



## Preparing a Computer Program with Foxpro 9 Language for Grease Laboratory in Dora Refinery

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### Abstract

The Grease lab. in Dora refinery needs a computer program to automatize its activities, because now most of laboratories in the world use computer programs to receive data and use standards information's and comparing them to get the suitable results, So this computer program is done to make the laboratory in a better form.

The computer program takes the grease sample name and gives its specifications and tells the analyst all the tests required to make on it, and after the selection of the analyst, then make the tests, the program will get the results, and show the standard information's and comparing them by the analyst, after that the program will show the report required for any period of time.

The program has an ability to show and print data at any time, and also edit, delete, add, and exit from the data files of the grease informations and standards and the test results.

This program was done by using a laptop with a suitable specifications and programming by FOXPRO 9 computer language.

**Keywords:** grease, foxpro 9, computer program, dora refinery, grease laboratory

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### 1. Introduction

The objectives of this research are to change the manually work done daily in the laboratory to a work done with computer using a program written in Foxpro 9 language like the work of most companies works in the analysis of grease in the world.

Now more of 9000 company in the world use a computer program written with different computer languages to analyze grease in their laboratories, for example, Dora Refinery in Iraq <sup>[1, 2, 3]</sup>, Midor refinery in Egypt <sup>[4]</sup>, SGS testing and control services in Singapore <sup>[5]</sup>, Oil analyzers in Canada <sup>[6]</sup>, Atlas Co. in Mumbai in India <sup>[7]</sup>, VPS Co. in USA <sup>[8]</sup>, D-A-Lubricant Co. in Lebanon <sup>[9]</sup>, Metslab Co. in Abu Dhabi <sup>[10]</sup>, Oil testing Lab Bureau Veritas in USA <sup>[11]</sup>, Jordan petroleum refinery Co. LTD in Jordan <sup>[12]</sup>, and Intertek Co. in USA <sup>[13]</sup>, etc.

### 2. Materials Required

1. This computer program is done with a Laptop has the following specifications:

Device name DESKTOP-KNC7LJM

Processor Intel(R) Core(TM) i7-7500U CPU @ 2.70GHz 2.90 GHz

Installed RAM 8.00 GB (7.80 GB usable)

Device ID 36E1DDC9-0676-4208-A136-A9288FCC5630

Product ID 00329-00000-00003-AA164

System type 64-bit operating system, x64-based processor

Pen and touch No pen or touch input is available for this display

Edition Windows 10 Enterprise

Version 22H2

Installed on 6/ 11/ 2023

OS build 19045.4170

Experience Windows Feature Experience Pack  
1000.19054.1000.0

2. Foxpro 9 computer language.

### 3. Theory

The theory of this work depends on the activities of Grease Laboratory in Dora Refinery which is:

1. The samples brought daily to the laboratory by a sample collector.
2. The operator of this computer program will define the grease name and use the computer program to print the specifications of this grease.
3. The specification paper will send to the analyst to choose the tests required to be done on this sample, and collects the results.
4. The operator will introduce the results in the computer program.
5. Then compare these results with the allowable standards.
6. All these data and results will be saved by the computer

program.

7. The computer program will type any report required by the staff, the main menu is:

**Table 1**

No.	Selection
1	Tests
2	Results
3	Certificate
4	Specifications
5	Result data
6	Comparing
7	Time period report
8	Return

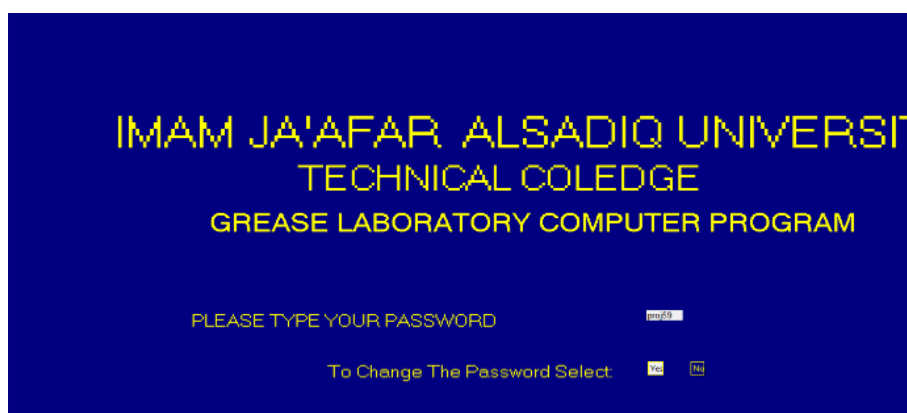
### 4. Practical Work

To use the computer program, do the followings:

