

# Trainee Batch - 2024

---

## GREAVES ENGINEERING

**Presented by: Mansi Yeole**

**Function: Digital Engineering**

**Trainer: Imran Khan**

**Mentor: Imran Khan**

	Index
1.	Project Synopsis: Provide a brief overview of the project & its scope
2.	Objective of Study: List tangible outcomes & deliverables
3.	Project Methodology/ Approach
4.	tools and techniques
5.	Project Images
6.	Project updates/Timeline
7.	Findings & Suggestions

**Project Synopsis: Provide a brief overview of the project & its scope**

## **Title of Project : Assembly Checksheet System**

- **Brief Overview :**

The project is focused on developing a paperless system for managing engine assembly processes. This system replaces traditional paper methods with an electronic platform, allowing data retrieval, submission, and various checksheet operations for multiple stations, including barcode scanning and dynamic dropdown values.

- **Scope of the Project**

### **Digital Checklists for ATP:**

- Implement a paperless checklist system for various stages of engine application, such as process audits.
- Automate the generation and management of checklists, with the ability to customize and filter based on specific requirements.

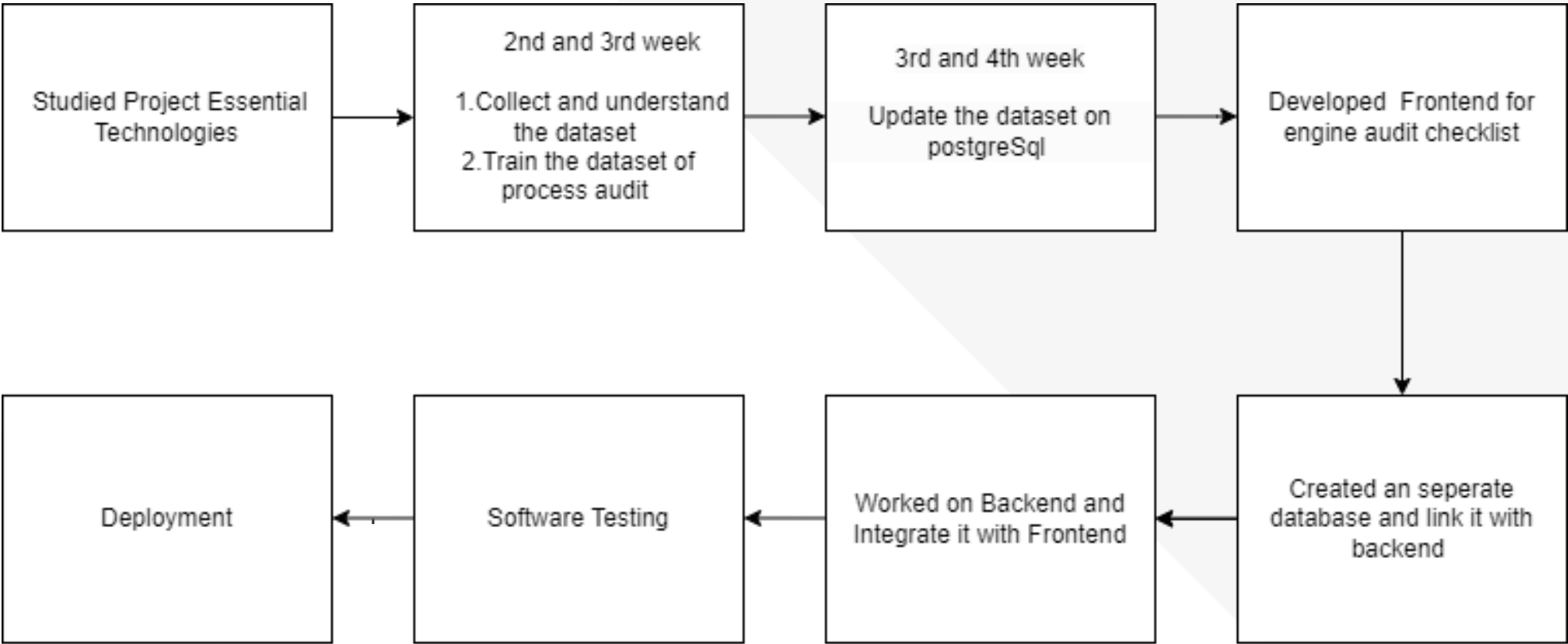
### **Data Integrity and Validation:**

- Ensure that all data entered into the system is validated and stored securely, with mechanisms for process auditing.
- Include authentication features to verify the identity of users and control access to sensitive information.

