Faculty of Engineering and Technology.

Department of Electrical and Computer Engineering

ENCS3130, LINUX LABORATORY

Project No.1

Shell Scripting Project

Medical Test Management System

Prepared by : Saja Mohammad   ID : 1211278

　　　　　　　Nadia El sheikh   ID: 1210021

Instructor : Dr. Aziz Qaroush

Teaching Assistant : Eng. Tarek Zidan

Section : 3

Date : 14/8/2024

Project description :

We Develop a system in shell scripting to efficiently store, manage, and retrieve medical test data for individual patients. This system acts as a basic patient record management system focusing on test results. The system will include features for adding new test results, updating existing records, deleting outdated or incorrect entries, and retrieving specific test results based on patient ID or test type.

File Format:

The medical test will be stored in text file named midecalRecord. Each line in the text file represents a single medical test. The representation will include fields for:

First, we have created two files, which are:

```
nadia_saja/midecalRecord.txt
1   1300500: Hemoglobin (Hgb), 2024-03, 18.0, g/dL, completed
2   1300500: White Blood Cell Count (WBC), 2024-03, 5.5, x10^9/L, completed
3   1300500: Platelets (PLT), 2024-03, 200, x10^9/L, completed
4   1300500: Glucose (GLU), 2024-03, 85, mg/dL, completed
5   1234567: Hemoglobin (Hgb), 2024-03, 20, g/dL, completed
6   1234567: Blood Glucose Test (BGT), 2024-03, 23, mg/dL, completed
7   1300509: Hemoglobin (Hgb), 2024-03, 20.0, g/dL, completed
8   1300500: RBC, 2024-03, 13.5, mg/dL, completed
9   1300511: LDL, 2024-03, 110, mg/dL, pending
10  3333333: RBC, 2021-08, 12, , Pending
11
```

```
nadia_saja/medicalTest.txt
1   Hemoglobin (Hgb): > 13.8, < 17.2; Unit: g/dL
2   Blood Glucose Test (BGT): > 70, < 99; Unit: mg/dL
3   LDL Cholesterol Low-Density Lipoprotein (LDL): < 100; L
4   Systolic Blood Pressure (systole): < 120; Unit: mm Hg
5   Diastolic Blood Pressure (diastole): < 80; Unit: mm Hg
6
```

System Functionality:

• Add a new medical test record:

the system will allow the user to store a new medical test with the required data. The system will check the validity of the input data.

➢ The Test Cases:

```
Welcome to First project in Linux Lab  Nadia Saja
---------------------------------------------------
0.Read Files
1.Add a new medical test record
2.Search for a test by patient ID
3.Searching for up normal tests
4.Average test value
5.Update an existing test result
6.Delet the test
7.EXIT :(
1
Enter Patient ID (7 digits):
25
Invalid ID. It may contain alphabets or the length is not 7 digits. Try again.
Enter Patient ID (7 digits):
111111
Invalid ID. It may contain alphabets or the length is not 7 digits. Try again.
Enter Patient ID (7 digits):
1111111
Enter Test Name:
po
Invalid Test Name. Please enter a valid test name from the following list:
Hemoglobin (Hgb)
White Blood Cell Count (WBC)
Platelets (PLT)
Glucose (GLU)
Blood Glucose Test (BGT)
RBC
LDL
Try again
```

```
Enter Test Name:
LDL
Valid Test Name: LDL
Enter Test Date (YYYY-MM):
2024-09
Enter Test Result:
25
Enter Status (Pending/Completed/Reviewed):
P
The midecalRecord.txt after added new Recored
1300500: Hemoglobin (Hgb), 2024-03, 18.0, g/dL, completed
1300500: White Blood Cell Count (WBC), 2024-03, 5.5, x10^9/L, completed
1300500: Platelets (PLT), 2024-03, 200, x10^9/L, completed
1300500: Glucose (GLU), 2024-03, 85, mg/dL, completed
1234567: Hemoglobin (Hgb), 2024-03, 20, g/dL, completed
1234567: Blood Glucose Test (BGT), 2024-03, 23, mg/dL, completed
1300509: Hemoglobin (Hgb), 2024-03, 20.0, g/dL, completed
1300500: RBC, 2024-03, 13.5, mg/dL, completed
1300511: LDL, 2024-03, 110, mg/dL, pending
3333333: RBC, 2021-08, 12, , Pending
1111111: LDL, 2024-09, 25,P
```

When the Id is not valid ➔ contain an alphabets or length is not 7 the code will handel this ,the same thing of the test name when the testname entered by user is not valid it will handel it by display all name test in the tests file and the user will chose .

