



JEWELRY WORKSHOP

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JEWELRY WORKSHOP
{Jewelry management system}

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Thank You

To Assoc.prof. (Ph.D.) TANER ÇEVİK

A teacher is a guide and a compass. You've shown me the path to success and walked with me along the way. Your high expectations in the lectures have helped give me confidence in myself. Thanks so much for all you've done.

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ABSTRACT

Jewelry management system is a project which aims in provide all the needs of the jewelry workshop in terms of financial accounts and converts the values of both gold and silver into dollars and creating invoices.

This program will be abbreviated for the user to use the papers and pens to perform the infinite calculation also calculating the gram differences for both gold and silver before and after formulation and manufacture.

This program aims to make the working in the jewelry workshop more enjoyable with less effort, as well as decreasing the error percentage by 99%.

CHAPTER 1

INTRODUCTION

This chapter gives an overview about the aim, and objectives.

1.1 PROJECT AIMS AND OBJECTIVES

- It has two systems one is for gold management and the other is for silver management.
- Has ingot analysis and extraction of metal values.
- Contain subtraction table which saves all the out-quantity and the in-quantity differences that happened as a result of manufacturing process.
- Changes from grams to dollars for both gold and silver systems.
- In gold system the user can chose between all the calibers and know the specific price for each one.
- Contains all the manufacturing wages for both gold and silver systems.
- Contains invoice creating for both Silver and Gold System, this program save the invoice as a pdf file .
- The user can choose between saving the information and keep it for any period of time he wants or just start from the beginning.
- The user can calculate the total difference in both systems.

CHAPTER 2

SYSTEM ANALYSIS

2.1 Software and hardware requirements

This section describes the software and hardware requirements of the system to run the program in the most efficient way.

- SOFTWARE REQUIREMENTS

- Operating system- Windows 10 is used as the operating system as it is stable and supports more features and is more user friendly
- Development tools and Programming language- java with JDK 11.02 and javafx 11 is used to write the whole code.

- HARDWARE REQUIREMENTS

- Intel core i7 7th generation is used as a processor because it is reliable, stable and faster than other processors and we can run our pc for longtime. By using this processor we can keep on developing our project without any worries.
- Ram 8 gb is used as it will provide super fast reading and writing capabilities and it will serve greatly in processing.

2.2 Programming tools used:

I used both Java with JDK11.02 and JavaFX11 to write the whole code,

Java was developed by a team led by James Gosling at Sun Microsystems. Sun Microsystems was purchased by Oracle in 2010. Originally called Oak, Java was designed in 1991 for use in embedded chips in consumer electronic appliances.

In 1995, renamed Java, it was redesigned for developing web applications. For the history of Java, see www.java.com/en/javahistory/index.jsp. Java has become enormously popular. Its rapid rise and wide acceptance can be traced to its design characteristics, particularly its promise that you can write a program once and run it anywhere. As stated by its designer, Java is simple, object oriented, distributed,

interpreted, robust, secure, architecture neutral, portable, high performance, multithreaded, and dynamic. For the anatomy of Java characteristics, see liveexample.pearsoncmg.com/etc/JavaCharacteristics.pdf. Java is a full-featured, general-purpose programming language that can be used to develop robust mission-critical applications. Today, it is employed not only for web programming but also for developing stand-alone applications across platforms on servers, desktop computers, and mobile devices. It was used to develop the code to communicate with and control the robotic rover on Mars. Many companies that once considered Java to be more hype than substance are now using it to create distributed applications accessed by customers and partners across the

Internet. For every new project being developed today, companies are asking how they can use Java to make their work easier. The World Wide Web is an electronic information repository that can be accessed on the Internet from anywhere in the world. The Internet, the Web's infrastructure, has been around for more than 40 years. The colorful World Wide Web and sophisticated web browsers are the major reason for the Internet's popularity. Java initially became attractive because Java programs can run from a web browser. Such programs are called applets. Today applets are no longer allowed to run from a Web browser in the latest version of Java due to security issues. Java, however, is now very popular for developing applications on web servers. These applications process data, perform computations, and generate dynamic webpages. Many commercial Websites are developed using Java on the backend. Java is a versatile programming language: You can use it to develop applications for desktop computers, servers, and small handheld devices. The software for Android cell phones is developed using Java.

JavaFX is a new framework for developing Java GUI programs. The JavaFX API is an excellent example of how the object-oriented principles are applied. This chapter serves two purposes. First, it presents the basics of JavaFX programming. Second, it uses JavaFX to demonstrate object-oriented design and programming. Specifically, this chapter introduces the framework of JavaFX and discusses JavaFX GUI components and their relationships. You will learn how to develop simple GUI programs using layout panes, groups,

buttons, labels, text fields, colors, fonts, images, image views, and shapes.

CHAPTER 3

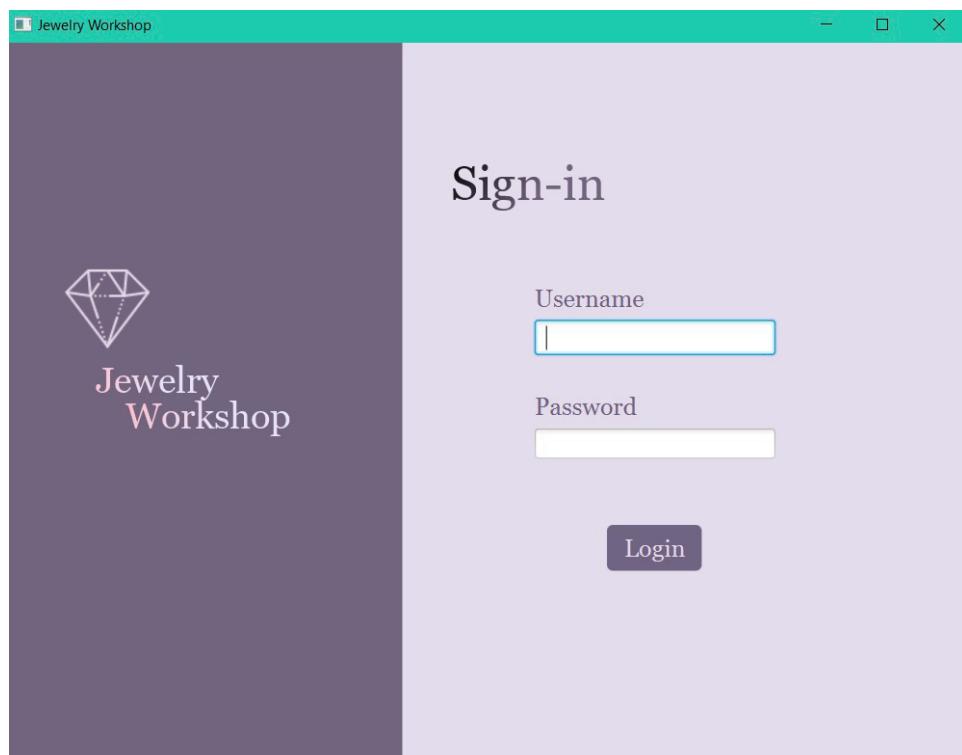
PROGRAM EXPLANATION

3.1 login system:

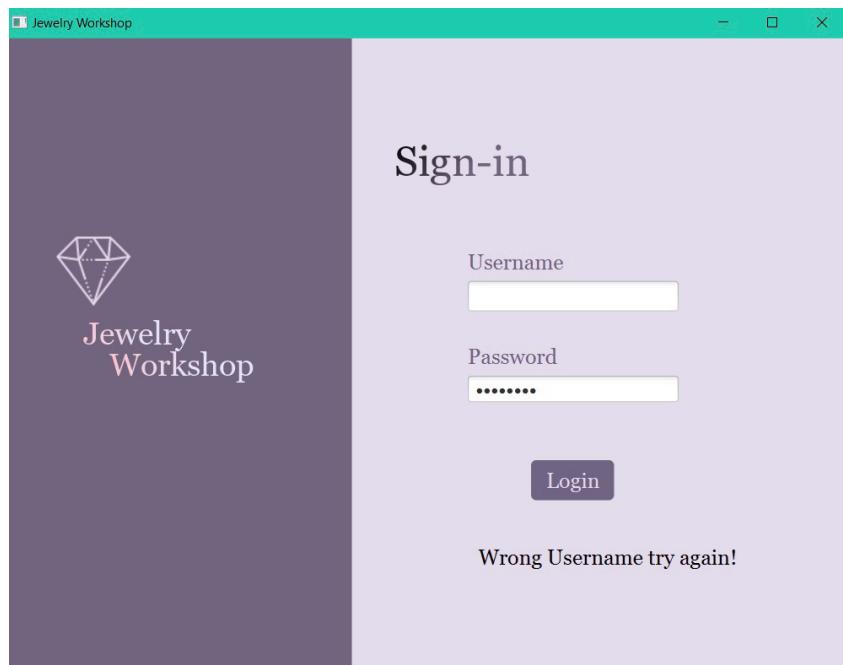
Username : Maryamalrubaye

Password: Maryam20

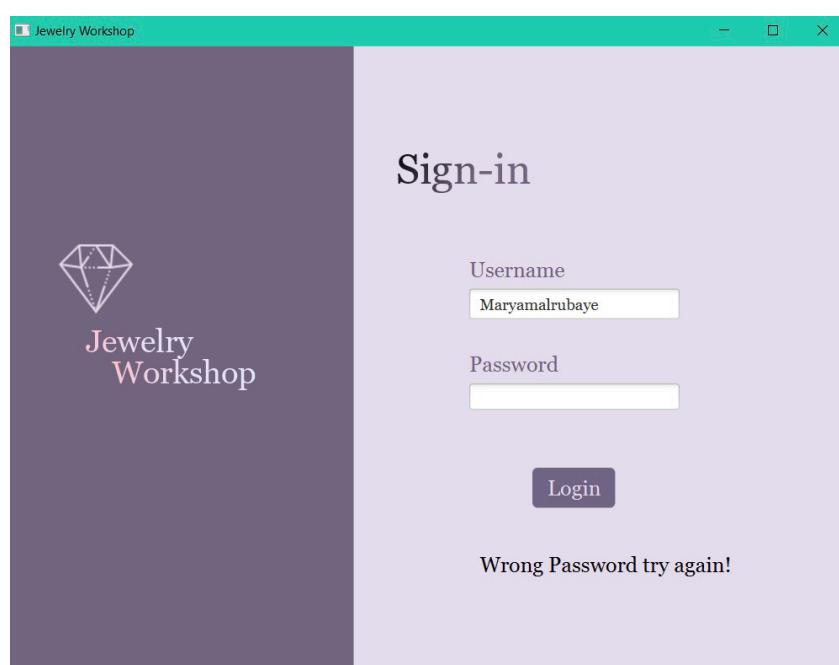
This page is the first page that's shows up right after running the program for the first time its contains two text fields that's gives the user the opportunity to enter the company username & password in order to access to the system.



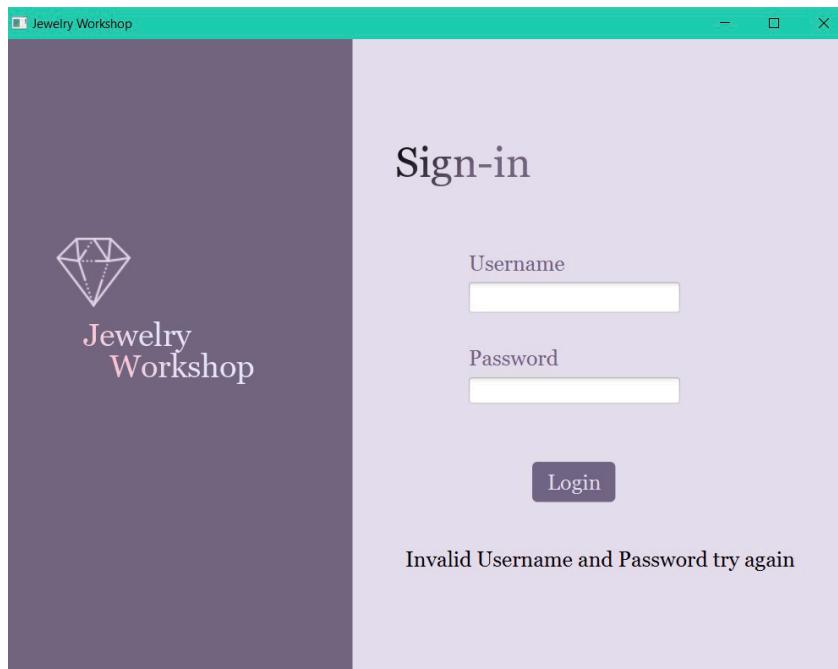
- This page shows up when the user enters wrong username.



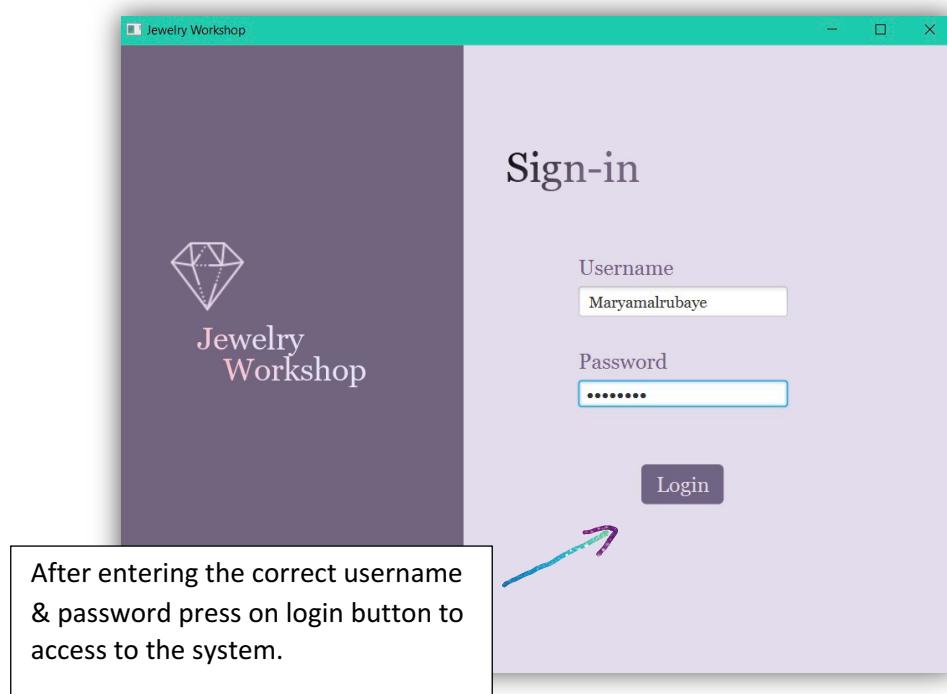
- This page shows up when the user enters wrong password.



