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TaskBuddy: A Smart Task Scheduling and Reminder Mobile Application

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***Abstract* - The Smart Task Scheduler and Reminder App is a proposed cross-platform mobile application designed to help users efficiently manage their time and daily activities. It enables users to create personalized schedules or choose automatically generated ones that suggest optimal timings based on deadlines, task importance, and available free time. By providing timely reminders and a flexible, user-friendly interface, the app aims to enhance productivity, reduce stress, and promote a balanced routine. It focuses on adaptability, allowing users to modify schedules according to their preferences while maintaining overall efficiency and organization.**

Most existing task management systems depend heavily on manual scheduling and assume users already have fixed calendars. They often lack intelligent adaptability, dynamic rescheduling, and awareness of users' real free time or changing priorities. To address these limitations, the proposed system integrates automation and intelligent task allocation. The app will be developed using Flutter for cross-platform compatibility, Firebase or SQLite for data management, and a Python (Flask/FastAPI) or Dart-based backend for implementing scheduling algorithms. These technologies together will enable real-time synchronization, automated reminders, and smart task prioritization, providing a practical and efficient solution for modern time management.

Keywords: Task Scheduling, Time Management, Productivity, Flutter, Intelligent Scheduling, Mobile Application.

I. INTRODUCTION

In today's world, the evolution of technology as well as the usage of smartphones affects individuals' attitude toward everyday life activities. Currently, people can hardly imagine their lives without digital tools which enable them to organize their tasks while studying or working. Considering numerous responsibilities of each person in his/her daily routine, proper time management is vital since it enables people to perform all the tasks effectively and efficiently, save time, and obtain desirable outcomes.

Time management definition may be described as the way one manages time and activities such that everything is done effectively. This simply means that proper time management enables students to manage their assignments effectively. Employers will equally face difficulties as far as management of time, work activities, and attendance of meetings is concerned. Proper time management will therefore go a long way in ensuring success and avoiding delay.

At the moment, there is a large variety of applications intended to help people manage their tasks. In other words, such apps enable people to plan their activities. Nevertheless, the process of task management should include not only a list of tasks but also an understanding of task priorities, estimation of the time needed to complete tasks, and allocation of appropriate time slots based on the existing schedule. Many users find it hard to perform these operations manually due to their dynamic nature.

On the other hand, contemporary lifestyle tends to be filled with various interruptions, changes in priorities, and unpredictability in terms of workload. As a consequence, users tend to find it hard to keep their schedule constant in time. The inefficiency of scheduling and allocation of time leads to inefficient use of time resources and additional cognitive load on users. Therefore, the need for systems that can help users manage their tasks becomes evident.

Recently, many innovations have been achieved in the field of mobile applications and intelligent computing. It makes it possible to apply automation and data-based decision-making to the task management problem. In addition, user-centric approaches allow designing an application that could provide assistance to its users in planning and scheduling their activities in a more efficient way.

Consequently, there is an increasing demand for smart and intuitive task management tools that would enable users to manage their daily tasks more effectively. These task management systems could help improve efficiency, lower stress levels, and encourage effective time management strategies.

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II. LITERATURE SURVEY

The importance of task management and scheduling has been greatly acknowledged owing to its usefulness in boosting the efficiency and wellbeing of users. With growing complexity in daily activities, a number of initiatives have been undertaken to develop solutions that assist users in managing their tasks and time. Various types of software have been developed in this context ranging from basic task management applications to advanced intelligent scheduling systems.

Several well-known task management software applications including Todoist, Trello, and Asana provide basic services such as creating, categorizing, and notifying about tasks. They prove to be highly efficient in task organization and teamwork. But their application is confined only to listing tasks and monitoring their status and does not include any form of intelligent scheduling. The user needs to allocate time to individual tasks and create his or her own schedule.

The importance of the impact that time management can have on enhancing productivity levels and reducing stress levels has been thoroughly studied by many academics. For example, in a literature review conducted by Aeon et al., it was noted that proper organization is crucial in attaining higher productivity levels and better health status. Thus, effective task organization does not mean arranging assignments in order but involves developing and executing plans properly.