## Objective of Study: List tangible outcomes & deliverables

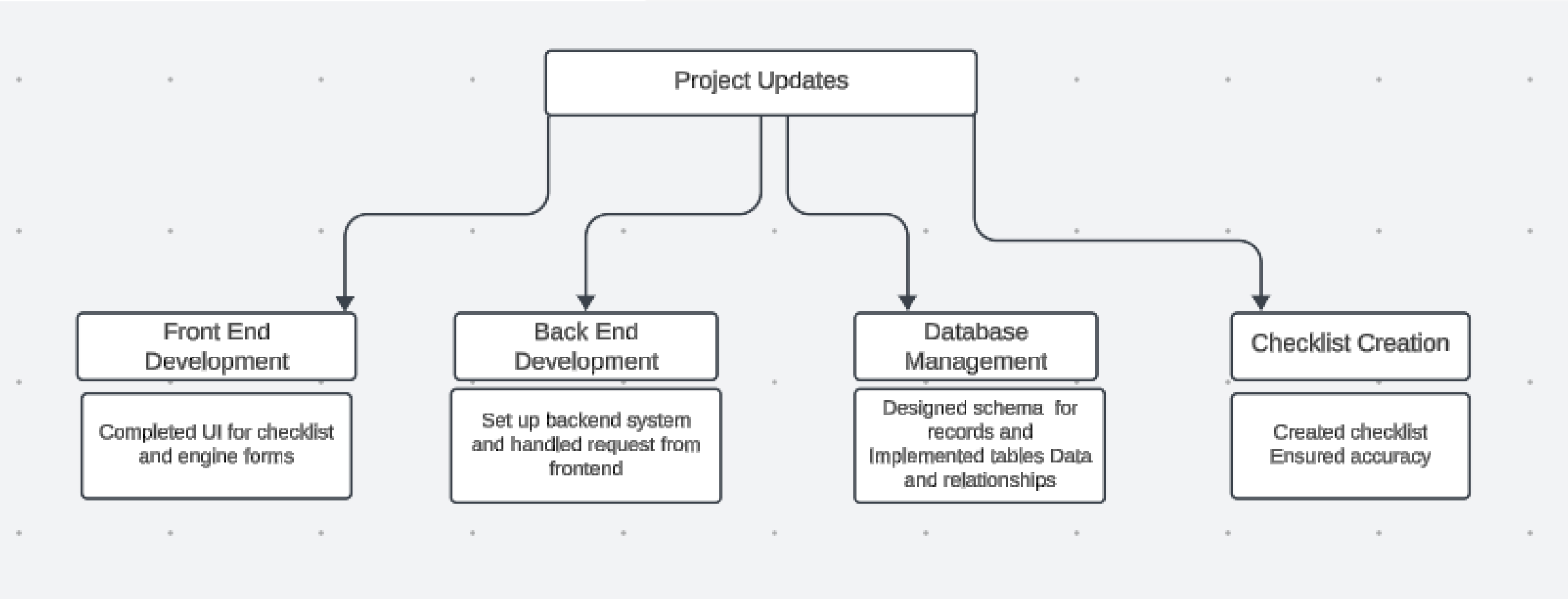
- allowing for smooth data flow and reducing redundancy in record-keeping.
- role-based access control system to ensure that only authorized users can access or modify sensitive engine application data.
- A centralized, searchable database containing all engine application records, accessible in real-time
- paper-based to a digital system, improving efficiency, accuracy, and compliance in engine application management.

**Project Methodology/ Approach: Describe the approach and methodology including tools and techniques**



### **Tools and Techniques :**

- **ReactJS** : Frontend development for building user interfaces
- **Django** : Backend development framework.
- **Python** : General-purpose programming language used for backend logic.
- **PostgreSQL** : Relational database management system
- **PyCharm** : Integrated Development Environment (IDE) for Python.
- **VS Code** : Lightweight code editor for various languages
- **Excel** : Data analysis and visualization tool



