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Chapter 1: Introduction

1.1 Introduction to Topic

The topic of my final year project is the development of a Construction App. This application is designed to assist builders and contractors in streamlining construction site operations by digitizing key processes. The app allows builders to track worker attendance, record budget data, and monitor project progress in real-time. Traditionally, many construction site activities are handled manually, which can result in errors, inefficiencies, and delays. By providing a digital solution, this app aims to simplify the entire workflow, reduce paperwork, and enhance overall productivity.

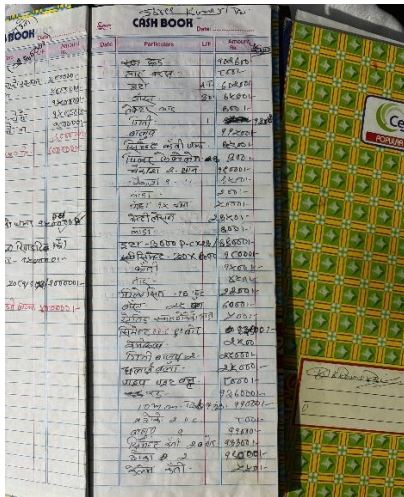
1.2 Problem Scenario

When builders and contractors receive a contract, they often rely on paper-based methods to keep records. This manual approach can lead to numerous errors, as they frequently depend on memory to document details after visiting the site. The delay between observing the work and recording it on paper increases the likelihood of forgotten details, resulting in inaccurate or incomplete records, which can create significant issues in tracking project progress and managing resources effectively.



Figure 1: Records of different contracts.

Additionally, in construction, builders are typically provided with a budget upfront. As they purchase materials throughout the project, they often lose track of the remaining funds, requiring frequent manual calculations to determine the remaining budget, which can be time-consuming and lead to mistakes. When it comes time to pay workers their weekly salaries, builders must maintain daily attendance records on paper and manually calculate salaries, which can also result in errors.



Date	Particulars	Amount
20/01/2020	Wages	1000
21/01/2020	Materials	500
22/01/2020	Labor	200
23/01/2020	Transport	100
24/01/2020	Food	50
25/01/2020	Tools	100
26/01/2020	Water	50
27/01/2020	Electricity	100
28/01/2020	Phone	50
29/01/2020	Internet	50
30/01/2020	Travel	100
31/01/2020	Medical	50
01/02/2020	Education	100
02/02/2020	Insurance	50
03/02/2020	Security	100
04/02/2020	Legal	50
05/02/2020	Accounting	100
06/02/2020	Marketing	50
07/02/2020	IT	100
08/02/2020	HR	50
09/02/2020	Operations	100
10/02/2020	Finance	50
11/02/2020	Production	100
12/02/2020	Quality Control	50
13/02/2020	Logistics	100
14/02/2020	Customer Service	50
15/02/2020	Research & Development	100
16/02/2020	Sales	50
17/02/2020	Marketing	100
18/02/2020	IT	50
19/02/2020	HR	100
20/02/2020	Operations	50
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22/02/2020	Production	50
23/02/2020	Quality Control	100
24/02/2020	Logistics	50
25/02/2020	Customer Service	100
26/02/2020	Research & Development	50
27/02/2020	Sales	100
28/02/2020	Marketing	50
29/02/2020	IT	100
01/03/2020	HR	50
02/03/2020	Operations	100
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04/03/2020	Production	100
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27/03/2020	Quality Control	50
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30/03/2020	Research & Development	100
31/03/2020	Sales	50
01/04/2020	Marketing	100
02/04/2020	IT	50
03/04/2020	HR	100
04/04/2020	Operations	50
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06/04/2020	Production	50
07/04/2020	Quality Control	100
08/04/2020	Logistics	50
09/04/2020	Customer Service	100
10/04/2020	Research & Development	50
11/04/2020	Sales	100
12/04/2020	Marketing	50
13/04/2020	IT	100
14/04/2020	HR	50
15/04/2020	Operations	100
16/04/2020	Finance	50
17/04/2020	Production	100
18/04/2020	Quality Control	50
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27/04/2020	Finance	100
28/04/2020	Production	50
29/04/2020	Quality Control	100
30/04/2020	Logistics	50
01/05/2020	Customer Service	100
02/05/2020	Research & Development	50
03/05/2020	Sales	100
04/05/2020	Marketing	50
05/05/2020	IT	100
06/05/2020	HR	50
07/05/2020	Operations	100
08/05/2020	Finance	50
09/05/2020	Production	100
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18/05/2020	Operations	50
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27/05/2020	IT	100
28/05/2020	HR	50
29/05/2020	Operations	100
30/05/2020	Finance	50
31/05/2020	Production	100
01/06/2020	Quality Control	50
02/06/2020	Logistics	100
03/06/2020	Customer Service	50
04/06/2020	Research & Development	100
05/06/2020	Sales	50
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01/09/2020	Sales	50
02/09/2020	Marketing	100
03/09/2020	IT	50
04/09/2020	HR	100
05/09/2020	Operations	50
06/09/2020	Finance	100
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01/11/2020	Production	100
02/11/2020	Quality Control	50
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05/11/2020	Research & Development	100
06/11/2020	Sales	50
07/11/2020	Marketing	100
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19/11/2020	IT	100
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23/11/2020	Production	100
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28/11/2020	Sales	50
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30/11/2020	IT	50
01/12/2020	HR	100
02/12/2020	Operations	50
03/12/2020	Finance	100
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07/12/2020	Customer Service	100
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14/12/2020	Finance	50
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26/12/2020	Production	50
27/12/2020	Quality Control	100
28/12/2020	Logistics	50
29/12/2020	Customer Service	100
30/12/2020	Research & Development	50
31/12/2020	Sales	100