1. Click on the logo of the computer program in the Desktop:



2. Type the password, the password can be changed by the operator at any time



3. Choose the required choice from the main menu which illustrated above,



If the first selection is choosed, the program ask the name of grease:

IMAM JA'FAR ALSADIQ UNIVERSITY  
TECHNICAL COLEDGE  
GREASE LABORATORY COMPUTER PROGRAM

Type the grease name

4. After typing the grease name, it's specifications will be shown

GREASE UNIT REPORT

GREASE NAME :	lube3	DATE :	12/25/24
Penetration @ 25 C	1	Dropping Point C	230-60
Water Content %	2	Color	38 MIN.
Texture	3	Free Acidity % As Oleic Acid	100 MIN.
Free Alkalinity As KOH	4		
Time Sample Received	15/04/2025	Signed	ALI

To Print Select: ☐ Yes ☐ No

The program let a choice to print the data or not, and after choosing, the operator will go to the down step.

5. The test results will be introduced in the computer program by the operator

IMAM JA'FAR ALSADIQ UNIVERSITY  
TECHNICAL COLEDGE  
GREASE LABORATORY COMPUTER PROGRAM  
GREASE UNIT REPORT

UNIT	<input type="text"/>	DATE :	12/25/24
GREASE NAME :	<input type="text"/>	Dropping Point C	<input type="text"/>
Penetration @ printrow+25 C	<input type="text"/>	Color	<input type="text"/>
Water Content %	<input type="text"/>	Free Acidity % As Oleic Acid	<input type="text"/>
Texture	<input type="text"/>		
Free Alkalinity As KOH	<input type="text"/>	Signed	<input type="text"/>
Time Sample Received	<input type="text"/>		

The program let a choice to print the data or not, and after choosing, the operator will ask to enter the grease name, then

the test number, then it will go to the down step.  
6. Comparing the results with the standard data.

IMAM JA'FAR ALSADIQ UNIVERSITY  
TECHNICAL COLEDGE  
GREASE LABORATORY COMPUTER PROGRAM  
COMPARING TABLE

TEST NAME	STANDARD VAL.	EXP. VAL.	COMP. RES.
Penetration @ 25 C	1	2	<input type="text"/>
Dropping Point C	230-60	3	<input type="text"/>
Water Content %	2	4	<input type="text"/>
Color	38 MIN.	5	<input type="text"/>
Texture	3	6	<input type="text"/>
Free Acidity % As Oleic Acid	100 MIN.	7	<input type="text"/>
Free Alkalinity As KOH	4	8	<input type="text"/>

After filling the comparing data, the program will return to the main menu.

**IMAM JA'FAR ALSADIQ UNIVERSITY**  
TECHNICAL COLEDGE  
GREASE LABORATORY COMPUTER PROGRAM  
COMPARING TABLE

Grease Unit:	1		
Date:	12/25/24		
TEST NAME	STANDARD VAL	EXP. VAL.	COMP. RES.
Penetration @ 25 C	1	2	ok
Dropping Point C	230-60	3	s
Water Content %	2	4	w
Color	38 MIN.	5	m
Texture	3	6	ok
Free Acidity % As Oleic Acid	100 MIN.	7	s
Free Alkalinity As KOH	4	8	w

7. Click the certificate choice from the main menu: the program ask typing the grease name:

**IMAM JA'FAR ALSADIQ UNIVERSITY**  
TECHNICAL COLEDGE  
GREASE LABORATORY COMPUTER PROGRAM  
CERTIFICATE REPORT

PLEASE TYPE GREASE NAME

After typing the grease name, the program asks typing the number of the test,

**IMAM JA'FAR ALSADIQ UNIVERSITY**  
TECHNICAL COLEDGE  
GREASE LABORATORY COMPUTER PROGRAM  
CERTIFICATE REPORT

PLEASE TYPE THE TEST NUMBER :

then the following page will occure

**IMAM JA'FAR ALSADIQ UNIVERSITY**  
TECHNICAL COLEDGE  
GREASE LABORATORY COMPUTER PROGRAM  
CERTIFICATE REPORT

Grease Unit:	1		
Date:	12/25/24		
TEST NAME	STAND. VAL.	EXP. VAL.	COMP. RES.
Penetration @ 25 C	1	2	ok
Dropping Point C	230-60	3	s
Water Content %	2	4	w
Color	38 MIN.	5	m
Texture	3	6	ok
Free Acidity % As Oleic Acid	100 MIN.	7	s
Free Alkalinity As KOH	4	8	w

To Print Select: ☐ ☐

All the informations about the test (specifications of the grease, the standard data, the result of the tests done and the comparing results) will occure, and there is a choice to print the certificate paper or not. After that the program returns to

the main menu.

8. Click the specification button, the program asks to type the grease name, after typing the grease name, the following page will appear.