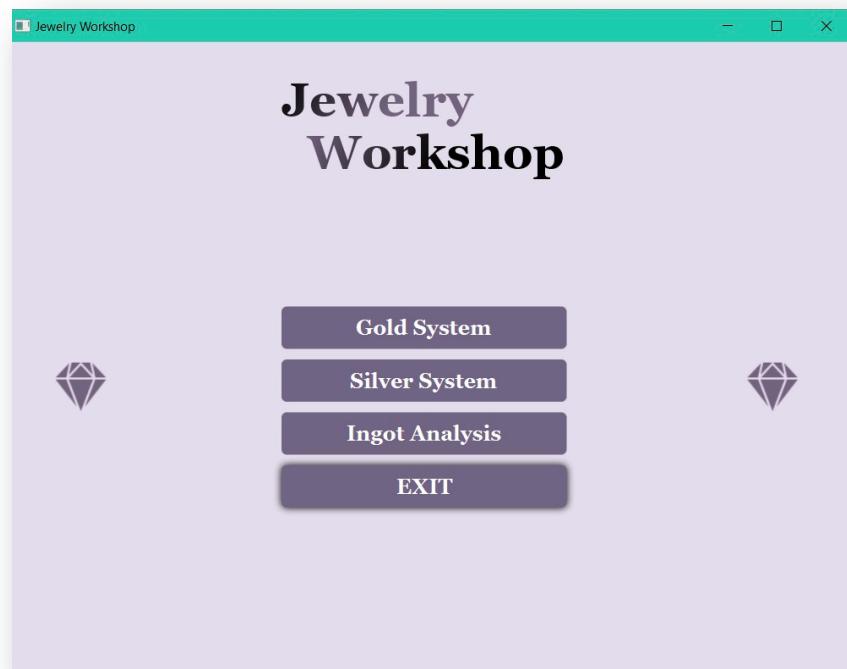
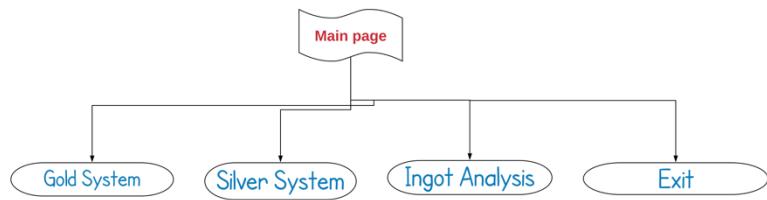
- This page shows up when the user enters wrong username & password.



- The user can't access to the system till he enters the right username & password which have been created specially for this Company.



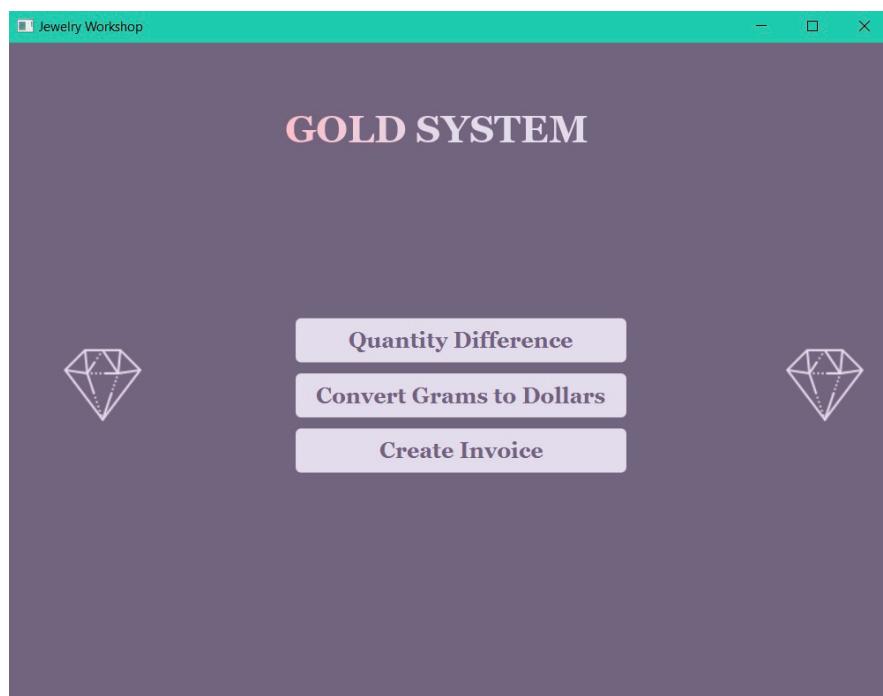
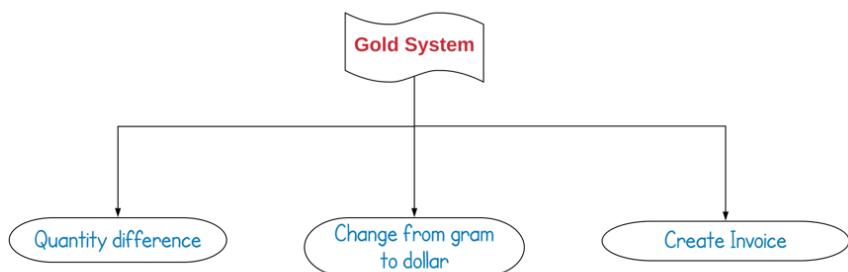
3.2 The main page:



In the main page the user can chose between four options:

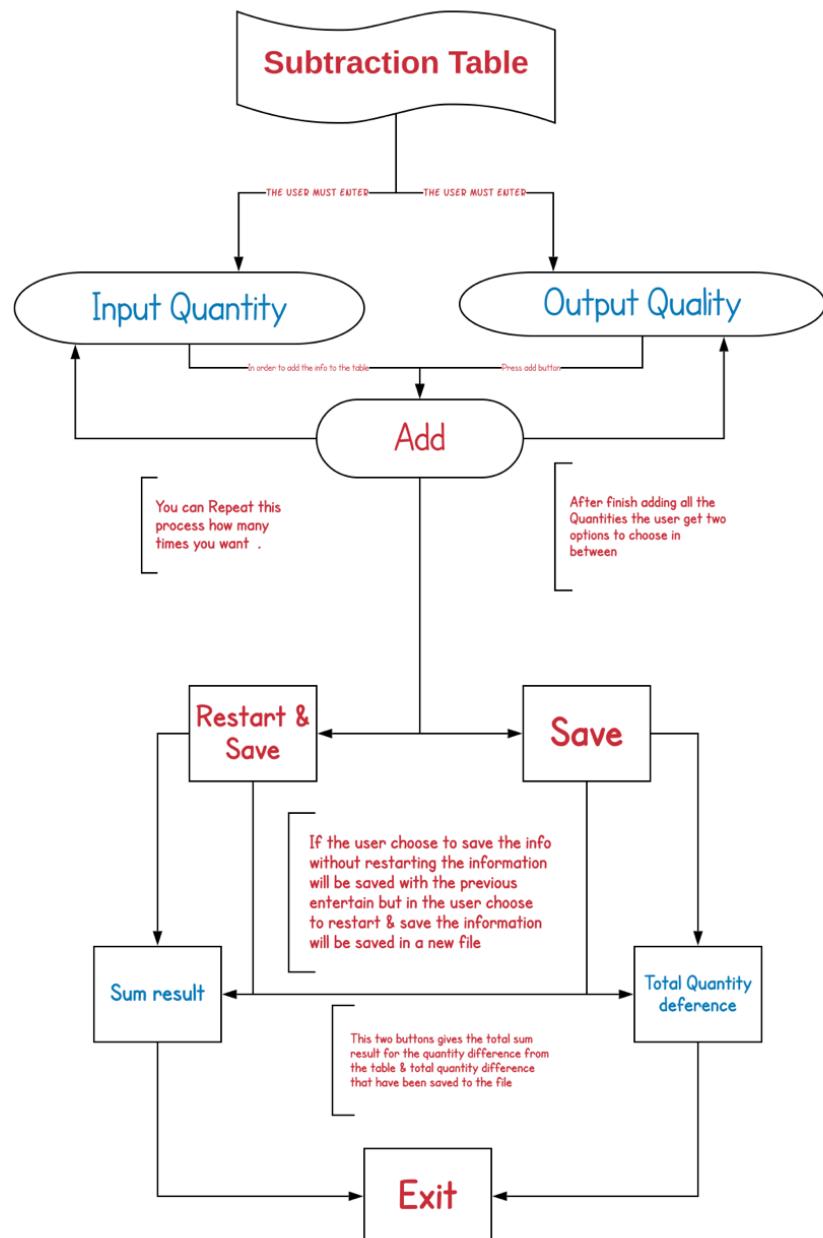
- The first option contains the gold management system.
- The second option contains the silver management system.
- The third option analysis the ingot and gives the extraction metals values.
- The last option gives the user the opportunity to exit from the application.