Regarding task scheduling and resources allocation, Chen et al. developed some task scheduling strategies that included analysis of intertask dependencies. Such strategies proved themselves to be extremely beneficial in case of distributed computing in which the optimal resource utilization becomes crucial. Another type of task scheduling strategies, based on learning models, were proposed by Liu et al.

AI technology applied in education includes AI-based time and task planners that aid students in managing their work more effectively. They make use of intelligent technologies that can offer personalized recommendations and foster students' self-regulation abilities. Furthermore, Khiat confirmed that applying time management tools boosts learning results due to adaptation.

The next application of computational intelligence is the problem of scheduling complex activities. Pillay and Qu examined various approaches to scheduling, such as genetic algorithm, simulated annealing, and constraints satisfaction technique, in order to develop an educational timetable. This methodology is highly effective for dealing with complex issues and helps generate optimum schedule; nevertheless, it is quite complicated computationally.

The area of Automated Planning & Scheduling has been extensively researched within the scope of artificial intelligence. Russell and Norvig provided a thorough review of planning algorithms which generate a sequence of actions based on certain conditions. This system forms a basis for designing intelligent scheduling models.

Moreover, recent researches focus on intelligent scheduling optimization algorithms taking into consideration such parameters as time restrictions, resources allocation and customer satisfaction. Wang et al. point to the importance of adaptive and modular scheduling models which can operate successfully in real conditions.

But despite the mentioned improvements, there is an evident gap between theoretical research and practical application in case of personal productivity applications. Existing solutions usually either too complicated or lack functionality of intelligent task scheduling tools. Available commercial applications rely on manual schedule planning approach, whereas intelligent task scheduling solutions have so far been applied only in certain areas of activity.

Hence, there is a demand for development of solution, combining the convenience of currently available applications and advantages of intelligent task scheduling. This paper proposes TaskBuddy system, providing intelligent task scheduling and duration estimation tools.

III. RELATED WORK

Task management and scheduling have received substantial attention from academia and practice alike. The need to increase productivity and efficient time management has made many researchers explore new ways of supporting users in task management and scheduling.

There are many task management software programs available in the market like Todoist, Trello, Asana, etc. which provide facilities like creating a task list, categorizing them, and even sending reminders to complete them. Such tools have widely been employed by humans not only personally but also in professional terms to assist them in coordinating themselves with others in a more effective manner. This tool may prove helpful in creating a to-do list, listing all the activities in accordance with their priority. But these task management applications lack advanced scheduling algorithms. The user has to create and schedule his/her own task manually which may be inefficient at times. It is not an easy job to manage several tasks by allocating the appropriate time slot to each one.

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The researchers have extensively studied the benefits of planning one's time. Aeon et al. noted that proper time management techniques could greatly improve task execution rates and help alleviate stress in academic and professional settings.

Specifically, Chen et al. discussed the idea of dependency-aware scheduling approaches which take into account the relations between tasks and constraints associated with each task. This approach is especially useful in distributed computing as it allows one to execute the necessary tasks in the most efficient order. In addition, Liu et al. presented their findings regarding machine-learning based approaches which are able to take into account behavioral patterns of users to improve task scheduling.

As for applications in education, Haderer and Ciolacu developed a system based on AI that allowed for better task and time planning by students in order to manage their academic burden effectively. Such intelligent systems were found to help improve self-regulated learning. Furthermore, Khiat found that using automated time-management tools was able to help students learn better by providing them with feedback and guidance.

Another direction in the application of computational intelligence is concerned with applying various optimization approaches to solving scheduling-related issues. Specifically, according to Pillay and Qu, different approaches may be applied including genetic algorithms, simulated annealing, or constraint satisfaction approaches. While such approaches proved to be effective, they tend to be rather complicated to use for simple personal task management systems.

Moreover, studies on automated planning and scheduling systems, which have been elaborated by Russell and Norvig, have served to develop theories and models for intelligent systems that can produce the best sequences of actions based on limitations. These theories underscore the role of decision-making strategies in optimizing efficiency and resources.

