ELECTRICAL&COMPUTER ENGINGEERING DEPARTMENT

LINUX LABORATORY ENCS313

Shell Scripting - Project 1

Medical Test Management System

Prepared by: Joud Thaher, Labiba Sharia

Id numbers: 1221381, 1220228

Instructor: Dr. Mohammad Jubran

Assistant: Eng. Ahed Mafarjeh

Section: 1

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Test Cases

Note: Please use the following command (using bash) as it might not work with shell.

```
ubuntu@ubuntu:~/Downloads$ bash ProjectOne
```

Also note that we might give a different file name because we edited the file multiple times each one alone, in different times.

Now let's go through the test cases in our medical test management system!

First, we created the two files MedicalTest and medecialRecord as requested in the project.

Below is what it looks like after running the previous command:

```
ubuntu@ubuntu:~/Downloads$ bash ProjectOne
medicalTest.txt exists
midecalRecord.txt exists
the system is downloading...!

============================STATISTICS============================

number of Patient tests is 11
number of valid test is is 6

============================PATIENTS IS============================

1300500|Hgb|2024-03|13.5|mg/dl|completed|
1234567|BGT|4444-09|34.4|ww/ee|completed|
1234567|BGT|5555-01|15.0|dd/dd|pending|
1234567|BGT|5555-09|15.0|gg|pending|
1234567|BGT|5555-05|15.0|hh|pending|
1234567|BGT|5555-05|15.5|gg|pending|
3456789|dd|2024-01|44.6|gg|pending|
2345678|dd|4444-04|45.6|gg|pending|
2345695|dd|4444-04|44.8|gg|pending|
1234567|BGT|4444-04|45.6|gg|pending|
1234567|LDL|4444-04|12.0|mg|pending|

============================TESTS IS============================

Hgb|13.8|17.2|g/dL|
BGT|70|99|mg/dL|
LDL||100|mg/dL|
systole||120|mmHg|
diastole||80|mmHg|
dd|44||mmHg|
```

It first gives the statistics based on the files, note that the valid tests are as shown in the project document. It then prints them in order to keep track of any change.

```
dd|44||mmHg|


================================================================================
===============================================SYSTEM START=====================================
================================================================================

1-add test
2-search for test
3-delete a test
4-search for abnromal test
5-find avarge value for each test
6-update test
7-statistics
8-exit
please choose one of the following
█
```

After printing the statistics, it gives the user a menu to choose the operation he wants.

1. Add a New Medical Test Record

• *Adding a Valid Input Test:*

```
please choose one of the following
1


================================================================================
============================================RESULT=============================
================================================================================

please enter your Patient ID
1234567
please enter your test name
LDL
please enter your test date
2020-07
please enter your result
17.9
please enter your unit
mg
please enter your status
pending
============================================MENU=============================
```

Choosing 1 and adding valid input record

Then we can choose 7 and print the statistics to make sur the record was added successfully.

```
=========================patients is==========================

1300500|Hgb|2024-03|13.5|mg/dl|completed|
1234567|BGT|4444-09|34.4|ww/ee|completed|
1234567|BGT|5555-01|15.0|dd/dd|pending|
1234567|BGT|5555-09|15.0|gg|pending|
1234567|BGT|5555-05|15.0|hh|pending|
1234567|BGT|5555-05|15.5|gg|pending|
3456789|dd|2024-01|44.6|gg|pending|
2345678|dd|4444-04|45.6|gg|pending|
2345695|dd|4444-04|44.8|gg|pending|
1234567|BGT|4444-04|45.6|gg|pending|
1234567|LDL|4444-04|12.0|mg|pending|
1234567|LDL|2020-07|17.9|mg|pending|
```

We can see that the test record was added successfully as the user entered.

- *Invalid Patient ID :*

```
========================================================MENU========================================================

1-add test
2-search for test
3-delete a test
4-search for abnromal test
5-find avarge value for each test
6-update test
7-statistics
8-exit
please choose one of the following
1


====================================================================================================================
=======================================================RESULT=======================================================
====================================================================================================================

please enter your Patient ID
12
please enter ID with 7 digit
please enter valid ID ! ! !
12a
please just enter numbers
please enter valid ID ! ! !
122s445
please just enter numbers
please enter valid ID ! ! !
1.344567
please just enter  intger
please enter valid ID ! ! !
```

As requested, the ID should contain 7 digits, with only INTEGER NUMBERS, so it will ask the user to choose a valid ID whenever the user enters less or more than 7 digits, or wherever it enters floating-points or strings instead of numbers, as shown in the previous picture.