Figure 2: Budget record of the contract

DATE	NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
20/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
21/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
22/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
23/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
24/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
25/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
26/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
27/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
28/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
29/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
30/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
31/01/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
01/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
02/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
03/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
04/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
05/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
06/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
07/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
08/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
09/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
10/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
11/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
12/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
13/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
14/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
15/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
16/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
17/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
18/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
19/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
20/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
21/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
22/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
23/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
24/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
25/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
26/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
27/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
28/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
29/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
30/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
31/02/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
01/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
02/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
03/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
04/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
05/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
06/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
07/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
08/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
09/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
10/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
11/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
12/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
13/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
14/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
15/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
16/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
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20/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
21/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	31
22/03/20	ABDUL Q.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P													

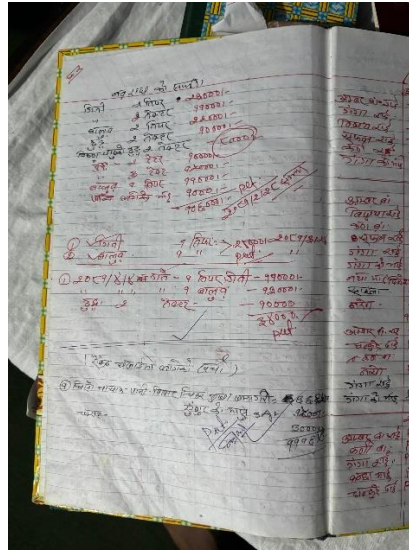


Figure 4: Calculating the material cost

“The above provided images are the records maintained by my father.”

1.3 Project as a solution

To address the challenges faced by builders and contractors, the Construction App will provide a practical digital solution. This app aims to simplify important tasks by offering a centralized platform for essential information.

Real-time Tracking: Builders can monitor worker attendance, project progress, and budget spending instantly. This reduces reliance on memory and paper records, lowering the chances of mistakes.

Budget Tracking: The app will allow builders to enter expenses as they buy materials, providing immediate updates on remaining funds without the need for manual calculations.

Attendance Recording: Builders can easily record daily attendance digitally, making it straightforward to calculate weekly salaries accurately.

Contact Storage: The app will keep important supplier contact information in one place, helping builders avoid losing important details and facilitating easier communication.

User-Friendly Interface: The app will feature an intuitive design that allows builders to navigate its functions with ease.

By offering these features, the Construction App aims to enhance the efficiency of construction site operations and reduce the challenges builders face. This project is

designed to support not only my father but also many other contractors and builders dealing with similar issues.

2 Chapter 2 : Aims and Objectives

2.1 Aims

1. To provide builders and contractors with a digital platform for tracking worker attendance and project progress efficiently.
2. To enable real-time budget tracking, allowing users to monitor their expenses as they purchase materials.
3. To simplify the recording of daily attendance, making salary calculations more accurate and less error-prone.
4. To store and manage contact information for material suppliers, reducing the risk of losing important details.

Optional,

5. To enhance communication by allowing builders to share budget plans and expenditure details with clients for greater transparency.

2.2 Objectives

1. To develop a user-friendly interface that allows builders and contractors to easily navigate and utilize the app's features.
2. To implement a real-time attendance tracking system that records worker presence accurately and efficiently.
3. To integrate a budget management tool that automatically updates remaining funds as expenses are logged, eliminating manual calculations.
4. To provide a secure database for storing supplier contact information, making it easily accessible for builders when needed.

Optional,

5. To create a sharing feature that enables builders to send budget plans and expenditure reports to clients, fostering better communication.

3 Chapter 3 : Expected Outcomes and Deliverables

3.1 Expected Outcomes

1. Enhanced accuracy in tracking worker attendance and project progress, leading to improved accountability.
2. Streamlined budget management, resulting in better financial oversight and reduced risk of overspending.
3. Reduced errors in salary calculations and attendance records, improving overall operational efficiency.
4. Easier access to supplier contact information, facilitating better resource management.
5. Increased transparency in communication between builders and clients regarding budget plans and expenditures.

3.2 Deliverables

1. A mobile application that provides builders and contractors with real-time tracking of worker attendance and project progress.
2. A backend API that facilitates seamless data flow between the app and users, enabling efficient budget tracking and attendance management.
3. A secure database for storing and managing supplier contact information, making it easily accessible for builders.
4. Regular updates and maintenance plans to ensure the app remains functional and relevant to user needs.

4 Chapter 4: Methodology

The development of the Construction App will follow the Scrum methodology, which emphasizes iterative progress through sprints. Key components of this approach include:

1. **Sprints:** Development cycles will be short where specific features are designed, developed, and tested.
2. **Daily Stand-ups:** Brief weekly meetings to discuss progress, address challenges, and plan tasks for the next week with the supervisor.
3. **Sprint Reviews:** At the end of each sprint, the supervisor will review the completed work to gather feedback and make adjustments.
4. **Sprint Retrospectives:** After each sprint, I will reflect on what went well and identify areas for improvement in the next sprint.

5 Chapter 5: Resource Requirements

5.1 Hardware Requirements

6. Laptop

5.2 Software Requirements

1. Node.js
2. React Native
3. MySql
4. Prisma
5. Postman