However, despite the existence of these intelligent systems and studies on them, many solutions available today lack actual implementations for ordinary users or involve complicated setups that restrict their accessibility. Many business software solutions center around tasks lists and alerts, whereas scheduling methods are predominantly used in computer science and industry.

IV. PROPOSED SYSTEM

The proposed system, TaskBuddy is an intelligent task scheduling and reminding mobile application intended to help users schedule their daily activities. The main idea behind the development of the system is to come up with a more effective approach to intelligent task organizing, combining task management, scheduling, and reminders into one user-friendly system.

The main goal of developing the system is to facilitate users' daily routine while providing them with intelligent assistance at all stages of task organizing process. As opposed to other traditional applications for task management, this system integrates intelligent mechanisms of estimating time required to perform a particular task and generating an optimal schedule according to user-specified requirements.

Tasks in the proposed system are organized according to certain parameters that allow creating more effective schedule for completing various tasks. Users can add various tasks specifying such details as task title, its category, and priority level as well as deadline of accomplishment. These parameters help organize tasks in a more structured way.

One of the essential components of the new system is a rule-based method of determining the task duration. In other words, it means analyzing different features of the task and giving an estimate according to certain rules. Different categories of tasks, their priorities, and relevant keywords from their descriptions are analyzed for making assumptions about how long they will take to complete. Such an approach allows the user to get rid of both under- and overestimating task duration, making it easier to plan.

Also, one of the most helpful elements of the new system is its smart scheduler. It will help the user to automatically schedule all of his or her pending tasks depending on free time, task priorities, and their deadlines. Tasks will be ranked by their priority levels, thus giving an opportunity to allocate more time for more urgent actions.

The system is equipped with a daily schedule generation function that displays activities in a time-line format for ease of comprehension and implementation. The function makes it possible for individuals to plan their day and adhere to the schedule without having to organize their tasks manually. Furthermore, the software is endowed with a rescheduling component, which allows for changes in the schedule in case some tasks have not been completed or new ones have been introduced.

Another way in which the system ensures convenience is through a reminder and alerting component that notifies users of the approaching deadlines. The notifications occur according to the assigned time slots.

Further, the proposed system will have a feature of data storage and persistence where users' data and information

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regarding the tasks will be stored and saved during different sessions. The use of local storage methods will be applied to make sure that application data is stored and used effectively by the system, such that it does not depend on internet connection.

Also, there is an inclusion of a statistics and productivity monitoring module within the application. This helps in ensuring that users analyze their performance as far as task completion and productivity is concerned. From the analysis, the user is able to find out ways that he or she could do things differently to improve.

Finally, from all the features discussed above, the proposed application brings about a system that combines all these aspects in managing tasks effectively.

V. SYSTEM ARCHITECTURE

TaskBuddy system architectural design incorporates modularity, scalability, and efficiency. In designing its architectural structure, the system adopts the layered architecture strategy. Layered Architecture splits up the software application into multiple layers. This would enable upgrading in the future and make it flexible and easy to maintain. The architecture of the whole system in figure 1 below depicts this concept.

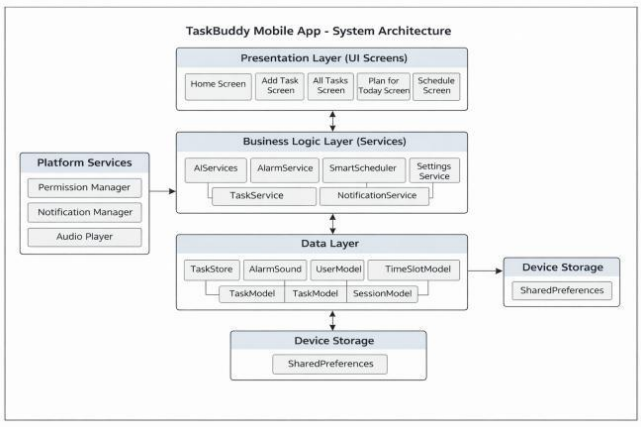

Figure 1: System Architecture of TaskBuddy

Four major layers form the entire architecture of this system, which includes: Presentation Layer, Business Logic Layer, Data Layer, and Platform Services Layer. All these layers have different roles and communicate with one another for the efficient operation of the application.