# Project updates:

Photo	Stage/Parameter	Control method of process	Specification Lower limit	Specification Higher Limit	Evaluation measurement Technique	<SC> <CC>	Observation	Remark
Fuel filter & NRV & spin-on Filter assembly								
	Desol Filter pipe - routing (If applicable)	Visual	Feed pump to filter pipe should be above filter to FIP pipe		Visual	-	OK	
	Feed pump inlet banjo (M10x1.0) torque	Manual TW	10.6 NM	21.5 NM	Digital torque meter	-	21.52	
	NRV Body Tightening torque	Manual TW	18.6 NM	20.6 NM	Digital torque meter	-	20.63	
	NRV over flow banjo (M8) Tightening torque - FIP end	Manual TW	14.0 NM	15.5 NM	Digital torque meter	-	15.49	
	Spin on filter BS VI with "O" ring	Visual	Oil application		Visual	-	OK	
	Spin on filter Torque	Manual TW	14.0 NM	15.5 NM	Digital torque meter	-	15.50	
180 EGR Sub Assembly And Fitment								
	EGR valve mounting nut/bolt (M10x1.25) torque	Single Spindle DCNR	23.3 NM	25.8 NM	Digital torque meter	-	25.77	
	EGR pipe mounting nut/bolt (M10x1.25) torque	Single Spindle DCNR	23.3 NM	25.8 NM	Digital torque meter	-	25.75	
	Inlet Flange M10 Collar nuts torque	Manual TW	23.3 NM	25.8 NM	Digital torque meter	-	25.81	
190 Engine Leak test								
	Engine Leak test with fuel line	ATEQ Leak Test Machine	By Leak test Machine <250cc/min		Visual	-	OK	
	Ensure Dipstick Fitment	Visual	Dipstick Correct Fitment as per BOM		Visual	-	OK	
200 Engine Buy Off inspection & Operation 30 Declaration								
	Ensure the Engine Proper fitment of all components	As per check list	AS per BOM		Visual	-	OK	
	Ensure All Parameter in Written on History Card	Data transfer on history card	Bumping Value / Endplay / SIT / NTP		Visual	-	OK	
210 Oil Filling in Engine & Unloading								
	Oil grade	Visual	ENGINE OIL SAE 15W-40 API CH-4		Visual	-	OK	
	Oil dispensing in engine	Oil Dosing unit	1.65 Ltr 1.75 Ltr		Oil dispensing machine	-	1.65	
	Ensure Correct Wire Routine of EGR	Visual	EGR Wire Routine in side Fuel Filter pipe		Visual	-	OK	
Additional check points based on field complaint (Effectiveness Monitoring for 3 Months)								
	1. Pinged Clamp position. Correct Fitment & cable should be horizontal position							
	2. Side panel clamp position correct fitment & clamp should be horizontal							
	3. Collar nut use for Engine test filter bracket for PVPs model							
Note: 1.0 Kgm = 9.81 Nm								
Additional Remark if any -								
TYPES OF WRENCH -								
BOM NO:- N01A000022								
ENGINE NO:- A4H1761101								
Audited by								

GREAVES

9/4/2024 11:38:57 AMHey, Imran

[Atp.](#) > [Home](#)

Welcome to Assembly Test Point

Master Checklist

[Open Checklist](#)[Add New Checkpoint +](#)

BOM Check List

Enter BOM No

Enter Station No

Show BOM Checklist

Check Engine Audit History

Enter Station No

Enter Engine No

Engine Audit Result

Audit Checklist

GREAVES

9/4/2024 11:40:01 AMHey, Imran

[Atp.](#) > [Home](#) > [Engineauditlist](#)

Audit Checklist Form

Engine checking for Engine Station Number "wedf32345" with Bom No "N01A000022" at Station No "200" is started by "Imran"

[Submit Report](#)

Checkpoint ID	Opn_No	Opn_Name	Stage Parameter	Control Method	Application	Image Reference	Unit	Lower Limit	Upper Limit	Evaluation Measurement Technique	Input Type	SC CC	Remark
1	10	Crank Shaft & FWE Cover Fitment	Crank Case Main journal / Crank Shaft OD.	By Oil cane	Oil application	No				Visual	<input checked="" type="checkbox"/> OK	--	ok
2	10	Crank Shaft & FWE Cover Fitment	FEW cover Nut	Single Spindle DCNR	N/A	Yes	NM	23.3	25.75	Digital torque meter	ok	<SC>	ok
3	10	Crank Shaft & FWE Cover Fitment	Liquid sealant application on FWE Cover	Visual	Dowsil 3-0115 & Check Expiry Date	No				Visual	<input checked="" type="checkbox"/> OK	--	ok
4	10	Crank Shaft	FWFCover	Robotic	As per	Yes				Visual	<input checked="" type="checkbox"/> OK	--	ok



## 1. Authorized User Login

### User Profile

No Image

Upload Image

IMRAN KHAN

Employee ID: 1037117

Information	Details
Username	Imran
First Name	imran
Last Name	khan
Email	imran.khan@greavescotton.com
Department	Digital Engineering
Rights	Admin

## 2.Home Page

GREAVES

9/4/2024 11:38:57 AM

Hey, Imran

Atp.