- *Invalid Test Date Format :*

```
please enter your test date
19998-01
please enter the year in range 4 digit
please enter valid date ! ! !
1999-44
please enter vaild month in range (12,1)
please enter valid date ! ! !
1999-1
please enter the month in range 2 digit like: 01  not 1
please enter valid date ! ! !
01-1999
please enter the year in range 4 digit
please enter the month in range 2 digit like: 01  not 1
please enter valid date ! ! !
hvws-bb
please just enter numbers
please enter valid date ! ! !
1..4-7.8
please just enter numbers
please enter valid date ! ! !
```

- *Invalid Test Result :*

```
please enter your result
aa
please just enter numbers
please just enter the number in float format like 123.0
please enter valid result ! ! !
122
please just enter the number in float format like 123.0
please enter valid result ! ! !
122.gg
please just enter numbers
please enter valid result ! ! !
122.0
please enter your unit
```

- *Invalid Status :*

```
please enter your status
177bhvjfr
please just enter string
please enter valid status ! ! !
128928
please just enter string
please enter valid status ! ! !
unknown
pleae enter one of the following (pending,completed,reviewed)
please enter valid status ! ! !
pending
=================================================MENU=================================================
```

2. Search for a Test by Patient ID

```
please choose one of the following
2

====================================================================================================
=================================================RESULT=============================================
====================================================================================================

please enter the ID
12fvyh8
1-Retrieve all patient tests
2-Retrieve all up abnormal patient tests
3-Retrieve all patient tests in a given specific period
4-Retrieve all patient tests based on test status
please choose one of the following operation
1
please just enter numbers
please enter valid ID ! ! !
1234567
1- 1234567: BGT, 4444-09, 34.4, ww/ee, completed
2- 1234567: BGT, 5555-01, 15.0, dd/dd, pending
3- 1234567: BGT, 5555-09, 15.0, gg, pending
4- 1234567: BGT, 5555-05, 15.0, hh, pending
5- 1234567: BGT, 5555-05, 15.5, gg, pending
6- 1234567: BGT, 4444-04, 45.6, gg, pending
7- 1234567: LDL, 4444-04, 12.0, mg, pending
8- 1234567: LDL, 2020-07, 17.9, mg, pending
9- 1234567: LDL, 2020-09, 122.0, mg, pending
=================================================MENU=================================================
```

Note that the user gave invalid ID and it asked the user again to give valid ID so that it gives the desired result.

- *Retrieve All Tests*

```
please choose one of the following
2

============================================================================================================
==================================================RESULT=====================================================
============================================================================================================

please enter the ID
1234567
1-Retrieve all patient tests
2-Retrieve all up abnormal patient tests
3-Retrieve all patient tests in a given specific period
4-Retrieve all patient tests based on test status
please choose one of the following operation
1
1- 1234567: BGT, 4444-09, 34.4, ww/ee, completed
2- 1234567: BGT, 5555-01, 15.0, dd/dd, pending
3- 1234567: BGT, 5555-09, 15.0, gg, pending
4- 1234567: BGT, 5555-05, 15.0, hh, pending
5- 1234567: BGT, 5555-05, 15.5, gg, pending
6- 1234567: BGT, 4444-04, 45.6, gg, pending
7- 1234567: LDL, 4444-04, 12.0, mg, pending
8- 1234567: LDL, 2020-07, 17.9, mg, pending
9- 1234567: LDL, 2020-09, 122.0, mg, pending
```

- ***Retrieve Abnormal Tests***

Let's first remember the range of tests:

```
=========================TESTS IS=============================

Hgb|13.8|17.2|g/dL|
BGT|70|99|mg/dL|
LDL||100|mg/dL|
systole||120|mmHg|
diastole||80|mmHg|
dd|44||mmHg|
```

