



Student Timetable Generator

Creating and testing alternative designs

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STOPWATCH

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Introduction

We took this opportunity to test the ideas we came up with for our timetable generator. As we are only developing it to ease and speed up the process of setting up students' timetables, we will be focusing mainly on efficiency and ease of use. We took the three best designs and gave low-fidelity prototypes thereof to our lab-rats.



Basis

The Product

Our product will be used by a wide variety of students representing almost all the faculties of the University of Pretoria, and maybe other universities as well. Our main objective is to find the most efficient and user-friendly way of representing our interface. As it is a common task done by students we want them to feel familiar with key-aspect of the interface, for example the layout of the timetable should reflect the timetables they create themselves.

The Stakeholder Group

We've carefully selected our stakeholder group to be as diverse as possible to support and indicate the opinions and experience held by the public. The main criteria differentiating students are the faculties they are enrolled in, as different fields attract different kinds of people. Our group represent the following faculties: Natural and Agricultural Sciences, Economic and Management Sciences, Engineering, the Built Environment and Information Technology and Economic and Management Sciences. This ensures a variety of expertise in our group.

The Designs

Our focus

We want the users to be familiar and comfortable with the interface. By using the default layout of a timetable, users can easily create mental models to make them at ease when interacting with the interface. Another cognitive aspect we like to promote is computational offloading, as the application will do all the thinking. We also like users to be able to generate the timetable that best suits them, therefore we give them the ability to choose from 5 different algorithms (Standard, Early, Late, Random, Sequential) to generate their timetable. We came up with three main prototypes which we thought had the potential to help us reach our goal.

The prototypes

Prototype #1: Application => (Attachment 1-Figure 1.1)

The user can use this application without navigating to another frame. All the categories are grouped together: The subjects together with the groups they represent, the display of the timetable, and the type of timetable together with the main button. The first thing the user will focus on is the timetable, the user will quickly figure out that he/she needs to add courses, choose the type of timetable, and generate his/her personal timetable.

Prototype #2: Wizard => (Attachment 1-Figure 1.2)

We assume that novice users are more comfortable using step-by-step wizards than having to do all the thinking on another interface. We made the wizard as simple as we could.

1. Name your timetable and download the timetable database if you want to.
2. Add the courses/modules/subjects you are currently enrolled in for this semester.
3. [Optional] Add, view, edit, remove groups from chosen courses.
4. [Optional] Editing group times: Click on the cell in the table that represents the day and time you'd like to insert/remove.
5. Select the type of timetable that best suits you.
6. View the generated timetable and save it.

Prototype #3: Simpler/Cleaner version of Prototype #1 => (Attachment 2-Figure 1.3)

We experimented with the extensive use of dropdown list boxes. This enabled us to save a lot of space ensuring a neat and non-clustered interface. The user can easily add new modules, select these modules and edit/view their groups' timetables. We also added a more complete main menu, with edit and help functions. This interface will be ideal for the user who is comfortable with the process and would like to speed it up even more.

Testing the prototypes

Representation

We made use of low-fidelity prototyping by using paper-based prototypes in the form of Storyboarding and Sketching, representing the layouts of our prototypes. We tested Prototype #2 by drawing a simple storyboard displaying the sequence of the wizard. The six phases are clearly represented and our stakeholder group understood the graphic representation perfectly. We sketched Prototype #1 and #3 as we emphasized on getting feedback on the look and feel. We sketched the full interface of each to give users the illusion of working with it on a screen in front of them. This led to some interesting findings.

User feedback

We attached a questionnaire to the prototypes. Focusing on evaluating our users' emotional responses to the interfaces. We wanted to compare our findings, therefore we made use of the Likert Scale assigning points to each answer. We also had open ended questions for Prototype #2 to get more in-depth feedback on the wizard. Users were encouraged to have a good look at each prototype and try to simulate their method of working with each one. After being familiarized with each prototype users had to complete the questionnaire and also rank the different prototypes to their liking.

User feedback-analysis

We scored each question based on the following: Great:+2, Good:+1, Neutral:0, Bad:-1, Awful:-2.