Home

Welcome to Assembly Test Point

Master Checklist

Open Checklist

Add New Checkpoint +

BOM Check List

Enter BOM No

Enter Station No

Show BOM Checklist

Check Engine Audit History

Enter Station No

Enter Engine No

Engine Audit Result

Audit Checklist

3. Audit Checklist Form for Station no 100

GREAVES

9/21/2024 12:49:21 PMHey, Imran


[Atp.](#) > [Home](#) > [Engineauditlist](#)

### Audit Checklist Form

Engine checking for Engine Station Number "2sad33" with Bom No "N01A000022" at Station No "100" is started by "Imran"

Submit Report

#### Crank Shaft & FWE Cover Fitment

L_Name	Stage Parameter	Control Method	Application	Unit	Lower Limit	Upper Limit	Evaluation Technique	Input Type	SC CC	Remark	Image Required	Action
Crk Shaft /VE er ent	Crank Case Main journal / Crank Shaft OD.	By Oil cane	Oil application				Visual	<input checked="" type="checkbox"/> OK	--	<input type="text" value="fgf"/>	No	Not Required
Crk Shaft /VE er ent	FEW cover Nut	Single Spindle DCNR	N/A	NM	23.3	25.75	Digital torque meter	<input type="text" value="gf"/>	<SC>	<input type="text" value="fg"/>	Yes	
Crk Shaft /VE er ent	Liquid sealant application on FWE Cover	Visual	Dowsil 3-0115 & Check Expiry Date				Visual	<input checked="" type="checkbox"/> OK	--	<input type="text" value="fgf"/>	No	Not Required

4.Audit Checklist Form for Station no 200

GREAVES







9/21/2024 12:50:50 PMHey, Imran

[Atp.](#) > [Home](#) > [Enginechecklist](#)

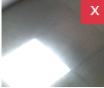
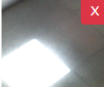
### Checklist form

- Engine checking for ESN [dfsdgfi234](#) with Bom [N01A000022](#) at Station No [200](#) is started by Imran

Submit Report

Sr No	Checkpoint ID	Checkpoint	Reference Pics	Check Method	Image Required	Action
1	D_002	Ensure "All Air Cowl Screw Fitted with clamps".	--N/A--			<input type="checkbox"/> unchecked
2	D_003	Ensure Engine fuel setting bolt with "Plastic sealing & Red ink".	--N/A--			<input type="checkbox"/> unchecked
3	D_004	Ensure "Air inlet flange with rubber cap LPI with polythene bag fitted".	--N/A--			<input type="checkbox"/> unchecked
4	D_005	Ensure "RR unit wire routing with clamp".	--N/A--			<input type="checkbox"/> unchecked
5	D_006	Ensure "Cr. Shaft M8 bolt with protection cap fitted." As per BOM.	--N/A--			<input type="checkbox"/> unchecked
6	D_007	Ensure " Oxicat bracket is fitted properly with bolt & washer". As per BOM". (if Applicable )	--N/A--			<input type="checkbox"/> unchecked

## 5. Image Capturing if required

_Name	Stage Parameter	Control Method	Application	Unit	Lower Limit	Upper Limit	Evaluation Technique	Input Type	SC CC	Remark	Image Required	Action
k Shaft VE r ent	Crank Case Main journal / Crank Shaft OD.	By Oil cane	Oil application				Visual	<input checked="" type="checkbox"/> OK	--	<input type="text" value="fgf"/>	No	Not Required
k Shaft VE r ent	FEW cover Nut	Single Spindle DCNR	N/A	NM	23.3	25.75	Digital torque meter	<input type="text" value="gf"/>	<SC>	<input type="text" value="fg"/>	Yes	
k Shaft VE r ent	Liquid sealant application on FWE Cover	Visual	Dowsil 3- 0115 & Check Expiry Date				Visual	<input checked="" type="checkbox"/> OK	--	<input type="text" value="gfg"/>	No	Not Required
k Shaft VE r ent	FWECover Liquid sealant Profile	Robotic dispensing machine	As per Master templet				Visual	<input checked="" type="checkbox"/> OK	--	<input type="text" value="fgf"/>	Yes	