Now note the ranges, they are abnormal (it gives all tests because this is based on ID while option 4 will give based on test name)

```
please choose one of the follwing
2


====================================================================================================
==============================================RESULT================================================
====================================================================================================

please enter the ID
1234567
1-Retrieve all patient tests
2-Retrieve all up abnormal patient tests
3-Retrieve all patient tests in a given specific period
4-Retrieve all patient tests based on test status
please choose one of the follwing optaion
2
1- 1234567: BGT, 4444-09, 34.4, ww/ee, completed
2- 1234567: BGT, 5555-01, 15.0, dd/dd, pending
3- 1234567: BGT, 5555-09, 15.0, gg, pending
4- 1234567: BGT, 5555-05, 15.0, hh, pending
5- 1234567: BGT, 5555-05, 15.5, gg, pending
6- 1234567: BGT, 4444-04, 45.6, gg, pending
7- 1234567: Hgb, 2021-05, 7.1, mg, pending
8- 1234567: Hgb, 2021-09, 8.9, g/dL, pending
```

- *Retrieve Tests in a Period*

```
please choose one of the following
2


====================================================================================================
==============================================RESULT================================================
====================================================================================================

please enter the ID
1234567
1-Retrieve all patient tests
2-Retrieve all up abnormal patient tests
3-Retrieve all patient tests in a given specific period
4-Retrieve all patient tests based on test status
please choose one of the following operation
3
please enter date in format (YYYY-MM)
from :
2019-01
please enter date in format (YYYY-MM)
to :
2024-11
1- 1234567: LDL, 2020-07, 17.9, mg, pending
2- 1234567: LDL, 2020-09, 122.0, mg, pending
3- 1234567: Hgb, 2021-05, 7.1, mg, pending
4- 1234567: Hgb, 2021-09, 7.1, g/dL, pending
```

```
please enter the ID
1234567
1-Retrieve all patient tests
2-Retrieve all up abnormal patient tests
3-Retrieve all patient tests in a given specific period
4-Retrieve all patient tests based on test status
please choose one of the following operation
3
please enter date in format (YYYY-MM)
from :
2020-01
please enter date in format (YYYY-MM)
to :
2020-02
there is no Patient with this range
```

- ***Retrieve Tests by Status***

```
4-Retrieve all patient tests based on test status
please choose one of the following operation
4
please enter the status that you want to search for
pending
1- 1234567: BGT, 5555-01, 15.0, dd/dd, pending
2- 1234567: BGT, 5555-09, 15.0, gg, pending
3- 1234567: BGT, 5555-05, 15.0, hh, pending
4- 1234567: BGT, 5555-05, 15.5, gg, pending
5- 1234567: BGT, 4444-04, 45.6, gg, pending
6- 1234567: LDL, 4444-04, 12.0, mg, pending
7- 1234567: LDL, 2020-07, 17.9, mg, pending
8- 1234567: LDL, 2020-09, 122.0, mg, pending
9- 1234567: Hgb, 2021-05, 7.1, mg, pending
10- 1234567: Hgb, 2021-09, 7.1, g/dL, pending
```

```
4-Retrieve all patient tests based on test status
please choose one of the following operation
4
please enter ID with 7 digit
please enter valid ID ! ! !
1234567
please enter the status that you want to search for
unknown
pleae enter one of the following (pending,completed,reviewed)
please enter valid statues
completed
1- 1234567: BGT, 4444-09, 34.4, ww/ee, completed
=====================================================MENU=====================================================
```

```
please enter the ID
1234567
1-Retrieve all patient tests
2-Retrieve all up abnormal patient tests
3-Retrieve all patient tests in a given specific period
4-Retrieve all patient tests based on test status
please choose one of the following operation
4
please enter the status that you want to search for
reviewed
there is no Patient with this status
```