A. Presentation Layer

The Presentation Layer represents the graphical interface through which the users can interact with the application system. All the input from users gets captured in the presentation layer and all processed data is displayed to the user in an intelligible manner. This presentation layer has been designed using the Flutter framework.

The Presentation Layer involves several screens like the Home Screen, Task Management Screen, Add Task Screen, Schedule Screen, and Settings Screen among others. The purpose of each screen is different and enables the users to utilize the features of the application effectively. The Home Screen gives the overview of all tasks and schedule, while the Task Management Screen helps users to add, edit, and delete tasks. In addition, the Schedule Screen will show all daily plans generated through a timeline.

All user inputs related to task description, task priority levels, and available time are captured using this layer and then transferred to the Business Logic Layer.

B. Business Logic Layer

The Business Logic Layer represents the heart of the TaskBuddy solution and performs data processing, implements application logic, and coordinates communication between other layers/components of the software. The Business Logic Layer includes a number of modules that perform specific tasks/functions of the overall solution.

First of all, one should mention the Task Service component of the Business Logic Layer, which performs all actions concerning the management of tasks, including creation, editing, and deletion of tasks. Also, this module guarantees that data about each task is processed correctly after passing validation.

Rule-Based Task Duration Estimation Module represents another important component of this layer. The main purpose of this module is analyzing the features of the task and estimating its duration based on the information such as category, keyword, and priority of the task.

This module takes care of developing the schedules in an efficient manner by assigning tasks to various time slots. The task assignments will depend upon several criteria, including the task's priority, deadlines, and the free time as specified by the user.

Moreover, this layer includes the implementation of the Notification Service module to handle reminder messages. These reminders will be scheduled according to the schedule timing of each task.

This business logic layer plays the role of an intermediary layer between the user and database, which means that it manages all operations accurately and effectively.

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C. Data Layer

The Data Layer is tasked with data storage, retrieval, and management. Various types of data models are included in the data layer, namely Task Model, User Model, Session Model, and Time Slot Model. These data models determine the structure of the data to be processed within the application.

Task data model consists of data about the title of the task, its description, category, priority, deadline, and duration. Information about users is stored using the User model, and time slots are stored using the Time Slot Model.

The data will be stored on a local level by utilizing SharedPreferences. Data will be stored in a key-value pair fashion during this process. To achieve this goal, it is imperative that we first serialize our data from objects into JSON files.

The application also takes advantage of in-memory storage in the event that tasks need to be accessed quickly and efficiently without having to undergo read/write to the persistent storage.

Data reliability and efficiency in access are guaranteed using the data layer.

D. Platform Service Layer

The Platform Services Layer interacts with the operating system and device functions. The Platform Services Layer makes use of system level functions like notifications, permissions, and sound alerts.

The Notification System can be created via the Platform Services Layer by making use of platform specific APIs. The reminder will ensure that it is notified even when the application is running in the background. The incorporation of time zone services helps create reminders at the right time as per the user's time zone.

Moreover, the permission system helps make sure that reminders have access to device notifications and storage services. Sound alerts can also be created by the system to help notify the users about the reminders.

Platform Services Layer helps integrate the application and devices seamlessly.

E. Interaction between Layers

The communication between various layers within the system is well-organized. User inputs collected from the Presentation Layer are transmitted to the Business Logic Layer for processing. Communication takes place between the Business Logic Layer and the Data Layer to perform storage and retrieval of data. Execution of system-wide operations like notifications is facilitated by the Platform Services Layer.

The communication ensures that each layer functions within its mandate without disrupting the activities of other layers in the system.

F. Advantages of the Architecture

There are numerous benefits associated with using such an architectural style in TaskBuddy. Modularity can be achieved as each of the functions is implemented separately in order to facilitate maintenance and scalability.