**GREASE UNIT REPORT**

GREASE NAME :	lube3	DATE :	12/25/24
Penetration @ 25 C	1	Dropping Point C	230-60
Water Content %	2	Color	38 MIN.
Texture	3	Free Acidity % As Oleic Acid	100 MIN.
Free Alkalinity As KOH	4		
Time Sample Received	15/04/2025	Signed	ALI

To Print Select:

Which contains the specifications of the required, also the program let a choice to print the data or not, after that four

choices (EDIT, ADD, DELETE, and EXIT), if the operator clicks the EDIT choice, the following page will be occur:

**IMAM JAAFAR ALSADIQ UNIVERSIT**  
**TECHNICAL COLEDGE**  
**GREASE LABORATORY COMPUTER PROGRAM**  
**GREASE UNIT REPORT**

GREASE NAME :	lube3	Dropping Point C	230-60
Penetration @ 25 C	1	Color	38 MIN.
Water Content %	2	Free Acidity % As Oleic Acid	100 MIN.
Texture	3		
Free Alkalinity As KOH	4		
Time Sample Received	15/04/2025	Signed	ALI

The program let the operator to change the data as he likes, then the program will save the new data, and return to the main menu

9. If the operator clicks the ADD choice, the following page will occur:

**IMAM JA'FAR ALSADIQ UNIVERSIT**  
**TECHNICAL COLEDGE**  
**GREASE LABORATORY COMPUTER PROGRAM**  
**GREASE UNIT REPORT**

UNIT	1	Test number	108
GREASE NAME :	lube3	DATE :	12/25/202
Penetration @ printrow+25 C	2	Dropping Point C	3
Water Content %	4	Color	5
Texture	6	Free Acidity % As Oleic Acid	7
Free Alkalinity As KOH	8	Signed	10
Time Sample Received	9		

Select one of the followings:

The program let the operator to add a new data, then the program will save the new data, and return to the main menu.  
10. If the operator clicks the DELETE choice, the program will delete this specifications and returns to the main menu.

11. If the operator clicks the EXIT choice, the program will returns to the main menu.  
12. If the operator clicks the RESULT DATA choice from the main menu, the program asks to type the test number:

**IMAM JA'FAR ALSADIQ UNIVERSIT**  
**TECHNICAL COLEDGE**  
**GREASE LABORATORY COMPUTER PROGRAM**

Type the test number

After typing the testnumber of the test, the following page

will occur.

**IMAM JA'FAR ALSADIQ UNIVERSIT**  
**TECHNICAL COLEDGE**  
**GREASE LABORATORY COMPUTER PROGRAM**  
**GREASE UNIT REPORT**

UNIT	1	Test number	106
GREASE NAME :	lube3	DATE :	12/25/24
Penetration @ printrow+25 C	2	Dropping Point C	3
Water Content %	4	Color	5
Texture	6	Free Acidity % As Oleic Acid	7
Free Alkalinity As KOH	8	Signed	10
Time Sample Received	9		

Select one of the followings: [\[EDIT DATA ABOVE\]](#) [\[DELETE DATA ABOVE\]](#) [\[ADD NEW DATA\]](#) [\[EXIT TO MAIN MENU\]](#)

The operator can choose one of the following (EDIT, ADD, DELETE & EXIT), if he clicked the EDIT choice the

following page will occur:

**IMAM JA'FAR ALSADIQ UNIVERSIT**  
**TECHNICAL COLEDGE**  
**GREASE LABORATORY COMPUTER PROGRAM**  
**GREASE UNIT REPORT**

UNIT	1	Test number	106
GREASE NAME :	lube3	DATE :	12/25/202
Penetration @ printrow+25 C	2	Dropping Point C	3
Water Content %	4	Color	5
Texture	6	Free Acidity % As Oleic Acid	7
Free Alkalinity As KOH	8	Signed	10
Time Sample Received	9		

Select one of the followings: [\[EDIT DATA ABOVE\]](#) [\[DELETE DATA ABOVE\]](#) [\[ADD NEW DATA\]](#) [\[EXIT TO MAIN MENU\]](#)

The operator can change and correct the data, then the program return to the main menu, if the operator click the

ADD button, the following page will occur:

**IMAM JA'FAR ALSADIQ UNIVERSIT**  
**TECHNICAL COLEDGE**  
**GREASE LABORATORY COMPUTER PROGRAM**  
**GREASE UNIT REPORT**

UNIT	1	Test number	106
GREASE NAME :	lube3	DATE :	12/25/202
Penetration @ printrow+25 C	2	Dropping Point C	3
Water Content %	4	Color	5
Texture	6	Free Acidity % As Oleic Acid	7
Free Alkalinity As KOH	8	Signed	10
Time Sample Received	9		

Select one of the followings: [\[EDIT DATA ABOVE\]](#) [\[DELETE DATA ABOVE\]](#) [\[ADD NEW DATA\]](#) [\[EXIT TO MAIN MENU\]](#)

The operator can add new result data, and then return to the main menu, if the operator click the DELETE button, the program will delete the current test results and return to the main menu, and if the operator click the EXIT button, the program returns to the main menu.