User	Prototype #1	Prototype #2	Prototype #3
1) Marnus Heunis	-2	11	10
2) Ricus Papp	4	6	11
3) Henri van Staden	-1	12	10
4) Pieter Cronje	-9	10	9
5) Andrew Barnes	0	11	10
6) Francois Strijdom	5	10	12
Total	-3	60	62

User rankings of the 3 prototypes:

- | | |
|----------------------|-------|
| 1) Marnus Heunis | 2,3,1 |
| 2) Ricus Papp | 3,2,1 |
| 3) Henri van Staden | 2,3,1 |
| 4) Pieter Cronje | 2,3,1 |
| 5) Andrew Barnes | 2,3,1 |
| 6) Francois Strijdom | 3,2,1 |

Based on this the combined order of prototypes is:

- | | | |
|-----------------|-----------------|-----------------|
| 1) Prototype #2 | 2) Prototype #3 | 3) Prototype #1 |
|-----------------|-----------------|-----------------|

Conclusion

The analysis we did on the user feedback gave us valuable information we can use to prepare our final prototype. We found that Prototype #1 was too clustered and that users were confused as to where to begin. This design got the worst rating and we won't be giving it another thought. Then Prototype #2 and #3 were head to head in the ratings and the rankings. Prototype #3 received the highest score in the questionnaire, but Prototype #2 were most desired. This is because most users like the way of being instructed to do things and follow the flow of a wizard than having to figure out the process themselves. Then you get your more experienced users, who voted for Prototype #3, they would rather do it themselves as it saves time.

From this we concluded that we will be integrating these two prototypes, as it is common for applications to have their own wizard. This will enable new users to be comfortable with creating their timetable by using the wizard and as they get more familiar with the application and how it works they have the ability to use the default form.

Attachment 1

<<If the quality of the images is bad, please refer to the attached full page images we handed to our user group>>

PROTOTYPE #1 APPLICATION LAYOUT

FILE

Save Load Quit

SUBJECTS

- ☐ COS 212
- ☐ COS 216
- ☐ INF 272
- ☐ INF 354
- ☐ IMY 310
- ☐ COS 222

NEW 101 ADD

SUBJECTS GROUPS

- ☐ GROUP 1
- ☐ GROUP 2
- ☐ GROUP 3

REMOVE ADD

TIMETABLE

PAY TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
07:30					
08:30					
09:30					
10:30					
11:30					
12:30					
13:30	COS 212(1)	INF 272(1)			
14:30		INF 272(1)		COS 216(2)	IMY 310(3)
15:30		INF 272(1)			
16:30	COS 216(1)				
17:30				COS 212(3)	

PREVIEW OF EDITING GRID

PREVIEW OF GENERATED TIMETABLE

☐ STANDARD
 ☐ LATE
 ☐ EARLY
 ☐ RANDOM
 ☐ SEQUENTIAL

GENERATE TIMETABLE

Figure 1.1:

Prototype #1

Storyboard of wizard

1.

NEW TIMETABLE

Name:

Download Timetable File

Back Quit Next

2.

NEW TIMETABLE

Courses

Course name: Remove Add

List of selected courses:

Back Quit Next

3.

NEW TIMETABLE

Courses' Groups

Course name: Select Course

Course's groups:

ADD Edit Times Remove

Back Quit Next

4.

NEW TIMETABLE

Edit Group's Times

Course name: <Course Name>

Group name: <Group Name>

Tip: Click on cells to insert/delete "X" means there is currently a class at that timetable.

	Mon	Tue	Wed	Thu	Fri
7:30					
8:30					
9:30					
10:30					
11:30					
12:30					
13:30					
14:30					
15:30					
16:30					
17:30					

Back Quit Next

5.

NEW TIMETABLE

Timetable Type

Select the type of timetable:

- ☒ Standard
- ☐ Choose latest classes
- ☐ Choose earliest classes
- ☐ Randomize
- ☐ Sequential

Back Quit Next

6.

VIEW TIMETABLE

	Mon	Tue	Wed	Thu	Fri
7:30					
8:30					
9:30					
10:30					
11:30					
12:30					
13:30					
14:30					
15:30					
16:30					
17:30					

Save as image Save as file

Back Quit Next

Evaluation

Please take a moment to give us feedback on the prototype...

What are your thoughts on the look and feel?

Do you know your goal in each phase? If not, please explain.

What improvements would you suggest, focusing on the layout?

What other improvements would you suggest?

We thank you for taking the time!

Signed _____ by _____ on _____

Figure 1.2:

Prototype #2

Attachment 2

PROTOTYPE #3

File Edit Help

LIST OF MODULES ADDED TMY310 ▾

GROUPS FOR SELECTED MODULE GROUP1 ▾

ADD MODULE FROM DATABASE CIL121 ▾

TIMETABLE

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
07:30					
08:30					
09:30	X				
10:30					
11:30					
12:30		X		X	
13:30					
14:30					
15:30					
16:30					
17:30					

SELECT TYPE OF TIMETABLE STANDARD ▾

VIEW TIMETABLE

Figure 1.3:
Prototype #3