3. Delete a Test

- *Delete an existing test record*

```
=============================PATIENTS IS=============================

1300500|Hgb|2024-03|13.5|mg/dl|completed|
1234567|BGT|4444-09|34.4|ww/ee|completed|
1234567|BGT|5555-01|15.0|dd/dd|pending|
1234567|BGT|5555-09|15.0|gg|pending|
1234567|BGT|5555-05|15.0|hh|pending|
1234567|BGT|5555-05|15.5|gg|pending|
3456789|dd|2024-01|44.6|gg|pending|
2345678|dd|4444-04|45.6|gg|pending|
2345695|dd|4444-04|44.8|gg|pending|
1234567|BGT|4444-04|45.6|gg|pending|
1234567|LDL|4444-04|12.0|mg|pending|
1234567|LDL|2020-07|17.9|mg|pending|
1234567|LDL|2020-09|122.0|mg|pending|
1234567|Hgb|2021-05|7.1|mg|pending|
1234567|Hgb|2021-09|7.1|g/dL|pending|
```

```
please choose one of the following
3

===================================================================================================
================================================RESULT=============================================
===================================================================================================

please enter your Patient ID
1234567
please enter your test name
LDL
please enter your test date
2020-09
please enter your result
122.0
please enter your unit
mg
please enter your status
pending
```

Record is deleted successfully!

```
============================patients is============================

1300500|Hgb|2024-03|13.5|mg/dl|completed|
1234567|BGT|4444-09|34.4|ww/ee|completed|
1234567|BGT|5555-01|15.0|dd/dd|pending|
1234567|BGT|5555-09|15.0|gg|pending|
1234567|BGT|5555-05|15.0|hh|pending|
1234567|BGT|5555-05|15.5|gg|pending|
3456789|dd|2024-01|44.6|gg|pending|
2345678|dd|4444-04|45.6|gg|pending|
2345695|dd|4444-04|44.8|gg|pending|
1234567|BGT|4444-04|45.6|gg|pending|
1234567|LDL|4444-04|12.0|mg|pending|
1234567|LDL|2020-07|17.9|mg|pending|
1234567|Hgb|2021-05|7.1|mg|pending|
1234567|Hgb|2021-09|7.1|g/dL|pending|
```

- ***Delete a test that does not exist***

Current Records:

```
============================patients is============================

1300500|Hgb|2024-03|13.5|mg/dl|completed|
1234567|BGT|4444-09|34.4|ww/ee|completed|
1234567|BGT|5555-01|15.0|dd/dd|pending|
1234567|BGT|5555-09|15.0|gg|pending|
1234567|BGT|5555-05|15.0|hh|pending|
1234567|BGT|5555-05|15.5|gg|pending|
3456789|dd|2024-01|44.6|gg|pending|
2345678|dd|4444-04|45.6|gg|pending|
2345695|dd|4444-04|44.8|gg|pending|
1234567|BGT|4444-04|45.6|gg|pending|
1234567|LDL|4444-04|12.0|mg|pending|
1234567|LDL|2020-07|17.9|mg|pending|
1234567|Hgb|2021-05|7.1|mg|pending|
1234567|Hgb|2021-09|7.1|g/dL|pending|
```

Let's delete a record that does not exist!

```
please choose one of the following
3


========================================================================================================
============================================RESULT======================================================
========================================================================================================

please enter your Patient ID
1221381
please enter your test name
LDL
please enter your test date
2018-07
please enter your result
14.8
please enter your unit
mg
please enter your status
completed
there is no test with same information
```

We can't delete a record that does not exist! So we tell the user that there is no such record.

4. Searching for Abnormal Tests

- *Specific Test Search*

```
please choose one of the follwing
4


=================================================================================================
===========================================RESULT===============================================
=================================================================================================



please enter your test name
Hgb
1- 1300500: Hgb, 2024-03, 13.5, mg/dl, completed
2- 1234567: Hgb, 2021-05, 7.1, mg, pending
3- 1234567: Hgb, 2021-09, 8.9, g/dL, pending
==========================================MENU==================================================
```

- *No Abnormal Tests*

```
please choose one of the follwing
4


=================================================================================================
===========================================RESULT===============================================
=================================================================================================



please enter your test name
LDL
there is no Patient with abnormal result
```

5. Average Test Value

- *Calculate Average*

```
2-search for test
3-delete a test
4-search for abnromal test
5-find avarge value for each test
6-update test
7-statistics
8-exit
please choose one of the following
5


======================================================================================================
================================================RESULT================================================
======================================================================================================

Hgb :9.2
BGT :23.4
LDL :14.9
systole :0
diastole :0
dd :45.0
================================================MENU==================================================
```

