] Prototype 3: Illustrative overview of Main Grid

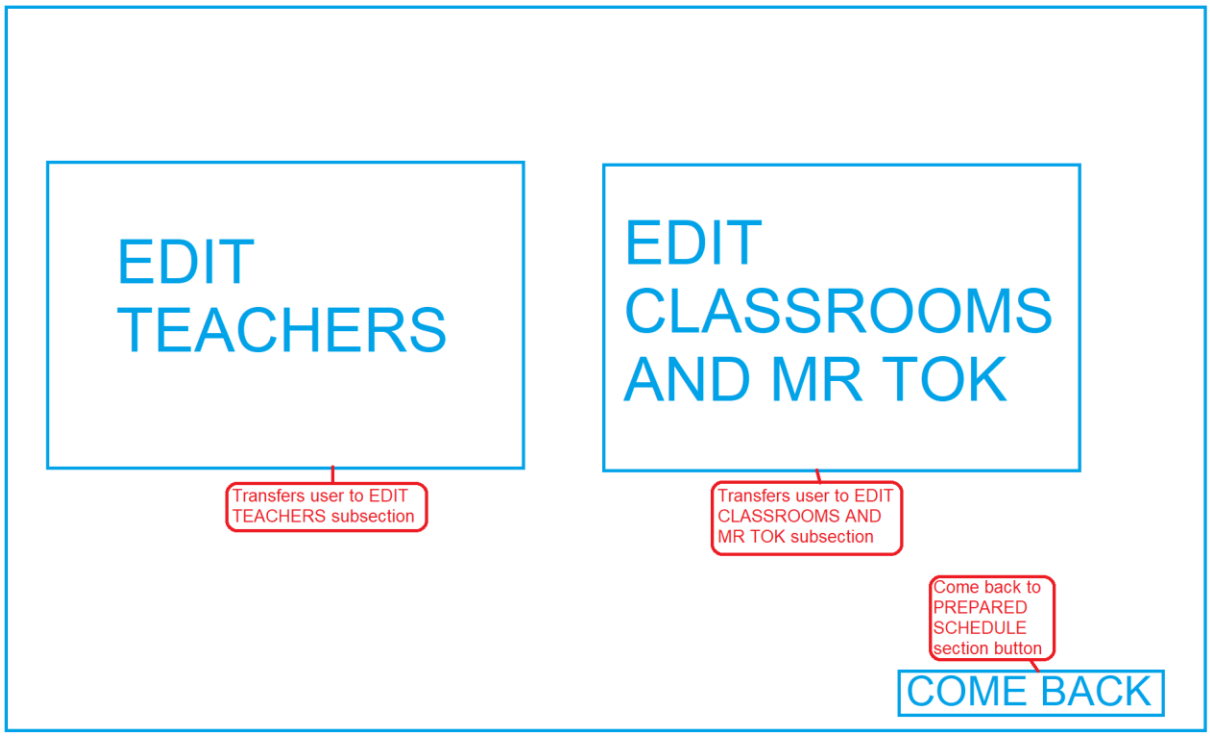


[Fig. 29] Prototype 3: Program divided into sections

Section Division

Sections B remain unchanged and D becomes C.

