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| Many Labs  User Manual  Pedro Sousa 1DF **1201428**  DiogoViolante 1DF **1201284**  GonçaloTeixeira1DF **1200882**  João Oliveira 1DF **1201183** | |
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| Uma imagem com interior, escova de dentes, plástico  Descrição gerada automaticamente | | | |
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| **Many Labs App** Development Team This apllication developed for the company Many Labs, was programmed and designed by the students of Computer Engineering: Gonçalo Teixeira, Diogo Violante, João Oliveira e Pedro Sousa. System Overview This application was realized to facilitate Many Labs in several functions of their work, with na intuitive use, the app uses na system of Login in the system, where the respective features of each employee are presented by a list since, registering a new client, to create e type of test, ending with na daily report to National Health Service. | |
| Imagem de muitos lâmpadas com apenas uma acesa | |  |
| Figura 1 | |  |
| System Requirements The application will be deployed to a machine with 8GB of RAM. Software Installation The Software has to be downloaded and initicialized by the .jar file that is on the downloaded folder. | |  |

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| system Features This project was sectioned in several User Stories. Each User Storie has an task associated. Feature 1 – US1 As a client, I want to access the application to view the results of the tests I have performed. Feature 2 – US2As a client, I want to update my personal data. As a client, I want to update my personal data.Feature 3 – US3As a receptionist of the laboratory, I want to register a client.  Feature 4 – US4 As a receptionist of the laboratory, I intend to register a test to be performed to a registered client.   Feature 5 – US5As a medical lab technician, I want to record the samples collected in the scope of a given test.  Feature 7 – US7 As an administrator, I want to register a new employee.   Feature 8 – US8As an administrator, I want to register a new clinical analysis laboratory stating which kind of test(s) it operates.  Feature 9 – US9 As an administrator, I want to specify a new type of test and its collecting methods.   Feature 10 – US10 As an administrator, I want to specify a new parameter and categorize it.   Feature 11 – US11 As an administrator, I want to specify a new parameter category   Feature 12 – US12 As a clinical chemistry technologist, I intend to record the results of a given test   Feature 13 – US13 As a clinical chemistry technologist, I intend to consult the historical tests performed by a particular client and to be able to check tests details/results Feature 14 – US14 As a specialist doctor, I intend to make the diagnosis and write a report for a given test.   Feature 15 – US15 As a laboratory coordinator, I want to validate the work done by the clinical chemistry technologist and specialist doctor. Feature 16 – US16 As a laboratory coordinator, I want to have an overview of all the tests performed by Many Labs and analyse the overall performance of the company. Feature 17 – US17 As a laboratory coordinator, I want to import clinical tests from a CSV file.   Feature 18 – US18 As an Administrator I want to send the Covid-19 report to the NHS at any time. Feature 19 – US19 The Many Labs company wants to send to the NHS daily reports of Covid-19 automatically generated at 6:00 am. TroubleShootingIssue #1 IllegalArgumentException:   * There is no category with that name * Check if the inserted data is between the limits * Unkown Error recording the test Results  ContactoS In case of any dought you can contact the support.  In order to talk directly with the programmers send email to:   * Gonçalo Teixeira - [1200882@isep.ipp.pt](mailto:1200882@isep.ipp.pt) * Diogo Violante – [1201284@isep.ipp.pt](mailto:1201284@isep.ipp.pt) * Pedro Sousa – [120148@isep.ipp.pt](mailto:120148@isep.ipp.pt) * João Oliveira – [1201183@isep.ipp.pt](mailto:1201183@isep.ipp.pt)  FAQ’S Q # How Does a Recepcionist creater a client?  A # The recepcionist has to enter with his\her credentials and fill the parameters of an new client.  Q # How is the process to add a new Test Type?  A # Only the administrator has the power to introduce a new Test Type.  Q # How it’s possible to consult an client’s historic?  A # Every past tests done by all client’s are in Many Labs data base, in order to consult it, the clinical chemistry technologist has to access to his/her menu.  Q # Where can I find all saved data?  A # In the file AllData.dat.  Q # Where can I file the produced data?  A # You can find it on Outputfiles. | | |
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**Annex A (MATCP)**

1. Simple Linear Regression
   1. Overview

In statistics, simple linear regression is a linear regression model with a single explanatory variable.