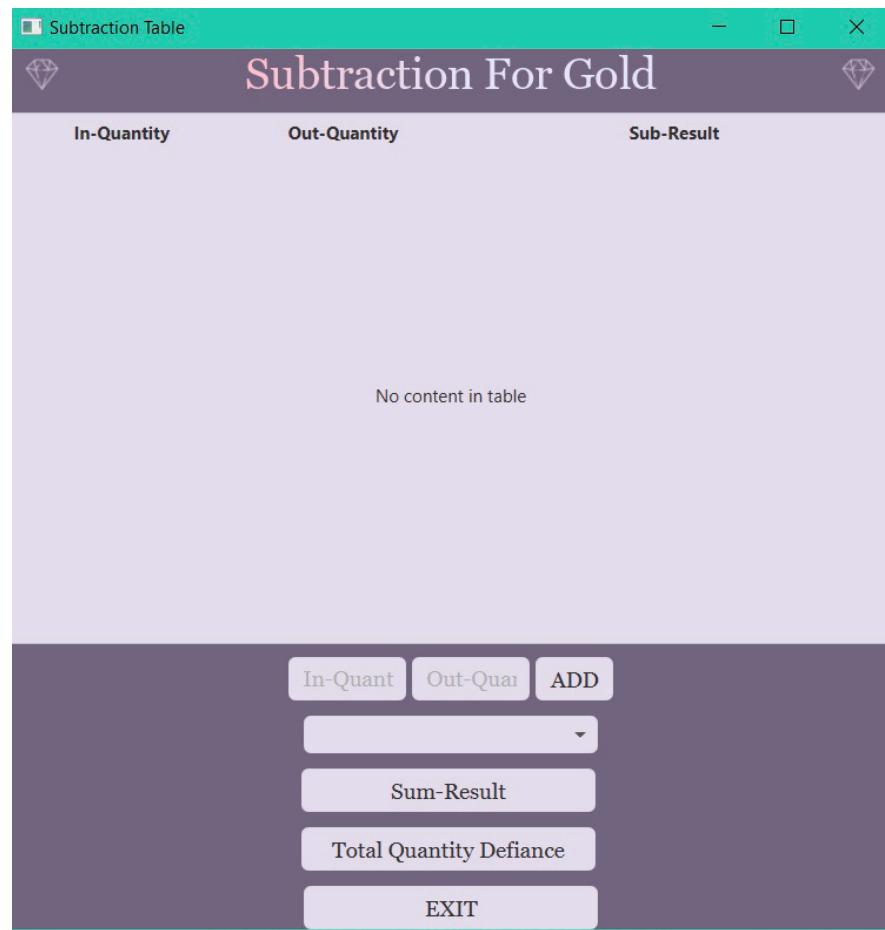
3.3 Gold System:



When the user clicks on the Gold System button three options will show up:

Quantity difference:





In the subtraction table :

The user will enter the out-quantity in grams and the in-quantity also in grams. After that the program will calculate the quantity differences by subtracting the two values and gives the result then calculate all the result for every single piece and gives their total result.

| Subtraction For Gold | | |
|----------------------|--------------|------------|
| In-Quantity | Out-Quantity | Sub-Result |
| 20 | 10 | 10.0 |
| 30 | 3 | 27.0 |
| 50 | 30 | 20.0 |
| 50 | 55 | -5.0 |
| 6 | 3 | 3.0 |

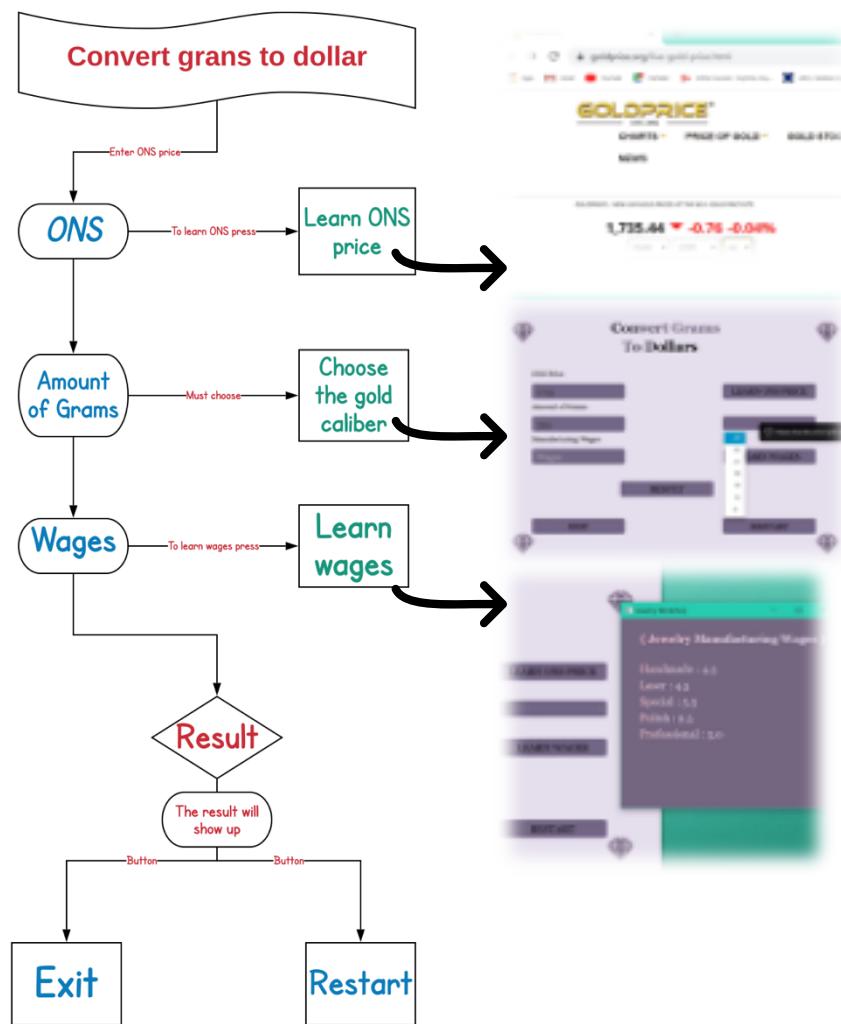
- Out-quantity -> this refers to the amount of gold in grams that's came out from the box which contains all the gold in the company and keep it safe.
- In-quantity -> this refers to the amount of gold in grams that will be add back to the box after the manufacturing process, (there is always a weight loss after the manufacturing process is finished).
- The user has to choose if he needs to start from the beginning and delete all the stored data from the file or proceed and add new data while keeping the current data in the file.
- In the first column the input quantity will be saved
- In the second column the output quantity will be saved
- In the third column the program will calculate the quantity difference between the in & out put quantities

Subtraction For Silver

| In-Quantity | Out-Quantity | Sub-Result |
|-------------|--------------|------------|
| 14 | 4 | 10.0 |
| 300 | 230 | 70.0 |
| 500 | 200 | 300.0 |
| 12 | 50 | -38.0 |
| 400 | 33 | 367.0 |

- The gold loss is measured by knowing the amount of gold particles lost throughout the process of gold pieces remodeling, this is done by collecting those particle from the device responsible for the remodeling and cleaning them from any residues by crimination process. Then the quantity of those particles is subtracted from the original value.
- The sum of the difference will be stored in a file that the user can retrieve to know the total lose.