It should also be noted that the application becomes more readable and less complicated because of the clear separation of concern. Using local data storage allows for efficient manipulation of the stored information. The use of platform services makes it possible to interact with other features of the mobile device.

VI. IMPLEMENTATION

The implementation of the proposed solution, namely TaskBuddy, will be oriented at the development of an effective, intuitive and reliable application, which incorporates both task management capabilities, intelligent scheduling and notification functionality. The application is to be designed and created by using modern tools and techniques of mobile application development based on the principle of modularity.

To develop the application in question, the Flutter framework is used. The stated framework enables the developers to develop cross-platform applications because of its single code base. Furthermore, it is because of the capabilities of Flutter, that a developer can make a fully responsive and attractive user interface with the help of pre-existing widgets.

Dart is the language selected for writing application logic for TaskBuddy. This programming language allows one to build very fast and highly effective applications. Moreover, as the language in question is oriented at building object-oriented applications, it allows one to structure the system's functionality into reusable modules and components.

Finally, the development process is facilitated with such integrated development environment as Visual Studio Code or Android Studio. Both IDEs allow developers not only to create and modify the code but also test the application using an Android emulator.

The implementation of the system follows a modular design paradigm, whereby the software application is broken

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down into multiple modules. Each module plays its own role in realizing the functionality of the system, thus enhancing cohesion within the system.

The main modules that have been developed in the system are:

- User Registration and Initialization Module
- Task Creation and Management Module
- Free Time and Availability Module
- Task Duration Estimation Module
- Smart Scheduling Module
- Notification and Reminder Module
- Data Storage and Persistence Module
- Schedule Visualization Module

These modules interact with other components in the system through specified interfaces.

A. User Registration and Initialization Module

Implementation starts with user registration and initialization. The moment the application is opened for the first time, a user is asked to input his or her personal details such as names, and preferences that can help tailor the application according to an individual user.

In addition to providing these details, a user can enter his/her schedule by defining his/her availability for free time slots. This is important in order to create tasks for the users.

B. Task Creation and Management Module

It is the Task Creation and Management Module that takes care of all the task-related operations. Users will be allowed to create tasks by entering information like task title, category, priority, and dates for deadlines. Validation of all data entries will take place prior to performing any further operations.

Tasks will be represented as objects created according to certain predefined templates. This module provides functionality for editing and deleting tasks. Also, this module will maintain a record of pending and completed tasks.

In order to implement this module, the following aspects will have to be considered: simplicity and easy usability for the user, and efficient data management on the back end.

C. Rule-Based Task Duration Estimation

The solution also has a rule-based system that predicts how long a task will take. The component evaluates the characteristics of the task in terms of its type, priority, and keywords from its description.

The method entails setting rules that provide base durations for certain types of tasks. These base durations are then modified according to priorities and keywords. For instance, high-priority tasks could be assigned a reduced base duration, whereas complicated tasks would need higher base durations.

The advantage of this process is that it does not consume much computational resources, thus allowing real-time applications of duration estimation. The prediction result is saved in the database together with the task information.

D. Smart Task Scheduling Module

Smart Scheduling Module is among the main modules of the application system. The task of this module is to develop an optimized schedule with respect to allocating tasks at appropriate time slots.

The implementation process for this module can be described by following steps:

- Fetch all pending tasks
- Find out all free time slots
- Sort tasks according to their priority and deadlines
- Allocate tasks to free slots appropriately
- Create a scheduled day plan

The process of allocation of tasks takes into account the time slots that do not have any overlapping tasks and other special cases. This module is implemented in such a way that the efficiency of this module remains high while processing large number of tasks.

E. Notification and Reminder Module

The Notification Module is created to make sure that the users get their notifications at the right time regarding their scheduled tasks. Flutter_local_notifications is the main library for sending these notifications to the user.

Notifications will be sent according to the time when the task is scheduled. The feature of background execution is also supported to send notifications even when the app is closed.