That is, it concerns two-dimensional sample points with one independent variable and one dependent variable and finds a linear function that, as accurately as possible, predicts the dependent variable values as a function of the independent variable.

The adjective simple refers to the fact that the outcome variable is related to a single predictor.

**Annex A (MATCP)**

1.Multiple Linear Regression

* 1. Overview

Multiple linear regression, also known simply as multiple regression, is a statistical technique that uses several explanatory variables to predict the outcome of a response variable. The goal of multiple linear regression is to model the linear relationship between the explanatory (independent) variables and response (dependent) variable.

**Annex B (MDISC)**

MDISC User Manual Report-Group 25

**Introduction**

In this Use Case, we have to sort the clientes by their TIN or their name.

We are asked to develop two sorting algortihms to do this function: a bubble sort and a selection sort.

showNameList

**Pseudocode**

1 showNameList(x[1], x[2]….x[n])

2 for a=1 to n-1

3 for b=0 to n-a-1

4 if x[b]>x[b+1]

5 client:=x[b]

6 x[b]:=x[b+1]

7 x{b+1]:= client

**Worst-Case Time Complexity Analysis**

|  |  |
| --- | --- |
| N lines | Bubble Sort |
| 2 | (n) (A+C) |
| 3 | ( + (n-1))(A+C) |
| 4 |  |
| 5 | + (A) |
| 6 | +(A) |
| 7 | +(A) |
| total |  |
| Big-O | O(n^2) |

**Realtime Run Tests**



showNameList1

**Pseudocode**

1 showNameList(x[1], x[2]….x[n])

2 for a=1 to n-1

3 for b=0 to n-a-1

4 if x[b]>x[b+1]

5 client:=x[b]

6 x[b]:=x[b+1]

7 x{b+1]:= client

**Worst-Case Time Complexity Analysis**

|  |  |
| --- | --- |
| N lines | Bubble Sort |
| 2 | (n) (A+C) |
| 3 | ( + (n-1))(A+C) |
| 4 |  |
| 5 | + (A) |
| 6 | +(A) |
| 7 | +(A) |
| total |  |
| Big-O | O(n^2) |

**Realtime Run Tests**

|  |  |
| --- | --- |
| N clients | Time wasted |
| 3 | 1502900 ns |
| 1589 | 19216100 ns |
| 3065 | 24800600 ns |
| 3852 | 40130500 ns |
|  |  |
|  |  |

Introduction

In this Use Case we had evaluate the Company performance and we have to analyze wich was the maximum sequence where there was more tests registred than tests with result through thow BruteForce algorithm(one that we have to make and another one provided by ISEP) .

BruteForceAlgorithm( our’s)

**Pseudocode**

1 maxSubArray(y[1], y[2]….y[n])

2 n:=x

3sum:=-231

4 start:=0

5end:=0

6for i=0 to n-1

7 runningWindowsSum:=0

8for j=i to n-1

9 runningWindowsSum:=runningWindowsSum+y[j]

10 start:=i

11 end:=j+1

12 return Arrays.copyOfRange(y,start,end)

**Worst-Case Time Complexity Analysis**

|  |  |
| --- | --- |
| N lines | BruteForce |
| 2 | 1(A) |
| 3 | 1(A) |
| 4 | 1(A) |
| 5 | 1(A) |
| 6 | (n+1)(A+C) |
| 7 | (n+1)(A) |
| 8 | + |
| 9 |  |
| 10 |  |
| 11 |  |
| 12 | 1 (R) |
| total |  |
| Big-O | O(n2 ) |

**Realtime Run Tests**

|  |  |
| --- | --- |
| N tests with result | Time wasted |
| 457 | 5256100 ns |
| 1269 | 8712000 ns |
| 1726 | 8797600 ns |

BruteForceAlgorithm( ISEP)

**Realtime Run Tests**

|  |  |
| --- | --- |
| N tests with result | Time wasted |
| 457 | 270495400 ns |
| 1269 | 712870900 ns |
| 1726 | 918253800 ns |