- *No Records for Test*

Note that it also handles zero division as it sits the average to zero when there are no records for the test as shown below:

```
2-search for test
3-delete a test
4-search for abnromal test
5-find avarge value for each test
6-update test
7-statistics
8-exit
please choose one of the following
5


======================================================================================================
================================================RESULT================================================
======================================================================================================

Hgb :9.2
BGT :23.4
LDL :14.9
systole :0
diastole :0
dd :45.0
```

6. Update an Existing Test Result

- *Valid Update*

```
==========================PATIENTS IS=============================

1300500|Hgb|2024-03|13.5|mg/dl|completed|
1234567|BGT|4444-09|34.4|ww/ee|completed|
 Help 7|BGT|5555-01|15.0|dd/dd|pending|
1234567|BGT|5555-09|15.0|gg|pending|
1234567|BGT|5555-05|15.0|hh|pending|
1234567|BGT|5555-05|15.5|gg|pending|
3456789|dd|2024-01|44.6|gg|pending|
2345678|dd|4444-04|45.6|gg|pending|
2345695|dd|4444-04|44.8|gg|pending|
1234567|BGT|4444-04|45.6|gg|pending|
1234567|LDL|4444-04|12.0|mg|pending|
1234567|LDL|2020-07|17.9|mg|pending|
1234567|Hgb|2021-05|7.1|mg|pending|
1234567|Hgb|2021-09|7.1|g/dL|pending|
```

```
please choose one of the following
6

================================================================
=========================================RESULT=================================================
================================================================

please enter your Patient ID
1234567
please enter your test name
Hgb
please enter your test date
2021-09
please enter your result
7.1
please enter your unit
g/dL
please enter your status
pending
1234567: Hgb, 2021-09, 7.1, g/dL, pending
please enter your new result
8.9
```

```
==========================patients is=============================

1300500|Hgb|2024-03|13.5|mg/dl|completed|
1234567|BGT|4444-09|34.4|ww/ee|completed|
1234567|BGT|5555-01|15.0|dd/dd|pending|
1234567|BGT|5555-09|15.0|gg|pending|
1234567|BGT|5555-05|15.0|hh|pending|
1234567|BGT|5555-05|15.5|gg|pending|
3456789|dd|2024-01|44.6|gg|pending|
2345678|dd|4444-04|45.6|gg|pending|
2345695|dd|4444-04|44.8|gg|pending|
1234567|BGT|4444-04|45.6|gg|pending|
1234567|LDL|4444-04|12.0|mg|pending|
1234567|LDL|2020-07|17.9|mg|pending|
1234567|Hgb|2021-05|7.1|mg|pending|
1234567|Hgb|2021-09|8.9|g/dL|pending|
```

- *Invalid Update*

```
please choose one of the following
6


==========================================================================================
=====================================RESULT===============================================
==========================================================================================

please enter your Patient ID
1221381
please enter your test name
LDL
please enter your test date
2020-12
please enter your result
88.9
please enter your unit
mg
please enter your status
complted
pleae enter one of the following (pending,completed,reviewed)
please enter valid status ! ! !
completed
1221381: LDL, 2020-12, 88.9, mg, completed
there is no test with same information
```

7. Error Handling

- *Invalid File Name*

```
ubuntu@ubuntu:~/Downloads$ mv medicalTest.txt medicalTexxt.txt
ubuntu@ubuntu:~/Downloads$ bash ProjectOne
file (medicalTest.txt) not found
please check the file before running
```

…………………..

It does not function when there is no medicalTest file but it creates a medicalRecord file when it is not found.

```
ubuntu@ubuntu:~/Downloads$ mv midecalRecord.txt midecalRecordd.txt
ubuntu@ubuntu:~/Downloads$ bash ProjectOne
medicalTest.txt exists
file (midecalRecord.txt) not found
the file is being created...!
the system is downloading...!
```

8. Edge Cases

- *Empty File*

Note that when medicalRecord is being created from the system (when it is not found), or the file is originally empty, the statistics can show that as there will be no patient tests.

```
============================STATISTICS==============================

number of Patient tests is 0
number of valid test is is 6
```