Convert Grams to Dollars:



In order to changes a specific amount of grams to its price in dollars the user must enters some information

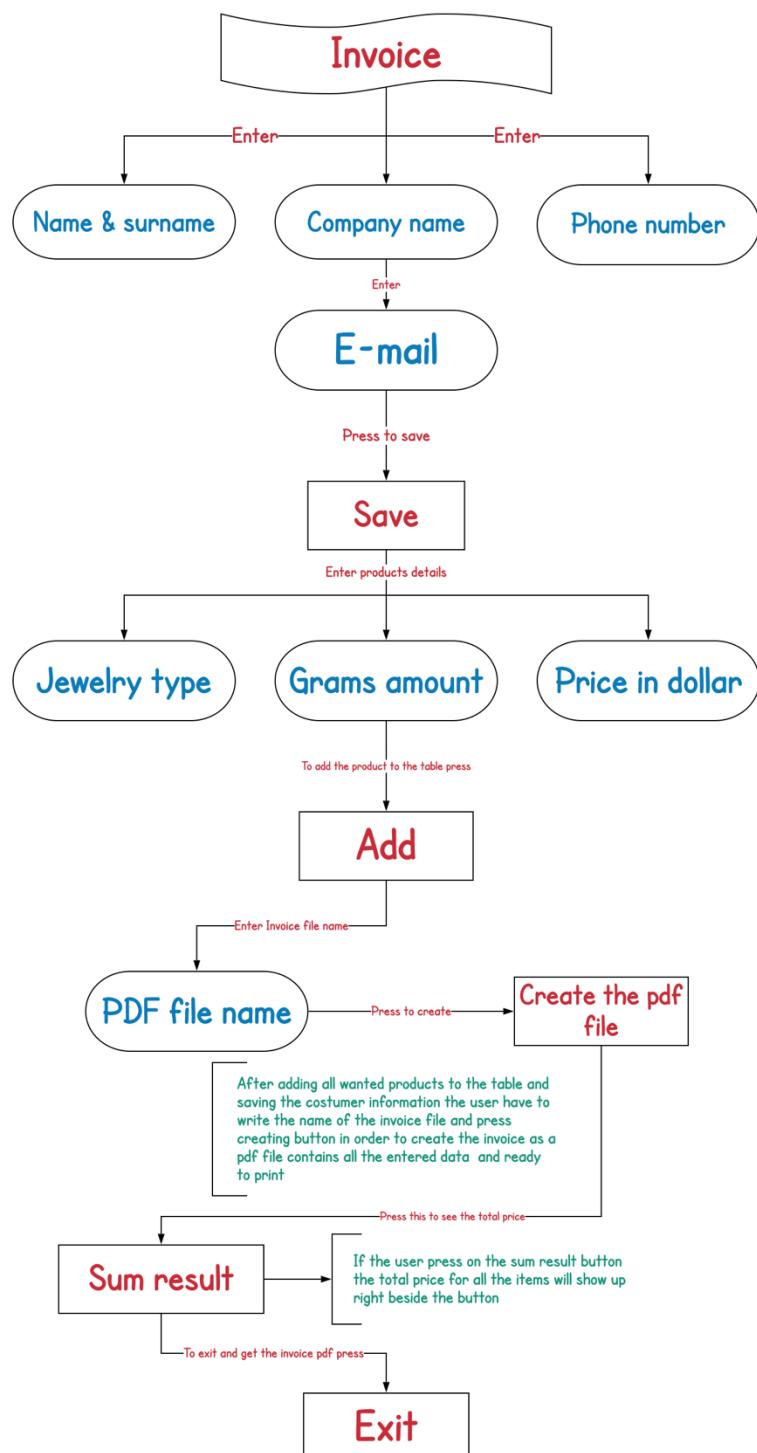
- ❖ In the first text field the user must enter the ONS price and in order to know it there is a button on the side that gives the user the opportunity to jump right into the official online ONS price website so the user can learn the ONS price for the day.
- ❖ In the second text field the user must enter the amount of grams that he wants to change it.
- ❖ Right in front of the second text field there is a choice box that contains all the available gold caliber which is (24, 22, 21,18, 14, 12,8)
- ❖ In the third text field the user has to enter the manufacturing wages and in order to learn the right manufacturing wages the user can press the button that's called (Learn wages) and the wages list will show up.
- ❖ To get the result the user must press the result button.
- ❖ After getting the result successfully the user has two choices to choose from the first one is exit which take the user out of this page or the other choice is a result button which gives the user the opportunity to restart every thing.
- ❖ To calculate the price of gold the program will do this calculation which is different from caliber to another ->
 - In the 24 caliber the program will do this calculations : the program will take the ONS price for the day which will be taking from the user and divides it by 31.1 (has

price) then the program will sum the result by the wages then multiply all with the amount of grams which will be also taken from the user.

- In the 22 caliber the program will do the following calculations : first it will take the ONS price for the day ,which will be taking from the user, and divides it by 31.1 (the HAS price). Then the program will sum the result with the wages price and the result of this will be divided by 0.916. As a final step the result of the previous calculations will be multiplied by the grams amount to get the total price in dollars.
- In the 21 caliber the program will do the same exact caculations but instead of dividing by 0.916 it will be devide by 0.875.
- In the 18 caliber the program will do the same exact calculations but instead of dividing by 0.916 it will be devide by 0.750.
- In the 14 caliber the program will do the same exact calculations but instead of dividing by 0.916 it will be devide by 0.585.
- In the 12 caliber the program will do the same exact calculations but instead of dividing by 0.916 it will be divide by 0.500.

- In the 8 caliber the program will do the same exact calculations but instead of dividing by 0.916 it will be divide by 0.335.

Create Invoice :



Creating jewelry invoice for the customers becoming more simple with this project :

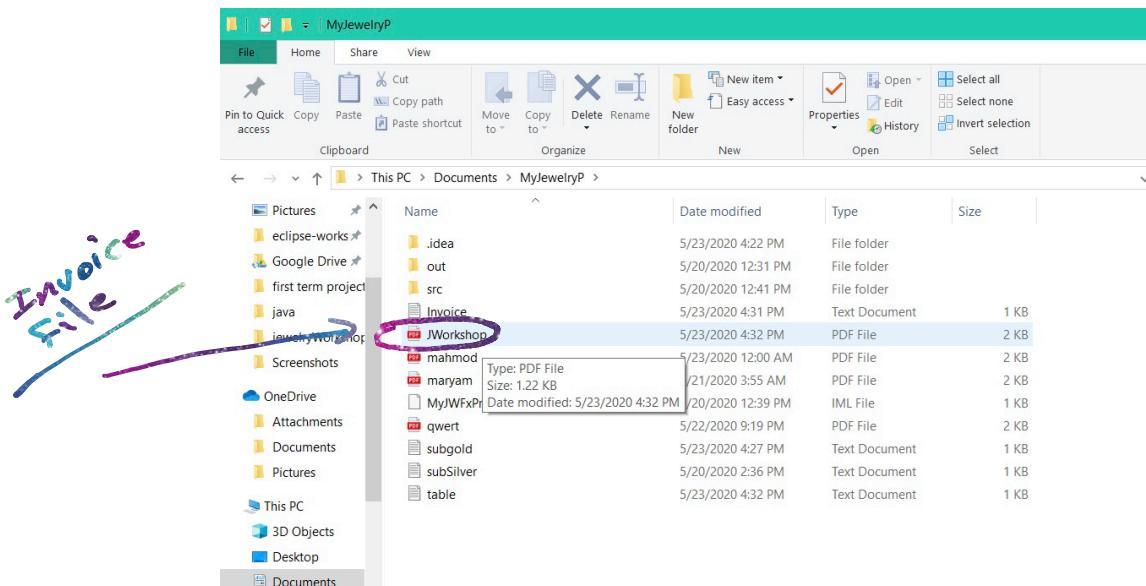
- ❖ As a first step the user will have four text field and he has to enter the customer information following the written details first the customer name and surname, the company name, the customer phone number and email after adding this details the user has to click on save button in order to save this information to the invoice file.
- ❖ Are the second step the user have three text field the first text field is to enter the type of the piece of jewelry that he's going to sell to the customer and in the Second text field the user has to enter its grams then in the third text field the user has to enter its price.