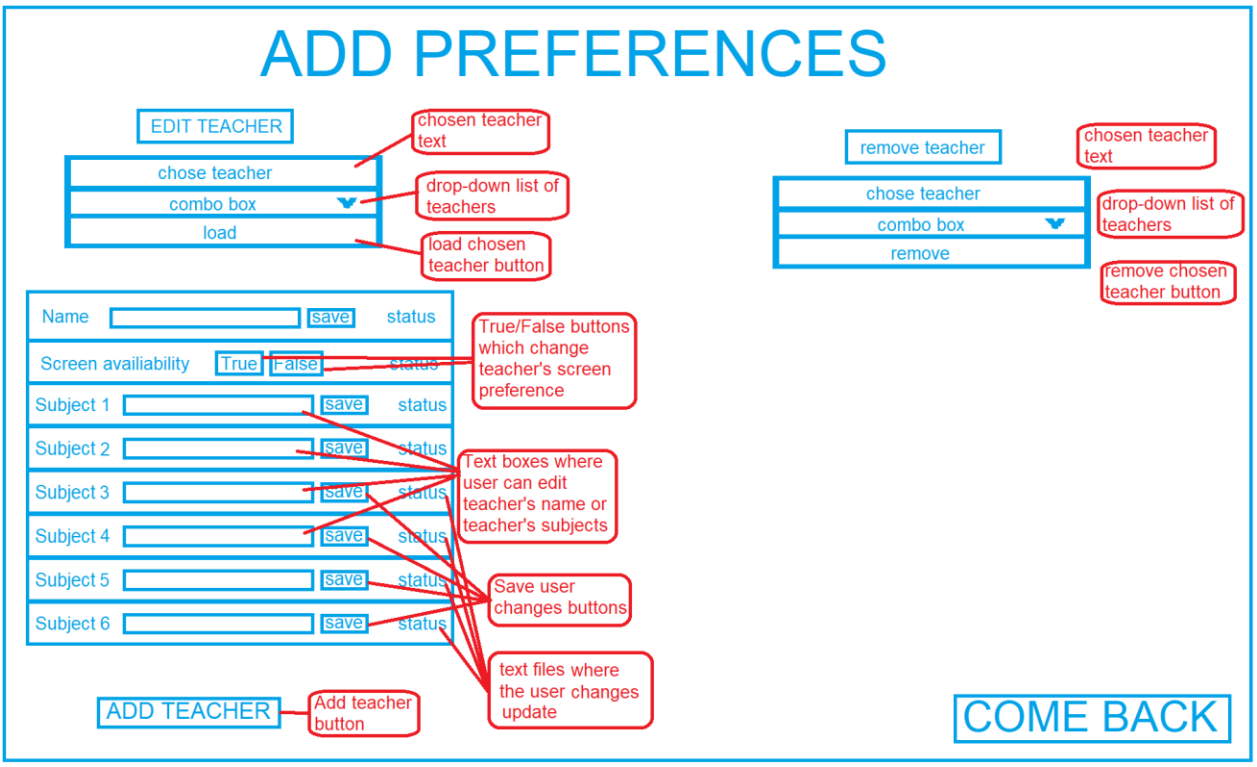
Section A preview:



[Fig. 30] Prototype 3: Illustrative overview of Add preferences section

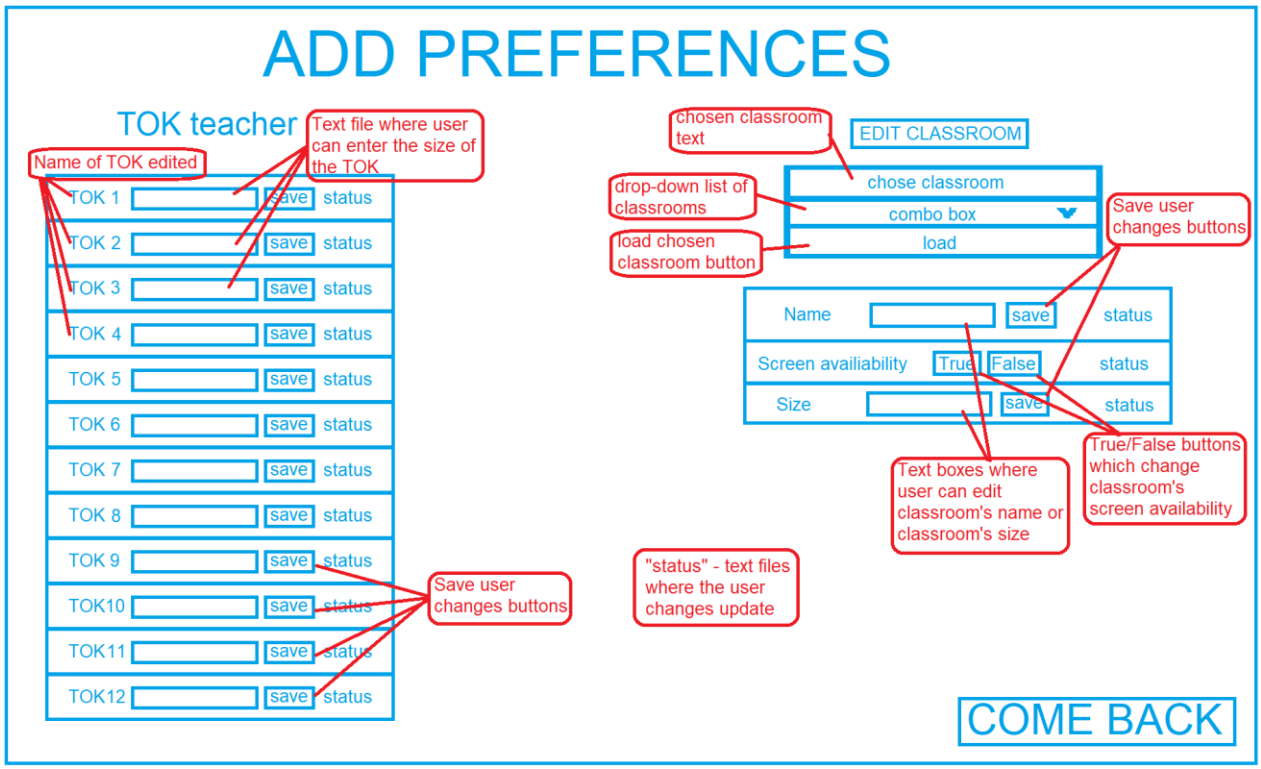
Two options:

- Program transfers user to EDIT TEACHERS subsection



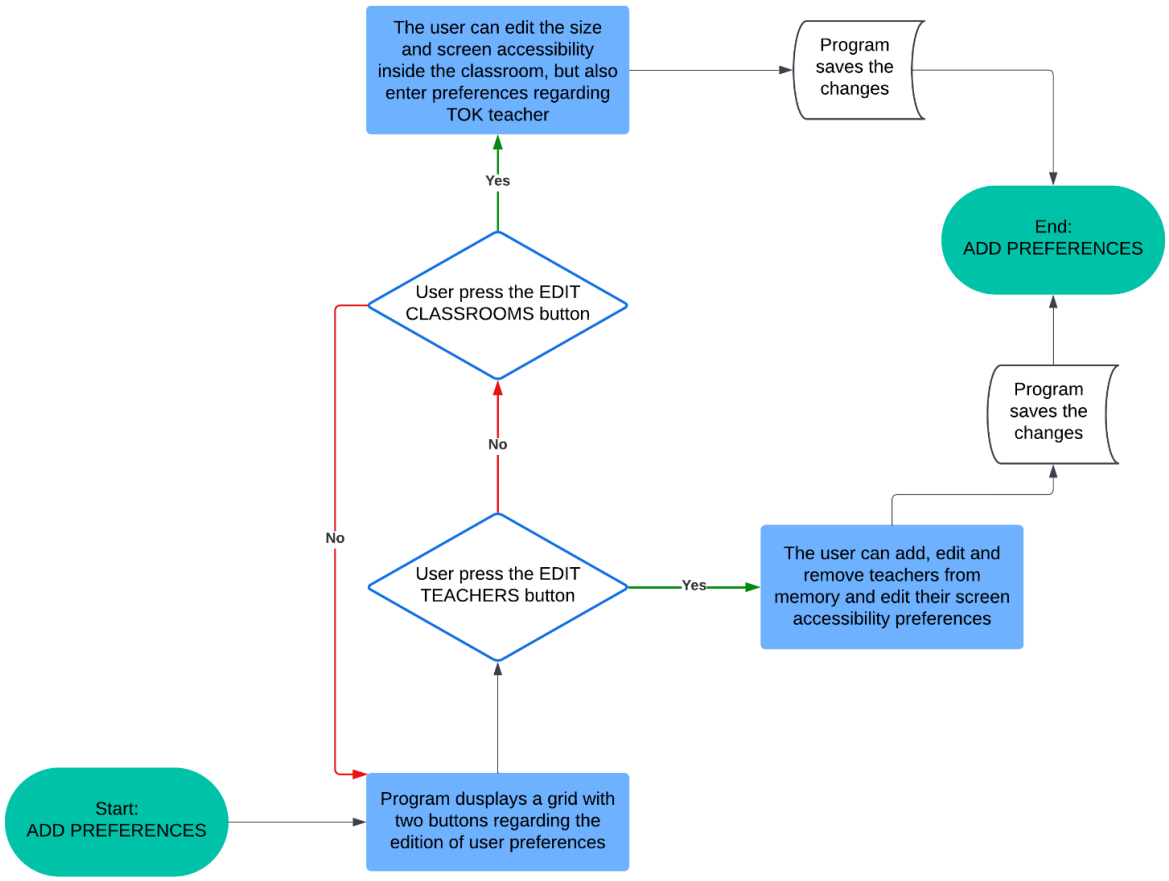
[Fig. 31] Prototype 3: Edit teachers subsection of add preferences section overview