Timezone is considered while integrating the module for notifications to make them accurate and consistent.

F. Data Storage and Persistence

Shared Preferences is used by the system to save data locally since it offers an efficient way of saving key-value pairs. Before saving the task data, it is serialized to convert it into JSON format.

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At the time the app starts, the stored data is restored in the form of objects. This helps maintain the data even when sessions are switched.

Apart from the persistent storage mechanism, the system has an in-memory storage technique to save some of the data in order to enhance the speed at which the system operates.

G. Schedule Visualization Module

The Schedule Visualization Module is used to present the scheduled tasks in a way that can be easily understood by the user. Tasks as well as their time allocation are presented in a timeline fashion.

This module offers a very simple user interface design, whereby the user can easily understand what his day's plan should be. The module also shows whether the tasks have been completed or not.

H. Integration and Testing

Module integration is done in a systematic manner to ensure proper functioning between modules. Testing for each module is done separately through unit testing, after which integration testing takes place for the entire system to test its functionality.

Testing is done based on different scenarios such as task overlap, deadline overlap, and updating tasks.

I. Performance Considerations

Efficiency in terms of performance is ensured through optimization techniques, whereby efficient algorithms and data structures are applied to ensure minimum computation time. In-memory data stores help reduce latency, while local data stores ensure fast access to data.

The scheduling algorithm works within minimum times; therefore, users enjoy instant responses to their queries. Low resource utilization makes the system ideal for mobile environments.

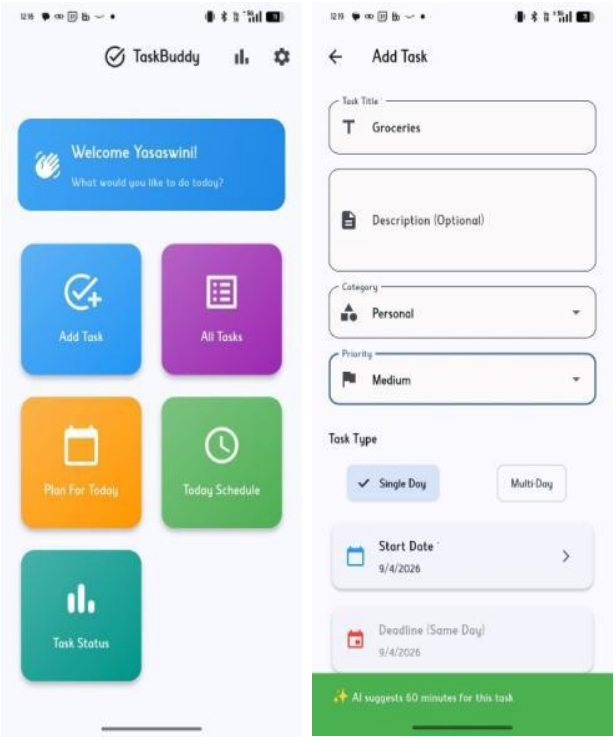
VII. RESULTS

The development of the suggested TaskBuddy application required implementing and testing it to see whether it works well with respect to managing daily activities and enhancing time management capabilities. In particular, system behaviour was analysed in terms of performing various functions, such as task creation, duration estimating, scheduling, notifying and interacting with the system.

First, the system performance regarding task management functions was analysed. Specifically, users could perform all necessary actions, namely creating, editing and deleting tasks by entering the appropriate data such as the name of the activity, category, priority level, etc. Data entered by the users were checked, which prevented any inconsistency or errors in data input. Furthermore, the task management component provided consistency when saving and retrieving data.

Task duration estimating was also investigated by analysing the performance of the relevant module in dealing with tasks of various complexities and categories. Consequently, rule-based estimation was used to make the estimation of tasks by considering the importance of tasks and other information. It was found out that there was no inconsistency in the time required to do the tasks; hence, it can be concluded that the estimating algorithm is efficient.