- ❖ In order to see the product details And add another product if there is another product The user has to press the add button.
- ❖ After adding all the product to the table the user has to enter the invoice pdf file name in order to create it.
- ❖ Also by pressing on the sum result button the user can learn the total price for all the products.
- ❖ After that the user must click exit button in order to exit the table and get the invoice file ready to print out.

Invoice Info

| Maryam Alrubaye | JWorkshop | 053611111111 |
|----------------------------|-----------|--------------|
| Maryamalrubaye18@gmail.com | | |
| Saved | | |
| Jewelry Type | Grams | Price |
| Ring | 15 | 300 |
| Ring | 12 | 280 |
| Ring | 7 | 150 |

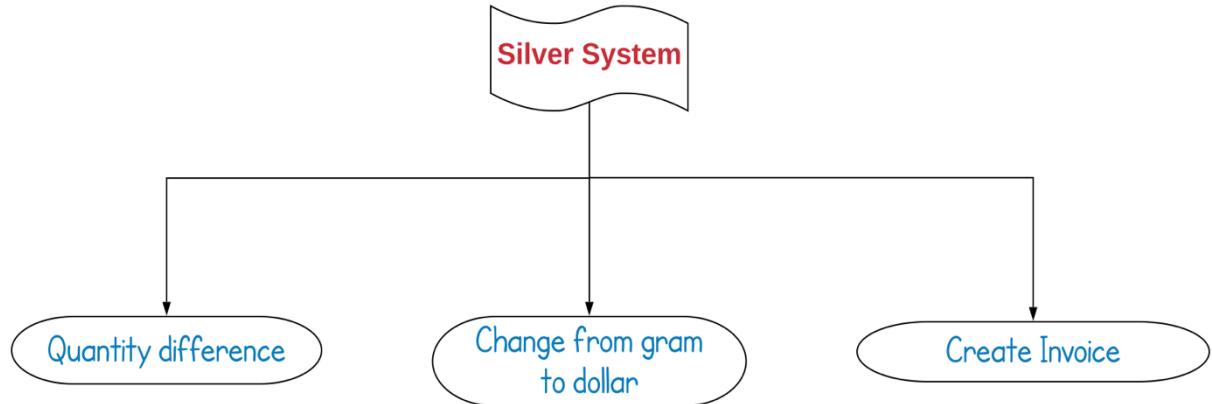
| | | | |
|------------|-------|------------------|-----|
| type | Grams | Price | ADD |
| JWorkshop | | Name Was Created | |
| Sum-Result | | 730.0 | |
| Exit | | | |



The invoice pdf file will be saved on the pc and will look like this:

| JEWELRY WORKSHOP | | | |
|--|-------|-------|------------------------|
| ***** | | | |
| Name and Surname : Maryam Alrubaye | | | |
| Company Name : JWorkshop | | | |
| Phone Number : 053611111111 | | | |
| E-Mail Address : Maryamalrubaye18@gmail.com | | | |
| ***** | | | |
| Type | Grams | Price | |
| ***** | | | |
| Ring | 15 | 300 | |
| Ring | 12 | 280 | |
| Ring | 7 | 150 | |
| ***** | | | |
| | | | TOTAL : 730.0\$ |

3.4 Silver System :



When the user enters to the silver system three buttons will show up just like the gold system:

Quantity difference:

The screenshot shows a software application window titled "Subtraction Table". The main title bar says "Subtraction For Silver". The interface includes a header with "In-Quantity", "Out-Quantity", and "Sub-Result" columns. Below the header is a table with five rows of data. At the bottom of the window are several buttons: "In-Quant", "Out-Quan", "ADD", "Restart & Save", "Sum-Result", "Total Quantity Defiance", and "EXIT".

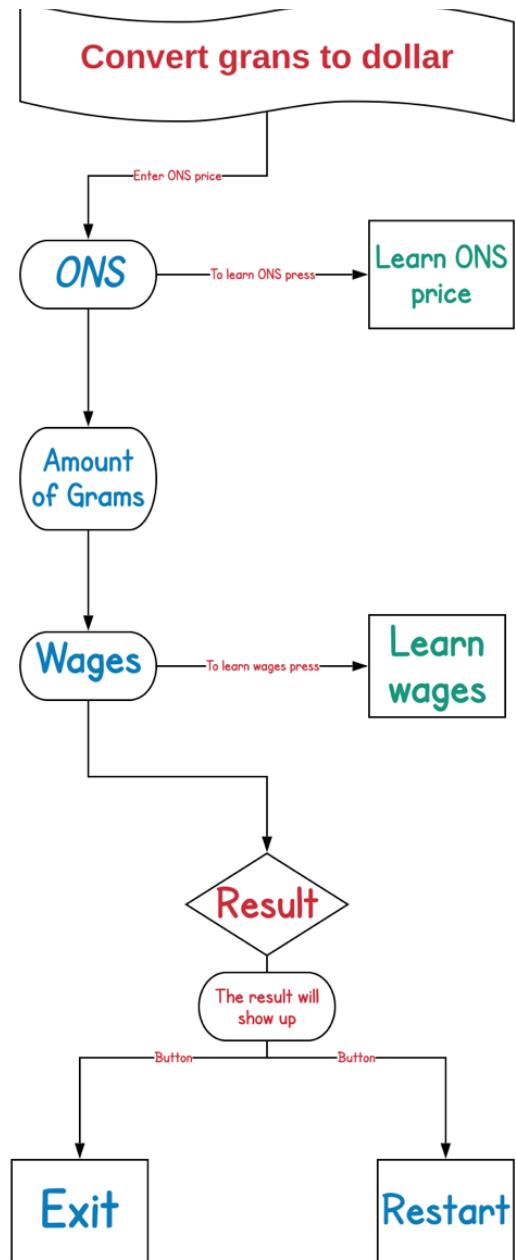
| In-Quantity | Out-Quantity | Sub-Result |
|-------------|--------------|------------|
| 14 | 4 | 10.0 |
| 300 | 230 | 70.0 |
| 500 | 200 | 300.0 |
| 12 | 50 | -38.0 |
| 400 | 33 | 367.0 |