• Search for a test by patient ID:

the system will have the following functionality based on user selection:
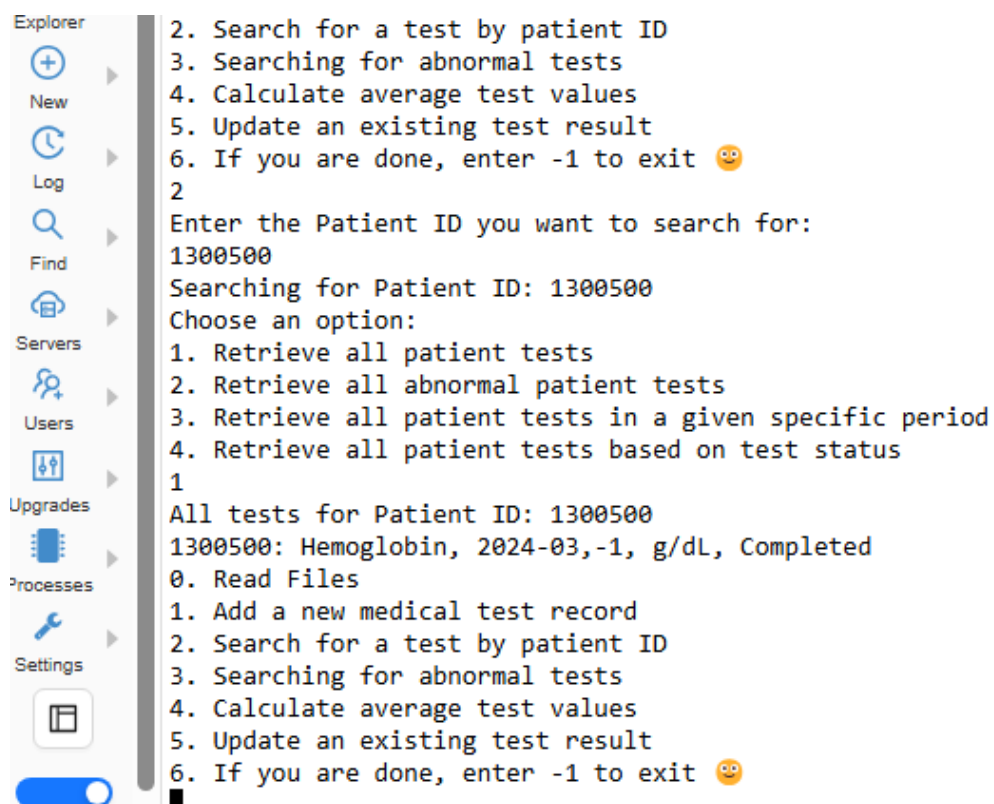
 Retrieve all patient tests

 Retrieve all up normal patient tests

 Retrieve all patient tests in a given specific period

 Retrieve all patient tests based on test status

> ➢ **The Test Cases:**

Retrieve all patient tests


```
Explorer        2. Search for a test by patient ID
                3. Searching for abnormal tests
   (+)          4. Calculate average test values
   New          5. Update an existing test result
   (C)          6. If you are done, enter -1 to exit  🙂
   Log          2
   Q            Enter the Patient ID you want to search for:
   Find         1300500
                Searching for Patient ID: 1300500
   (⊟)          Choose an option:
   Servers      1. Retrieve all patient tests
   𝒫₊           2. Retrieve all abnormal patient tests
   Users        3. Retrieve all patient tests in a given specific period
                4. Retrieve all patient tests based on test status
   [↕]          1
   Upgrades     All tests for Patient ID: 1300500
                1300500: Hemoglobin, 2024-03,-1, g/dL, Completed
   Processes    0. Read Files
                1. Add a new medical test record
   🔧           2. Search for a test by patient ID
   Settings     3. Searching for abnormal tests
                4. Calculate average test values
   [▣]          5. Update an existing test result
                6. If you are done, enter -1 to exit  🙂
```

Retrieve all patient tests in a given specific period

```
Enter the Patient ID you want to search for:
1300533
Searching for Patient ID: 1300533
Choose an option:
1. Retrieve all patient tests
2. Retrieve all abnormal patient tests
3. Retrieve all patient tests in a given specific period
4. Retrieve all patient tests based on test status
3
Enter the period (YYYY-MM) to filter the tests:
2024-01
All tests for Patient ID: 1300533 in the period 2024-01
1300533: Systolic Blood Pressure, 2024-01,23, mm Hg, Completed
```

Retrieve all patient tests based on test status

```
Enter the Patient ID you want to search for:
1300544
Searching for Patient ID: 1300544
Choose an option:
1. Retrieve all patient tests
2. Retrieve all abnormal patient tests
3. Retrieve all patient tests in a given specific period
4. Retrieve all patient tests based on test status
4
Enter the status (e.g., Completed, Pending, Reviewed) to filter the tests:
Reviewed
All tests for Patient ID: 1300544 with status Reviewed
1300544: Diastolic Blood Pressure, 2024-01, 75, mm Hg, Reviewed
1300544: Dia Blood Preure, 2024-01, 95, mm Hg, Reviewed
1300544: Dia Blod Preure, 2024-01, 95, mm Hg, Reviewed
```

• **Searching for up normal tests:** the system will retrieve all up normal patients' tests based on the input medical test.