Various scenarios for testing the task scheduling module were simulated. Different numbers of tasks, deadlines overlapping, and limited number of available time slots were among the factors included in this test. In general, task scheduling worked well and allowed to schedule tasks into free time slots in such a way that no conflicts appeared. Tasks were assigned to free slots in accordance with their priority and deadlines, which helped schedule important tasks first. This application possesses the necessary flexibility as evidenced by its ability to adjust to dynamic changes. If tasks are added or modified after the initial scheduling process takes place, the scheduling module will update the task planning accordingly.



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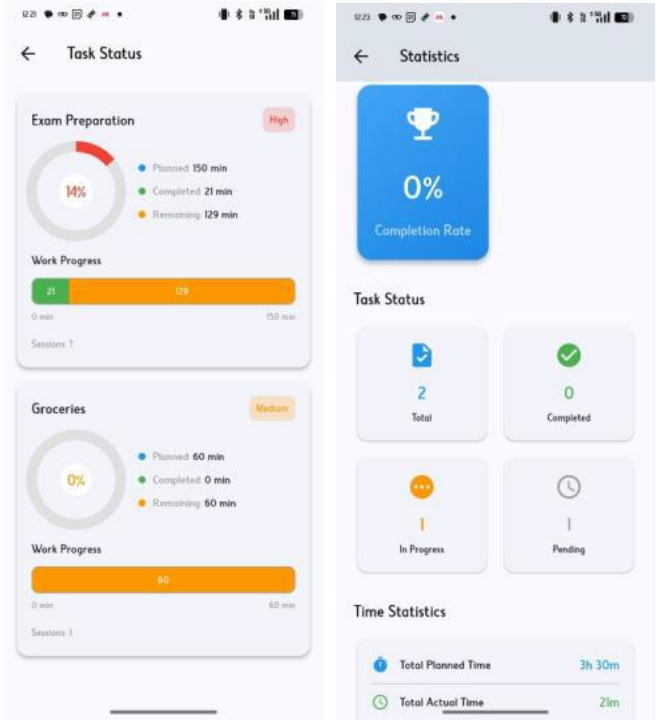

Figure 2: Application screens

Functionality of the application is best described by screenshots depicting the interface of the application screens used by the user (refer to Fig. 2). The first screen in the sequence is called the Home Screen, where all tasks and those awaiting scheduling are displayed. Next in the row is the Add Task Screen, where task information can be entered into the program. The Schedule Screen shows tasks arranged in accordance with their time sequence. The last screenshot is the Statistics Screen, which helps track task progress.

The notification module was tested to confirm that the notifications can reliably be delivered to remind the user of his or her tasks. The notifications were made when necessary and helped the users be reminded of their upcoming tasks. The notifications could also be provided reliably even if the software is not in the foreground mode.

Apart from evaluating the functionality of the software, the responsiveness and usability of the application were tested. The program was responsive and there was no delay after the inputs by the users; the user can get a schedule immediately after entering their inputs. The user interface was also easy to use and navigate without much struggle.

The test was also carried out to confirm how the scheduling feature can handle multiple tasks with varied priorities. The tests showed that the module could effectively distribute the tasks in the available time frame logically.

In conclusion, the results obtained indicate that the TaskBuddy application can incorporate all the aspects needed including task management, duration estimation, scheduling, and notifications into one working system.

VIII. DISCUSSIONS

The findings generated by implementing and evaluating the TaskBuddy system reveal some vital characteristics of its operation and functionality. Indeed, the system outperforms the conventional methods of task management by introducing intelligent scheduling and automatic planning functions.

Firstly, one of the most valuable insights from the experiment is the efficiency of the rule-based task duration estimation technique. Although rather rudimentary in terms of technical implementation, the proposed technique delivers practical and realistic estimations that suffice in ordinary situations. At the same time, the adoption of fixed rules implies computational simplicity, which makes the model efficient and effective despite the potential inaccuracy of estimation due to task complexity. It should be noted that the proposed technique has room for further improvement by implementing more sophisticated learning algorithms.

Another vital function of the TaskBuddy system is the smart scheduling module. In simple terms, it maximizes time usage through automatic allocation of time slots for various tasks. Additionally, it offers the flexibility for prioritization of tasks according to their urgency.