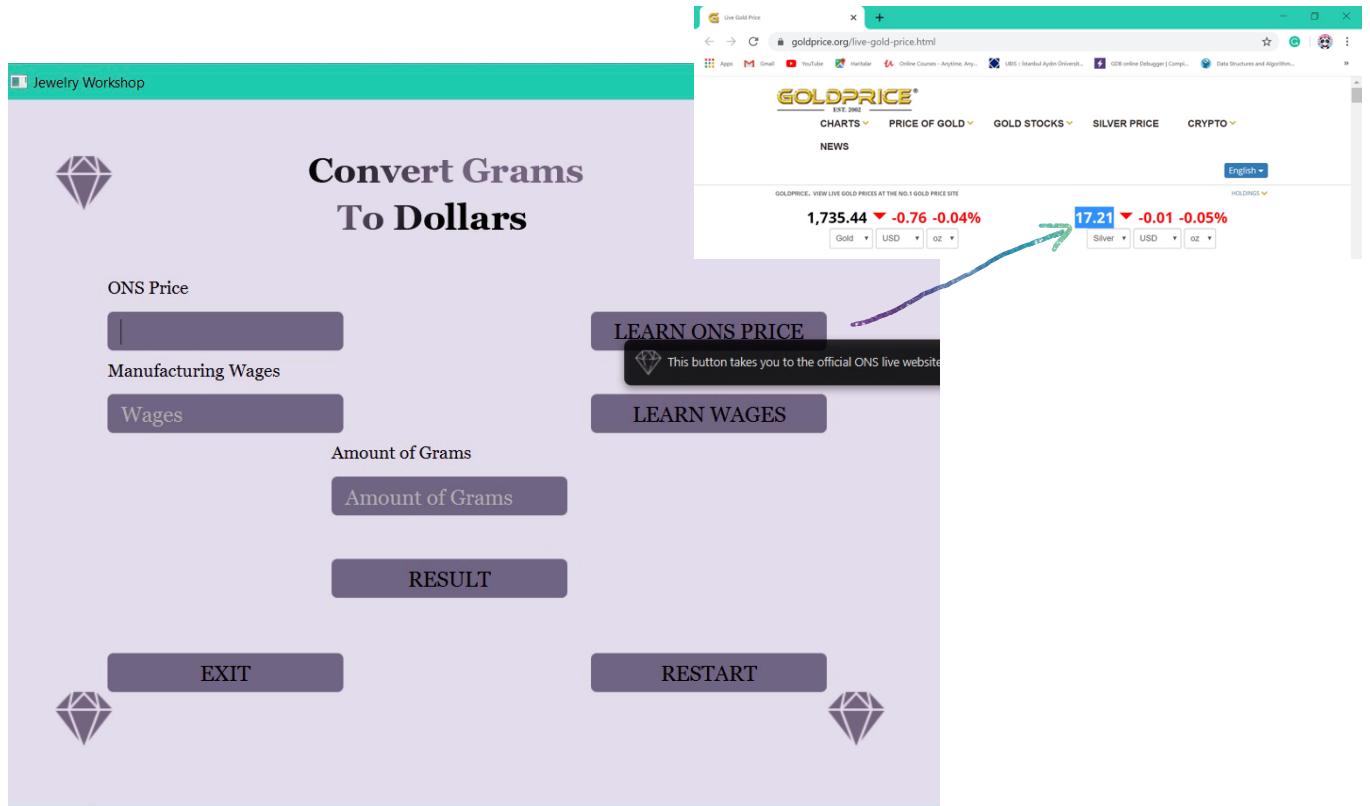
This table will do the exact same thing that the subtraction table in the gold system do but it's information will be saved in a totally different file because the systems are different.

Change from grams to dollars:

- This option has some major differences from the gold system because the silver system has no calibers and only one calculation which is : first it will take the ONS price for the day, which will be entered by the user, and divides it by 31.1 (The HAS price). The result

of this will be then multiplied by 0.925 and its' result will be combined with the wages then multiply all with the amount of grams to get the price in dollar.



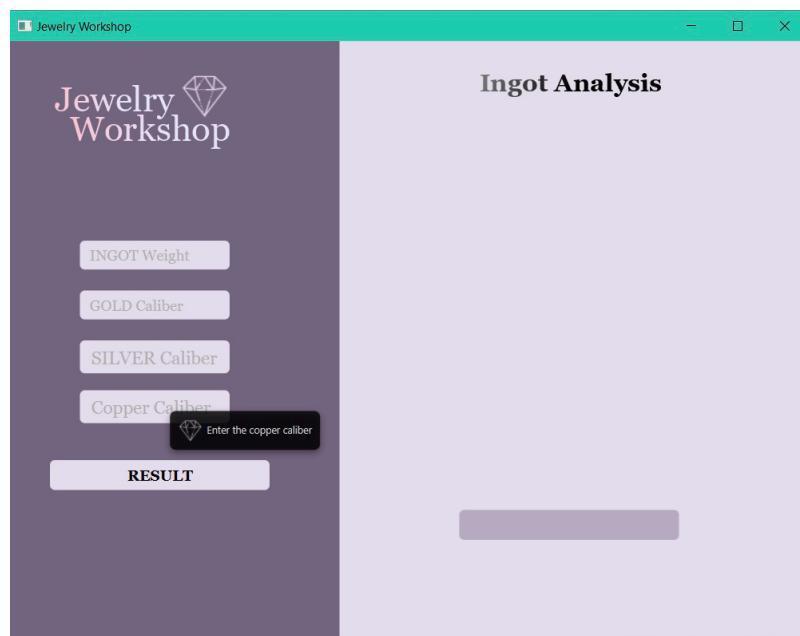
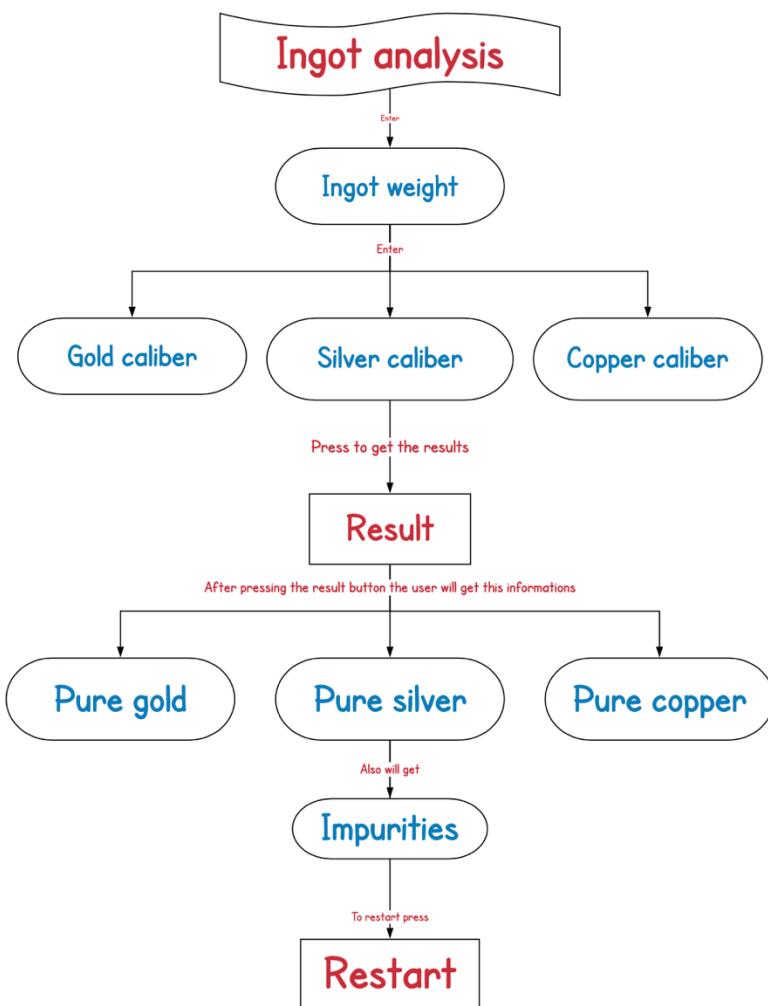


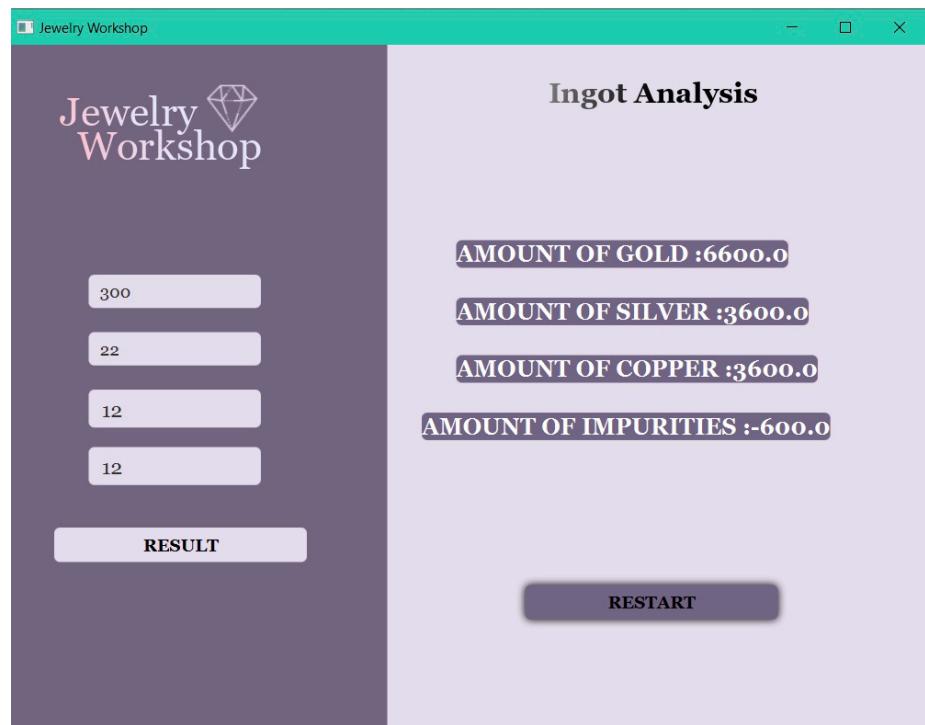
Create invoice :

This button takes the user the the invoice creating table which I have been explained before.