## 6. After Successfully submission of data ,will be stored in database

Data Output Messages Notifications									
	id [PK] bigint	checkpoint_id bigint	remark character varying (50)	entry_date timestamp with time zone	opn_no character varying (10)	station_no integer	operator character varying	result character varying	esn character vary
1	750	1		2024-09-05 09:44:22.8+05:30	10	200	19	OK	wedf32345
2	751	2		2024-09-05 09:44:22.801+05:30	10	200	19		wedf32345
3	752	3		2024-09-05 09:44:22.801+05:30	10	200	19		wedf32345
4	753	4		2024-09-05 09:44:22.801+05:30	10	200	19		wedf32345
5	754	5		2024-09-05 09:44:22.801+05:30	20	200	19		wedf32345
6	755	6		2024-09-05 09:44:22.801+05:30	20	200	19		wedf32345
7	756	7		2024-09-05 09:44:22.801+05:30	20	200	19		wedf32345
8	757	8		2024-09-05 09:44:22.801+05:30	20	200	19		wedf32345
9	758	9		2024-09-05 09:44:22.801+05:30	30	200	19		wedf32345
10	759	10		2024-09-05 09:44:22.801+05:30	30	200	19		wedf32345
11	760	11		2024-09-05 09:44:22.801+05:30	30	200	19		wedf32345
12	761	12		2024-09-05 09:44:22.801+05:30	30	200	19		wedf32345
13	762	13		2024-09-05 09:44:22.801+05:30	30	200	19		wedf32345
14	763	14		2024-09-05 09:44:22.801+05:30	40	200	19		wedf32345
15	764	15		2024-09-05 09:44:22.801+05:30	40	200	19		wedf32345

7.Check Engine Audit History

GREAVES

9/5/2024 9:45:17 AMHey, Imran

[Atp.](#) > [Home](#) > Engineauditresult

Print

Engine Audit Report

Engine No. wedf32345

Checkpoint ID 1

Operator Name Imran

ation No. 200

Start Timestamp 9/5/2024, 9:45:12 AM

om No. N01A000022

ir io	Opn.No	Opn.Name	Stage Parameter	Control Method	Application	Image Reference	Unit	Lower Limit	Upper Limit	Evaluation Measurement Technique	Input Type	SC CC	Remark
	10	Crank Shaft & FWE Cover Fitment	Crank Case Main journal / Crank Shaft OD.	By Oil cane	Oil application	No Image	N/A	N/A	N/A	Visual	checkbox	--	N/A
	10	Crank Shaft & FWE Cover Fitment	FEW cover Nut	Single Spindle DCNR	N/A	<div>Capture Image</div>	NM	23	25	Digital torque meter	textbox	<SC>	N/A
	10	Crank Shaft & FWE Cover Fitment	Liquid sealant application on FWE Cover	Visual	Dowsil 3-0115 & Check Expiry Date	No Image	N/A	N/A	N/A	Visual	checkbox	--	N/A
	10	Crank Shaft & FWE Cover Fitment	FWECover Liquid sealant Profile	Robotic dispensing	As per Master templet	<div>Capture Image</div>	N/A	N/A	N/A	Visual	checkbox	--	N/A

8. BOM Check List

GREAVES

9/5/2024 9:45:31 AMHey, Imran

[Atp.](#) > [Home](#) > Bomlist

Search...