- Program transfers user to EDIT CLASSROOMS subsection



[Fig. 32] Prototype 3: Edit classrooms subsection of add preferences section overview

Flow chart of ADD PREFERENCES section



[Fig. 33] Prototype 2: Add preferences section flowchart of functioning

Info	Add preferences section is a place where user add, edit and remove teachers with their preferences regarding screen availability, favorite classroom and what subjects do they teach, but also edit classrooms' sizes, screen availability and whether it is an homeroom hour	
Choice	Edit teachers	Edit classrooms
Action/ input	User adds, edits and edits teachers with their preferences regarding screen availability, favorite classroom and classes which the teacher teach	User edits size of the classrooms, the screen availability and whether it is someone's an homeroom hour
Result/ output	Program saves user's changes	Program saves user's changes

[Tab. 7] Prototype 3: Add preferences section functioning

Due to Object Oriented Programing:

Each sections' UML Diagram

Section A

Class	ADD PREFERENCES	
Edit teacher Subclass	Attributes	Combo Box: chose teacher for edit Button: load chosen teacher for edit Combo Box: chose teacher for remove Button: load chosen teacher for remove Text Box: enter teacher name Button True: change user screen preference for True Button False: change user screen preference for False Line Edit: enter teacher subject 1 Line Edit: enter teacher subject 2 Line Edit: enter teacher subject 3 Line Edit: enter teacher subject 4 Line Edit: enter teacher subject 5 Line Edit: enter teacher subject 6 Button: save changed subject 1 Button: save changed subject 2 Button: save changed subject 3 Button: save changed subject 4 Button: save changed subject 5 Button: save changed subject 6 Button: come back to ADD PREFERENCES section
	Methods	LoadTeacher():Load teacher with its current data ChangeName(): Saves changed teacher name ChangeScreenPreference(): Saves changed screen preference ChangeSubject1(): Saves changed subject 1 ChangeSubject2(): Saves changed subject 2 ChangeSubject3(): Saves changed subject 3

		ChangeSubject4(): Saves changed subject 4 ChangeSubject5(): Saves changed subject 5 ChangeSubject6(): Saves changed subject 6 AddTeacher(): Adds teacher RemoveTeacher(): Removes teacher from memory
Edit classroom Subclass	Attributes	Combo Box: chose classroom for edit Button: load chosen classroom for edit Text Box: enter teacher name Button True: change user screen preference for True Button False: change user screen preference for False Line Edit: enter teacher subject 1 Line Edit: enter size of TOK teacher TOK 1 … Line Edit: enter size of TOK teacher TOK 12 Button: save changed TOK 1 … Button: save changed TOK 12 Button: come back to ADD PREFERENCES section
	Methods	LoadTeacher():Load classrooms with its current data ChangeName(): Saves changed classrooms name ChangeScreenPreference(): Saves changed screen preference ChangeTOK1(): Saves TOK 1 size … ChangeTOK12(): Saves TOK 12 size

[Tab. 7] UML Diagram for Add preferences section

Section B

Class	Prepared schedule	
Download schedule	Attributes	Button: download file button
	Methods	DownloadFile(): creates schedule with assigned classrooms
Notifications	Attributes	Button: transfer button
	Methods	goToNotifications():transfers to notification subsection with all problems which program encountered
See specific hour	Attributes	Button: transfer button
	Methods	goToSpecificHour(): transfers user to proper specific hour subsection displayClasses(): displays what classes are held, what teachers teach, number of empty places, and what classrooms are occupied displayEmpty(): displays all not occupied classes for a specific hour

