Overview of methods and existing solutions for task order generation

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Abstract—**This is a review paper related to the problem of working time planning and its automatic prioritization. The paper presents an overview of theoretical methods and existing facilities, as well as a comparison of properties of existing software implementations according to selected criteria.**

Keywords—***Application, Task, Priority, Planning, Evaluation, Comparison, Automation, Pomodoro.***

I. Introduction

People accumulate obligations around them over time. They frequently underestimate their capacity and assign the wrong priorities to their duties, which results in poor time management. Minor errors become too many significant issues future. These issues eventually impact an individual's mental health and ruin his life.

My study led to an examination of current programs, which would aid in helping individuals schedule their time properly and help them prevent such errors.

II. Analysis of latest research and publications

This research based on some of other publications. One of them is more psychological than techical. Article [1] is discussed about efficiency of people with their work. It described how their procrastinating and how to solve this problem. This study explained how planned and predefined tasks are more productive in contradistinction to planning tasks on the go.

The publication [2] describes how important planning assistants are in the work. It is important for a person to see his graph in front of him visualized in beautiful graphs and colors. It is crucial on a psychological and a physical level both. I analyzed such assistants in my work.

It is important to maintain a balance between life and work. Take breaks, rest, do not work overtime is best practices. Ideally, planning assistants should take this into account and provide guidance. More detailed about work-life balance are published in work [3].

Some of criteria based on research [4]. Interaction of three core aspects to a personalized scheduling task are described here.

III. Evaluation criteria of existing solutions

I analyzed and tested selected apps to develop assessment criteria. It will be further explained. These criteria include the following end-user capabilities:
- the possibility of keeping a notebook for personal use;
- the possibility of creating a task for execution;
- the possibility of editing the task;
- the possibility of deleting the task;
- the possibility of adding a description of the task;
- the possibility of giving priority to the task;
- the possibility of adding a date from which it would be convenient to complete the task;
- the possibility of adding a date by which the task must be completed;

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- the possibility of adding an estimated duration of the task;
- the possibility of creating a duplicate task;
- the possibility of changing the status of tasks;
- the ability to display completed tasks;
- the possibility of granting the status "Completed" for the task;
- the possibility of granting the status "Scheduled" for the task;
- the possibility of granting the status "Active" for the task;
- the ability to sort tasks by priority;
- the ability to start performing a task that will last a clearly defined period;
- the ability to pause a task that should last a clear period;
- the possibility of a built-in Pomodoro time management system;
- the possibility of automating the selection of the most successful time to perform the task.

IV. ANALYSIS OF COMPETITORS

Three time-management tools have been selected for this analysis. I choose the Todoist as the first tool for comparison among them [5]. Although this tool is relatively simple to use, it is not without flaws.

The application is exactly a notebook for maintaining personal work, not for a team, as most comparable apps are. If you meet the requirements outlined above. You may use it to carry out common work procedures on jobs like creation, editing, and deletion. You can provide an additional description and a priority ranging from 4 to 1 when creating a task. The program's first flaw is that there is only the option to create a task for a certain day. It is not possible to specify a date from which it would be suitable to start the activity. Additionally, neither the option to automatically choose a day for the work nor the opportunity of establishing a deadline for completion of this activity are present. It is important to note that the program's duties are simple to administer, that the user-friendly interface is comfortable and clear, that duplication features are available, and that the status may be changed. The ability to display tasks in this program, both finished and planned, is nicely setup, but sadly, there is no way to change the task's state while it is still in process. Additionally, there is automatic sorting. Another drawback is that it is hard to keep track of how long a task takes.

The Nifty program was the following research initiative [6]. A complicated and loaded software with few functionalities compared to rivals. You need to spend a lot of time in the application to learn to use them. Although there is a distinct component for personal projects, this program is largely focused on collaboration. The typical ability to add, amend, and remove tasks is included. Surprisingly, no feature would let the work and its benefit have a description included. The program offers a variety of choices for managing time and dates, scheduling upcoming tasks, and keeping track of accomplished tasks. This is further demonstrating that this work application is more geared toward teamwork. Strangely, finished tasks don't displayed anywhere and just vanish, no dialog boxes signal their completion. The task status is the same as it was in the previous application however, this program does not allow you to arrange jobs by priority, which is a major drawback. The application also allows you to begin a task that will last for a predetermined period.

The last one for this study was the Worksection program [7]. The program is very rich in functionality. The intriguing aspect is that you can put the first task in this application with values from 1 to 10. It does not contain many disadvantages. Among the key ones - there is a missing function of creating a duplicate. There is no built-in Pomodoro time management technique just like in other programs. These techniques would allow you to increase your productivity by reducing the influence of external and internal distractions.

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V. RESULTS

I summarized the results in a table that quickly describes whether this or other functional possibilities are present or not to make the data easier to use.

Table 1 - Summary table of the presence of functionality in the studied implementations according to the criteria

№	Criteria	Todoist	Nifty	Worksection
1.	The possibility of keeping a notebook for personal use	+	+	+
2.	Ability to create a task to be performed	+	+	+
3.	Ability to edit the task	+	+	+
4.	Ability to delete the task	+	+	+
5.	The possibility of adding a description of the task	+	−	+
6.	Ability to prioritize a task	+	−	+
7.	The possibility of adding a date when it would be convenient to complete the task	−	+	+
8.	Ability to add a date by which the task must be completed	+	+	+
9.	The possibility of adding an estimated duration of the task	−	−	+
10.	Ability to duplicate a task	+	+	−
11.	Ability to change the task status	+	+	+
12.	Ability to display completed tasks	+	−	+
13.	Ability to provide the status "Completed" for the task	+	+	+
14.	Ability to provide the status "Planned" for the task	+	+	+
15.	Ability to provide the status "Active" for the task	−	−	+
16.	Ability to sort tasks by priority	+	−	+
17.	The ability to start a task that will last for a clearly defined period	−	+	+
18.	Ability to pause a task that should last for a specified period	−	−	−
19.	Possibility of built-in Pomodoro time management technique system	−	−	−
20.	The possibility of automating the selection of the most successful time to perform the task	−	−	−

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The Worksection application offers the most advantages and hence the fewest drawbacks, according to the as outlined below table (16 advantages, 4 disadvantages). Among the examined applications, the Todoist program comes in second (pluses: 13, minuses: 7), and Nifty comes in last (pluses - 11, minuses - 9).

It is important to note that none of the examined applications included the features of "automating the selection of the optimal time to accomplish the task" or "built-in system of Pomodoro time management approach.". Therefore, these tools make it easier for the user to manage his duties and evaluate his time, but they do not do it automatically for the user.

VI. FUTURE RESEARCH

Future research might concentrate additionally attention on studies of fault tolerance, uptime, and performance of diverse applications. It is also feasible to divide this topic's mobile application investigation into different research. Future works can analyze how well these programs adhere to the norms and standards might be crucial.

VII. CONCLUSION

I thoroughly examined several already existing solutions, including Nifty, Todoist, and Worksection. I analyzed the requirements to develop an application for generating the order of execution of planned tasks. I concluded that the current solutions still require some improvements because each has specific drawbacks. The end user may find it to be very significant.

No app implements built-in progressive methods of time management or some optimization of work.

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