➢ **The Test Cases:**

```
                7.EXIT :(
  New           3
  ⏱          ▸  Patient ID: 1300500
  Log           Test Name: Hemoglobin(Hgb)
  🔍         ▸  Test Result: 18
  Find          Upper Value: 17
  🖥         ▸  Upper Value: 17 < Test Result: 18 ,so this is upnormal test .
  Servers       #################################################################################
  👥         ▸  Patient ID: 1234567
  Users         Test Name: Hemoglobin(Hgb)
  🎛         ▸  Test Result: 20
  Upgrades      Upper Value: 17
  ▪         ▸  Upper Value: 17 < Test Result: 20 ,so this is upnormal test .
  Processes     #################################################################################
  🔧        ▸  Patient ID: 1300509
  Settings      Test Name: Hemoglobin(Hgb)
                Test Result: 20
                Upper Value: 17
                Upper Value: 17 < Test Result: 20 ,so this is upnormal test .
                #################################################################################
                0 Read Files
```

• Average test value:

the system will retrieve the average value of each medical test.

➢ **The Test Cases:**

```
  ▸  ▐  1. Add a new medical test record
        2. Search for a test by patient ID
        3. Searching for abnormal tests
  ▸  ▐  4. Calculate average test values
        5. Update an existing test result
        6. If you are done, enter -1 to exit 🙂
  ▸  ▐  4
        Test percentages:
  ▸  ▐   2024-01: 50.00%
         2024-02: 16.00%
  ▸  ▐   2024-03: 33.00%
```

• Update an existing test result.

We have made an update function so that the update is based on the line number in the file to ask the user to enter the new value of the result after displaying the previous

➢ The Test Cases:

test-1

```
5
      1  1300500: Hemoglobin, 2024-03,-1, g/dL, Completed
      2  1300511: LDL Cholesterol, 2024-03, 110, mg/dL, Pending
      3  1300522: Blood Glucose Test, 2024-02, 85, mg/dL, Reviewed
      4  1300533: Systolic Blood Pressure, 2024-01, 118, mm Hg, Completed
      5  1300544: Diastolic Blood Pressure, 2024-01, 75, mm Hg, Reviewed
      6  1300544: Dia Blood Preure, 2024-01, 95, mm Hg, Reviewed
      7  1300544: Dia Blod Preure, 2024-01, 95, mm Hg, Reviewed
Enter the line number where you want to update the test result:
3
Old test result:  85
Please enter the new test result value:
55
Updated line 3 with the new value.
Updated line:
1300522: Blood Glucose Test, 2024-02,55, mg/dL, Reviewed
0. Read Files
1. Add a new medical test record
2. Search for a test by patient ID
3. Searching for abnormal tests
4. Calculate average test values
5. Update an existing test result
6. If you are done, enter -1 to exit  🙂
```

test-2

```
5
      1  1300500: Hemoglobin, 2024-03,-1, g/dL, Completed
      2  1300511: LDL Cholesterol, 2024-03, 110, mg/dL, Pending
      3  1300522: Blood Glucose Test, 2024-02,55, mg/dL, Reviewed
      4  1300533: Systolic Blood Pressure, 2024-01, 118, mm Hg, Completed
      5  1300544: Diastolic Blood Pressure, 2024-01, 75, mm Hg, Reviewed
      6  1300544: Dia Blood Preure, 2024-01, 95, mm Hg, Reviewed
      7  1300544: Dia Blod Preure, 2024-01, 95, mm Hg, Reviewed
Enter the line number where you want to update the test result:
4
Old test result:  118
Please enter the new test result value:
23
Updated line 4 with the new value.
Updated line:
1300533: Systolic Blood Pressure, 2024-01,23, mm Hg, Completed
0. Read Files
1. Add a new medical test record
2. Search for a test by patient ID
3. Searching for abnormal tests
4. Calculate average test values
5. Update an existing test result
6. If you are done, enter -1 to exit  🙂
```

• Delete test case result :

➢ The Test Cases:

```
Enter the ID of the patient whose test you want to delete:
1111111
Tests for Patient ID 1111111:
1111111: LDL, 2024-09, 25,P
Enter the name of the test you want to delete: LDL
Test 'LDL' for Patient ID 1111111 has been deleted.
1300500: Hemoglobin (Hgb), 2024-03, 18.0, g/dL, completed
1300500: White Blood Cell Count (WBC), 2024-03, 5.5, x10^9/L, completed
1300500: Platelets (PLT), 2024-03, 200, x10^9/L, completed
1300500: Glucose (GLU), 2024-03, 85, mg/dL, completed
1234567: Hemoglobin (Hgb), 2024-03, 20, g/dL, completed
1234567: Blood Glucose Test (BGT), 2024-03, 23, mg/dL, completed
1300509: Hemoglobin (Hgb), 2024-03, 20.0, g/dL, completed
1300500: RBC, 2024-03, 13.5, mg/dL, completed
1300511: LDL, 2024-03, 110, mg/dL, pending
3333333: RBC, 2021-08, 12, , Pending
0.Read Files
1.Add a new medical test record
2.Search for a test by patient ID
3.Searching for up normal tests
4.Average test value
5.Update an existing test result
6.Delet the test
7.EXIT :(
```