[Tab. 8] UML Diagram for Prepared schedule section

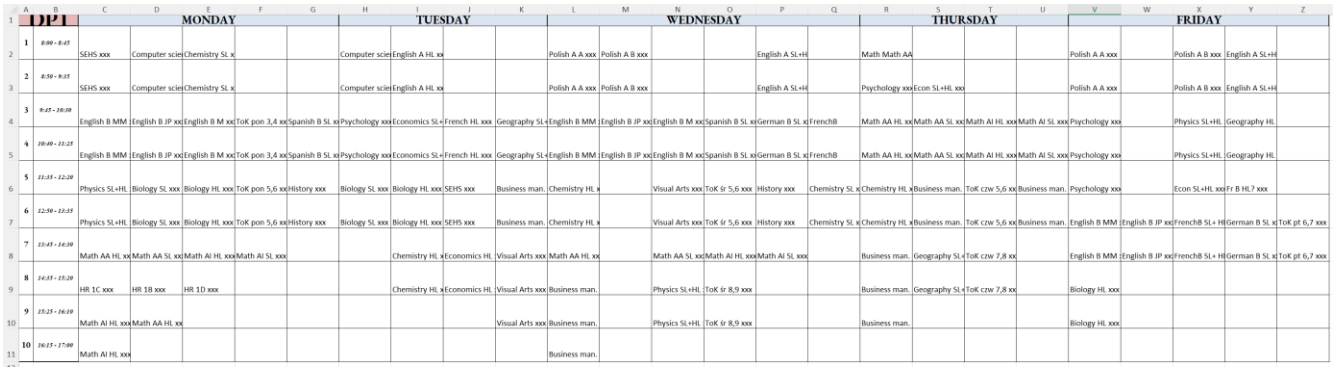
Section C

Class	Upload file	
Upload file	Attributes	Window: with a possibility to upload file
	Methods	UploadFile(): user selects file SaveFile(): program saves selected file

[Tab. 8] UML Diagram for Upload file section

Output data

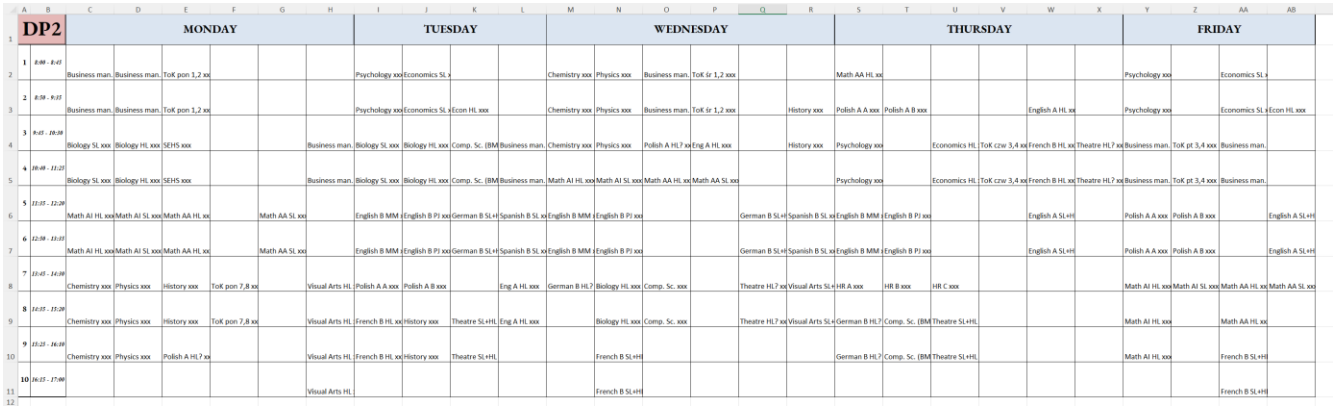
The program assigns classrooms to classes, output example:



DP1		MONDAY						TUESDAY						WEDNESDAY						THURSDAY						FRIDAY					
1	8:00 - 8:45	SEHS xxx	Computer scien	Chemistry SL x				Computer scien	English A HL xx					Polish A A xxx	Polish A B xxx			English A SL+HI		Math Math AA						Polish A A xxx			Polish A B xxx	English A SL+HI	
2	8:50 - 9:35	SEHS xxx	Computer scien	Chemistry SL x				Computer scien	English A HL xx					Polish A A xxx	Polish A B xxx			English A SL+HI		Psychology xxx	Econ SL+HL xxx					Polish A A xxx			Polish A B xxx	English A SL+HI	
3	9:45 - 10:30	English B MM	English B JP xx	English B M xx	ToK pon 3,4 xx	Spanish B SL xx		Psychology xxx	Economics SL+	French HL xxx	Geography SL+			English B MM	English B JP xx	English B M xx	Spanish B SL xx	German B SL x	FrenchB	Math AA HL xx	Math AA SL xx	Math AI HL xxx	Math AI SL xxx			Psychology xxx			Physics SL+HL	Geography HL	
4	10:40 - 11:25	English B MM	English B JP xx	English B M xx	ToK pon 3,4 xx	Spanish B SL xx		Psychology xxx	Economics SL+	French HL xxx	Geography SL+			English B MM	English B JP xx	English B M xx	Spanish B SL xx	German B SL x	FrenchB	Math AA HL xx	Math AA SL xx	Math AI HL xxx	Math AI SL xxx			Psychology xxx			Physics SL+HL	Geography HL	
5	11:35 - 12:20	Physics SL+HL	Biology SL xxx	Biology HL xxx	ToK pon 5,6 xx	History xxx		Biology SL xxx	Biology HL xxx	SEHS xxx	Business man.			Chemistry HL x		Visual Arts xxx	ToK śr 5,6 xxx	History xxx	Chemistry SL x	Chemistry HL x	Business man.	ToK czw 5,6 xx	Business man.			Psychology xxx			Econ SL+HL xxx	Fr B HL? xxx	
6	12:30 - 13:15	Physics SL+HL	Biology SL xxx	Biology HL xxx	ToK pon 5,6 xx	History xxx		Biology SL xxx	Biology HL xxx	SEHS xxx	Business man.			Chemistry HL x		Visual Arts xxx	ToK śr 5,6 xxx	History xxx	Chemistry SL x	Chemistry HL x	Business man.	ToK czw 5,6 xx	Business man.			English B MM	English B JP xx	French B SL+ HI	German B SL x	ToK pt 6,7 xxx	
7	13:45 - 14:30	Math AA HL xx	Math AA SL xx	Math AI HL xxx	Math AI SL xxx				Chemistry HL x	Economics HL	Visual Arts xxx			Math AA HL xx		Math AA SL xxx	Math AI HL xxx	Math AI SL xxx		Business man.	Geography SL+	ToK czw 7,8 xx				English B MM	English B JP xx	French B SL+ HI	German B SL x	ToK pt 6,7 xxx	
8	14:35 - 15:20	HR 1C xxx	HR 1B xxx	HR 1D xxx					Chemistry HL x	Economics HL	Visual Arts xxx			Business man.		Physics SL+HL	ToK śr 8,9 xxx			Business man.	Geography SL+	ToK czw 7,8 xx				Biology HL xxx					
9	15:25 - 16:10	Math AI HL xxx	Math AA HL xx								Visual Arts xxx			Business man.		Physics SL+HL	ToK śr 8,9 xxx			Business man.						Biology HL xxx					
10	16:15 - 17:00	Math AI HL xxx												Business man.																	