13. If the operator clicks the COMPARING DATA choice from the main menu, the program asks to type the test number, After typing the test number, the following page will occur:

TEST NAME	STAND. VAL	EXP. VAL.	COMP. RES.
Penetration @ 25 C	1	1	ok
Dropping Point C	230-60	230-60	s
Water Content %	2	2	w
Color	38 MIN.	38 MIN.	m
Texture	3	3	ok
Free Acidity % As Oleic Acid	100 MIN.	100 MIN.	s
Free Alkalinity As KOH	4	4	w

Select one of the followings: [\[EDIT DATA ABOVE\]](#) [\[DELETE DATA ABOVE\]](#) [\[ADD NEW DATA\]](#) [\[EXIT TO MAIN MENU\]](#)

After editing the above data, the program return to the main menu, if the operator select the DELETE button, the program will ask to type the test number and after typing the test code, it will delete this test results with its comparing results.

If the operatorer select the ADD button, the program will ask to type the test number, and after typing the test number, the following page will occure:

TEST NAME	STAND. VA	EXP. VAL.	COMP. RES.
Penetration @ 25 C	1	1	ok
Dropping Point C	230-60	230-60	s
Water Content %	2	2	w
Color	38 MIN.	38 MIN.	m
Texture	3	3	ok
Free Acidity % As Oleic Acid	100 MIN.	100 MIN.	s
Free Alkalinity As KOH	4	4	w

Select one of the followings:

After adding the new data, the program will return to the main menu.

from the main menu, the program asks to type the time period required If:

14. The operator clicks the TIME PERIOD REPORT choice

IMAM JA'FAR ALSADIQ UNIVERSIT  
TECHNICAL COLEDGE  
GREASE UNIT REPORT FROM TO

Type The Date Peroid

Then the program will ask about the file name of tests in this time period,

IMAM JA'FAR ALSADIQ UNIVERSIT  
TECHNICAL COLEDGE  
GREASE UNIT REPORT FROM TO

Type The Date Peroid

Microsoft Visual C++  
C:\\_greaseperiod.dbt already exists.  
overwrite it?

After selecting “yes”, the program shall type all the tests done during this time period (15 tests in one page), and wait rhe

operator to click “PRESS ANY KEY TO CONTINUE” to see the new page until the results are finished.

GREASE PERIOD REPORT FROM		12/01/24	TO		01/30/25
No.	UNIT	TEST DATE	SAMPLE TIME	GREASE NAME	TEST NUMBER
1.00	90	12/11/24	8	lube90	90
2.00	300	12/15/24	8	lube3	102
3.00	400	12/15/24	8	lube3	104
4.00	400	12/15/24	8	lube3	105
5.00	400	12/15/24	7	lube3	101
6.00	300	12/15/24	8	lube3	103
7.00	5	12/20/24	9	lube90	90
8.00	1	12/25/24	9	lube200	105
9.00	1	12/25/24	9	lube3	106

PRESS ANY KEY TO CON

When the operator click the final “PRESS ANY KEY TO CONTINUE”, the following page will occure to let the

operator to choose if he want to print data or not.

GREASE PERIOD REPORT FROM		12/01/24	TO		01/30/25
No.	UNIT	TEST DATE	SAMPLE TIME	GREASE NAME	TEST NUMBER
1.00	90	12/11/24	8	lube90	90
2.00	300	12/15/24	8	lube3	102
3.00	400	12/15/24	8	lube3	104
4.00	400	12/15/24	8	lube3	105
5.00	400	12/15/24	7	lube3	101
6.00	300	12/15/24	8	lube3	103
7.00	5	12/20/24	9	lube90	90
8.00	1	12/25/24	9	lube200	105
9.00	1	12/25/24	9	lube3	106

TO PRINT THE ABOVE DATA SELECT :

If the operator select YES the data will printed and return to the main menu, if NO the program will return to the main menu.

15. If the operator clicks the EXIT choice from the main menu, the program will exit to the desktop screen.

## 5. Conclusion

By using thid computer program, the operator in the laboratory of Dora Refinery can:

1. Type the specifications of the grease prepared to test, and give it to the analyst to sign the suitable tests required.
2. Introduce the test results in the program, and give a comparing paper between the standard and experimental data, and let the analyst to compare between them and type the results of comparing.
3. Edit, delete add new data to the file of informations about greases, tests, and comparing results.
4. Give a report at any time about the tests done during the required period time.

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