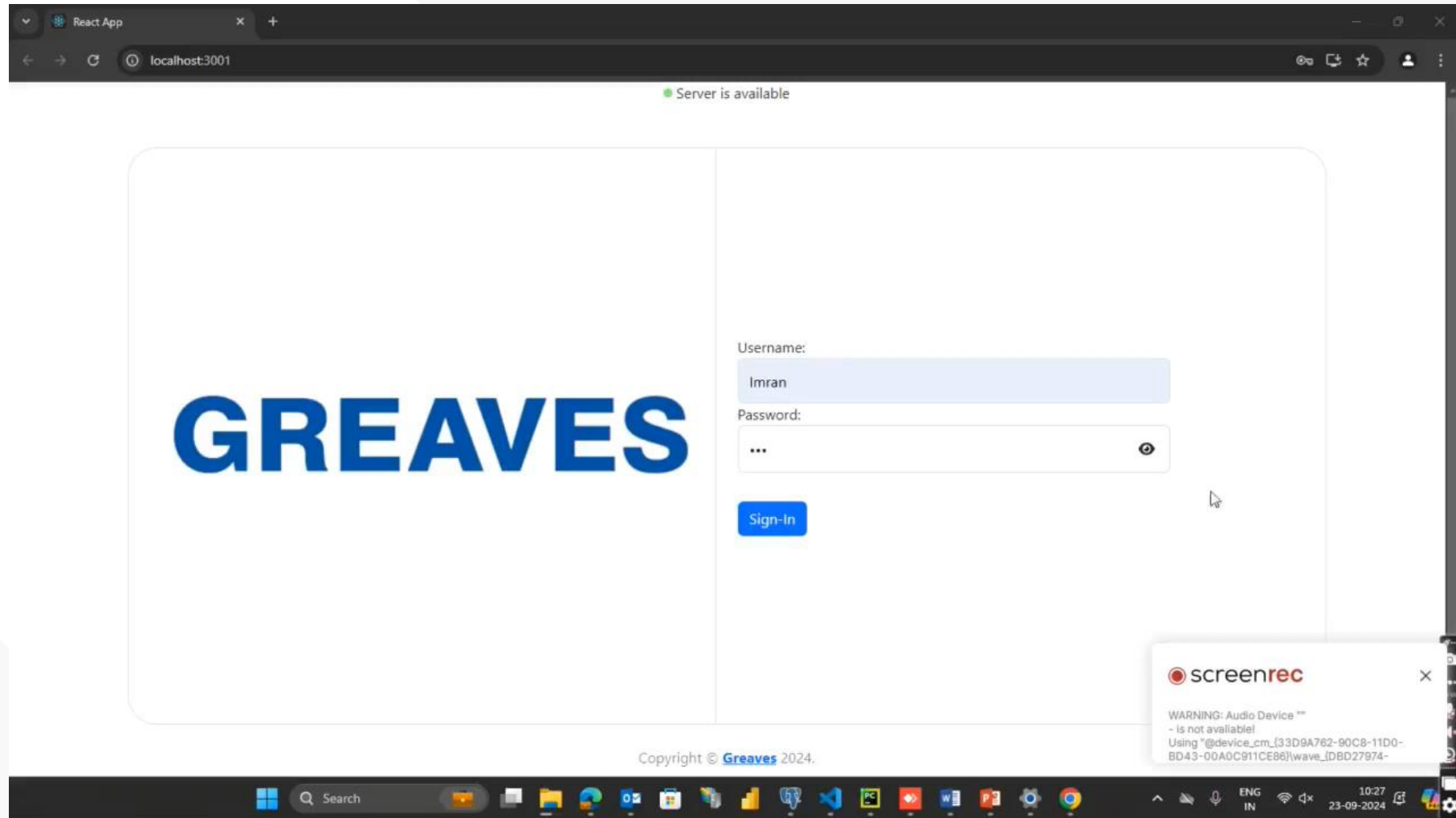
Search

Create New Entry

BOM Checklist

BOM No	Station No	Checkpoint ID	Sequence No	Status	Date Edited	Action
N01A000022	200	D_002	2	True	5/7/2024, 1:57:22 PM	<div><div></div><div></div></div>
N01A000022	200	D_003	3	True	5/7/2024, 1:57:34 PM	<div><div></div><div></div></div>
N01A000022	200	D_004	4	True	5/7/2024, 1:57:45 PM	<div><div></div><div></div></div>
N01A000022	200	D_005	5	True	5/10/2024, 12:19:20 PM	<div><div></div><div></div></div>
N01A000022	200	D_006	6	True	5/7/2024, 1:58:23 PM	<div><div></div><div></div></div>
N01A000022	200	D_007	7	True	5/7/2024, 1:58:37 PM	<div><div></div><div></div></div>
N01A000022	200	D_009	8	True	5/7/2024, 1:58:51 PM	<div><div></div><div></div></div>
N01A000022	200	D_011	10	True	5/7/2024, 1:59:21 PM	<div><div></div><div></div></div>

## video recording :



1. Implement interactive dashboards using ReactJS libraries like Chart.js or D3.js for visualizing engine data, trends, and statistics.
2. Integrate WebSockets or other real-time technologies to provide live updates on engine data, ensuring that users see the most current information without needing to refresh.
3. A personal hardware workstation

# Thanks