Flexibility and the capability of adjusting schedules depending on the changes in tasks or addition of tasks is yet another strong point for the application. Such flexibility allows it to be used effectively for various purposes since user requests may often be subject to change.

The application will become even more effective with the use of notifications that will help remind users about their tasks in time. Notification delivery will contribute greatly to keeping track of all the activities and avoid missing any tasks.

Speaking of the usability of the application, it is safe to say that it has a convenient interface. The display of schedule in the timeline view will let users see what they have planned for each day. Productivity tips can also be useful for users who want to evaluate their work efficiency.

Comparison with Existing Systems

Table 1: Comparison with Existing Systems

Feature	Existing Systems	TaskBuddy
Task Listing	Available	Available
Manual Scheduling	Required	Not Required

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Automatic Scheduling	Not Available	Available
Duration Estimation	Not Available	Available
Notifications	Basic	Smart Reminders
Personalization	Limited	Improved

As demonstrated in Table 1, the main differences between traditional task management applications and the proposed TaskBuddy model can be seen. Traditional task management applications like Todoist and Trello, together with other similar systems, are mainly oriented toward simple capabilities like task listing, classification, and reminders. Although such capabilities are valuable for organizing tasks, they still rely on users' manual planning and evaluation of time needed for performing individual actions. Such an approach may turn out to be quite inefficient and cumbersome when dealing with numerous tasks of different priority levels.

The TaskBuddy system utilizes an innovative approach to managing tasks, which includes estimating task duration with the help of rule-based algorithms and smart scheduling methods. In other words, the proposed system is designed to perform automatic task allocation to appropriate time slots without user involvement.

Moreover, having scheduled task visualization and dependable notification facilities increases user participation and engagement with the application. As opposed to existing systems which offer mere static lists of tasks to be performed, TaskBuddy is a dynamic application with an intelligent scheduling mechanism, hence rendering it more realistic and practical. In summary, the evaluation highlights how the suggested system offers a better alternative than existing approaches.

However, there are some drawbacks in the current system as well. For instance, the rule-based approach used in the estimation of duration may not be able to address all the variations that exist in terms of complexity in tasks. Moreover, the algorithm employed in the scheduling of tasks operates based on predefined logic and does not have any learning mechanism based on the behavior of users.

From the overall performance of the application, it can be inferred that TaskBuddy system holds great potential as a sophisticated time-management system. This is mainly due to the fact that this system incorporates several elements like automation and structured scheduling in order to solve problems related to time management.

IX. CONCLUSION

In this paper, TaskBuddy, an intelligent task scheduling and reminder mobile application, was proposed. The system is aimed at addressing the drawbacks of task management through intelligent scheduling and automatic reminders to help people be more productive.

The suggested system facilitates creation and management of tasks with automatic generation of structured daily schedules depending on their urgency, deadlines, and free time of the user. Using a rule-based estimation algorithm of the task duration allows estimating its time duration effectively. As a result, tasks are distributed optimally without conflicts between them and better time usage is provided.

According to the findings obtained during evaluation of the developed system, the performance of TaskBuddy proved to be high regarding such functions as task management, scheduling, and notifications delivering. Moreover, TaskBuddy possesses such useful properties as usability and interactivity. In particular, users can use the system conveniently and interact with it.

Scalability and ease of maintenance become possible because of its modular nature; hence, the software is prepared for any further upgrades. Flexibility of the application in adjusting itself according to the needs of users with updates and rescheduling shows that it can be used in real life situations.

There are some limitations of the present system that have been identified. First, using rules for estimating tasks' duration and performing scheduling is not as effective as possible, and there may be some improvements in this respect. Future improvements could include implementing machine learning algorithms for predicting task duration, developing an adaptive scheduling strategy that will depend on the behavior of each individual user, and integrating cloud-based storage for synchronizing data between multiple devices.

Summarizing the information above, TaskBuddy proves to be an effective and practical approach to automating task management, which combines both scheduling and user-centered approaches.

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