[Fig. 34] Output Excel file DP1

Both for DP1 and DP2



DP2		MONDAY							TUESDAY					WEDNESDAY						THURSDAY							FRIDAY					
1	8:00 - 8:45	Business man.	Business man.	ToK pon 1,2 xx					Psychology xxx	Economics SL x				Chemistry xxx	Physics xxx	Business man.	ToK śr 1,2 xxx			Math AA HL xx							Psychology xxx		Economics SL x			
2	8:50 - 9:35	Business man.	Business man.	ToK pon 1,2 xx					Psychology xxx	Economics SL x	Econ HL xxx			Chemistry xxx	Physics xxx	Business man.	ToK śr 1,2 xxx		History xxx	Polish A A xxx	Polish A B xxx			English A HL xx			Psychology xxx		Economics SL x	Econ HL xxx		
3	9:45 - 10:30	Biology SL xxx	Biology HL xxx	SEHS xxx				Business man.	Biology SL xxx	Biology HL xxx	Comp. Sc. (BM	Business man.		Chemistry xxx	Physics xxx	Polish A HL? xx	Eng A HL xxx		History xxx	Psychology xxx		Economics HL	ToK czw 3,4 xx	French B HL xx	Theatre HL? xx	Business man.	ToK pt 3,4 xxx	Business man.				
4	10:40 - 11:25	Biology SL xxx	Biology HL xxx	SEHS xxx				Business man.	Biology SL xxx	Biology HL xxx	Comp. Sc. (BM	Business man.		Math AI HL xxx	Math AI SL xxx	Math AA HL xx	Math AA SL xxx			Psychology xxx		Economics HL	ToK czw 3,4 xx	French B HL xx	Theatre HL? xx	Business man.	ToK pt 3,4 xxx	Business man.				
5	11:35 - 12:20	Math AI HL xxx	Math AI SL xxx	Math AA HL xx		Math AA SL xxx			English B MM	English B PJ xx	German B SL+	Spanish B SL xx		English B MM	English B PJ xxx			German B SL+	Spanish B SL xx	English B MM	English B PJ xx			English A SL+H		Polish A A xxx	Polish A B xxx		English A SL+H		
6	12:50 - 13:35	Math AI HL xxx	Math AI SL xxx	Math AA HL xx		Math AA SL xxx			English B MM	English B PJ xx	German B SL+	Spanish B SL xx		English B MM	English B PJ xxx			German B SL+	Spanish B SL xx	English B MM	English B PJ xx			English A SL+H		Polish A A xxx	Polish A B xxx		English A SL+H		
7	13:45 - 14:30	Chemistry xxx	Physics xxx	History xxx	ToK pon 7,8 xx		Visual Arts HL		Polish A A xxx	Polish A B xxx		Eng A HL xxx		German B HL?	Biology HL xxx	Comp. Sc. xxx		Theatre HL? xx	Visual Arts SL+	HR A xxx	HR B xxx	HR C xxx				Math AI HL xxx	Math AI SL xxx	Math AA HL xx	Math AA SL xxx		
8	14:35 - 15:20	Chemistry xxx	Physics xxx	History xxx	ToK pon 7,8 xx		Visual Arts HL		French B HL xx	History xxx	Theatre SL+HL	Eng A HL xxx			Biology HL xxx	Comp. Sc. xxx		Theatre HL? xx	Visual Arts SL+	German B HL?	Comp. Sc. (BM	Theatre SL+HL				Math AI HL xxx		Math AA HL xx			
9	15:25 - 16:10	Chemistry xxx	Physics xxx	Polish A HL? xx			Visual Arts HL		French B HL xx	History xxx	Theatre SL+HL				French B SL+HI					German B HL?	Comp. Sc. (BM	Theatre SL+HL				Math AI HL xxx		French B SL+HI			
10	16:15 - 17:00						Visual Arts HL								French B SL+HI													French B SL+HI			

[Fig. 35] Output Excel file DP2

where *xxx* is a prescribed classroom.

Schedule for developing the program

The program is divided into four parts, the main grid and three sections, which will be developed in presented order:

Main Grid	Main Grid with buttons that transfer the user to a proper window and the rest of the transition buttons
Section C	Upload file option, this section feeds the algorithm with data, so it is developed early
Section A	Add preferences, to gather all data regarding teachers and classrooms, as program must know them to feed classroom assigning algorithm
Main algorithm	Classroom assigning algorithm, as this corresponds to whether my program fulfils its main functionality
Section B	Download schedule, as it is the prior purpose of the program
Section B	See specific hours, which is another requirement of the client

Test plan

Activity:	Criterion for success	Action tested	Method of testing
Main grid and transitions	Program's functionality	Buttons	Check whether all buttons work properly and transfer user to proper window
		Exit button	Check whether program is closing
Section A	Criterion 2	Adding teacher	Check whether the program does not allow for improper data type, and adds the teacher to program memory
	Criterion 2	Remove teacher	Check whether the program removes the teacher from program memory
	Criterion 4	Edit teacher	Check whether the program does not allow for improper data type and saves the changes in program memory
	Criterion 3	Edit classroom's size	Check whether the program does not allow for improper data type and saves the size of the classroom in program memory
	Criterion 3	Edit classroom's screen availability	Check whether the program edits and saves the changes of the screen availability in program memory

Section B	Criterion 7	Downloading schedule	Check whether the program creates an Excel file with assigned classrooms
	Criterion 6	Created schedule	Check whether program did not make an assignment error
	Criterion 5	Schedule and the buttons of each hour	Check whether program transfers user to the proper window
	Criterion 5	Each hour cell	Check whether the data written in the table corresponds the one in created schedule
Section C	Criterion 1	Uploading file	Check whether uploaded file is stored in proper array
	Program’s functionality	Storing gathered data	Check whether program stores the data collected and applies it to class tasks.
	Criterion 4	Schedule creation	Check whether program assigned classrooms to classes according to earlier defined guidelines, and whether the assignment is valid

[Tab. 9] Test plan schedule plan

Extensive writing word count: 222