3.5 Ingot Analysis:

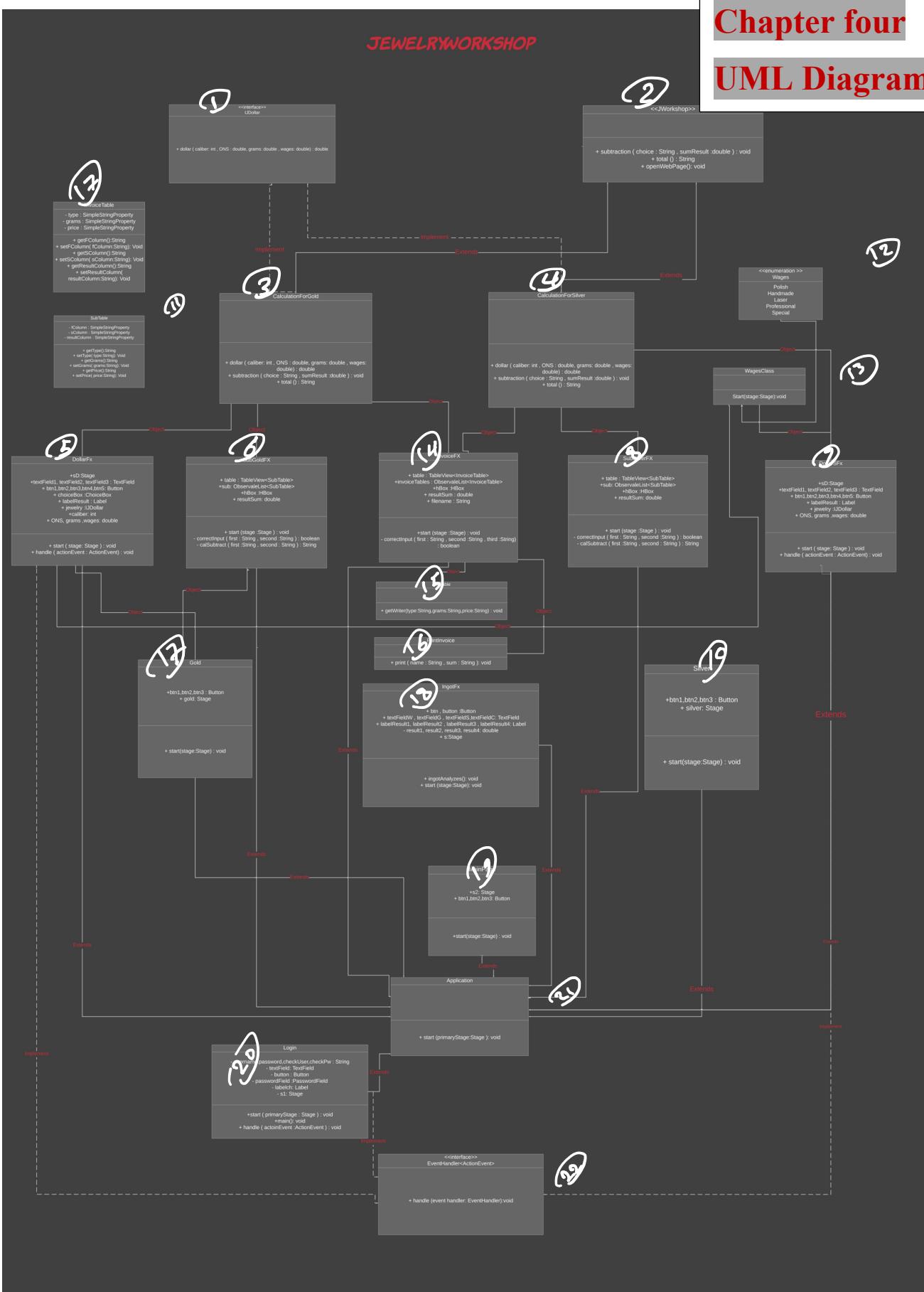
In this option the program gives the user the opportunity to analyze the proportion of minerals in the gold ingot. So by adding the ingot weight and the gold, silver and copper calibers the program will gives as a result the pure gold amount and also for the copper and silver. It's also will gives the amount of the impurities that's left in the ingot





Chapter four

UML Diagram



❖ **Implement please see the UML diagram in the pdf file if it's not clear here..& the main class in this project is the Login class which has the main method.**

- 1) **IJDollar** : this class is an interface class which has one abstract method named dollar and this method takes four parameters one of the is from type integer and the others is from type double also this method returns a double type value.
- 2) **JWorkshop** : this class is an abstract class which contains two abstract methods and one concrete method the first abstract methods is named as subtraction method which takes two parameters the first one is a string type and the second one is double type and it's a void type method which means it's doesn't returns any data. The second abstract method named total, this method doesn't takes any parameters and returns a string data type. The third method is a concrete method which has a code that's makes direct access to a url website link which will be used in the program in a button to gives access to the online ONS website.
- 3) **CalculationForGold**: this class is a sub class which extends from the super abstract class **JWorkshop** also it's a sub class that's implement from the super interface **IJDollar**. By extends and implements from these two this class has override from all the methods inside both of them, the first method is the method from the interface class which has a specific job in this class which is converting gold grams to dollars by taking the information from the **DollarFX** class which

I am going to talk about in the next pages, it will reserve the information as parameters with different types as written above and do the calculations that has been written in the code with the conditions then returns the final result to the same class that's reserved the information from. The second method is the subtraction method that has been override from the abstract class that I mentioned previously this method takes two parameters which is reserved from SubGoldFX, this method has a code that's takes the first parameter as a condition in order to save the second parameter in a file with append mood or to clear the file and save just the new parameter in it according to the user choice the file name is "subgold.txt". The total method takes all the information that has been written in the file "subgold.txt" previously by using subtraction method and change them to a double value using type casting then calculate the sum of all the file content which are then calculate the sum of all the file content which represents the total lose in the amount of grams then recast the double to string and send it back to the SubGoldFX class.

- 4) **CalculationForSilver** : this class is do the same as the gold one but it's takes the information for the dollar method from DollarSFX class and do a totally different calculations from the gold class ones and the subtraction method takes it's parameters from a class named SubSilverFX and stores the sum in a file "subSilver.txt" last method the total method returns

the sum of the lose in silver grams which is from the “subSilver.txt” file to the SubSilverFX class.

5) DollarFX : this class is the sub class that extends from the super abstract class Application and implements the interface EventHandler which are both from JavaFx libraries that's helps create the graphical user interface GUI in java. This class contains the convert from grams to dollars page design and informations and has a parameter type IJDollar from the interface which has been used to create an object from the CalculationForGold class (Polymorphism) in order to send the information that has been entered from the user to the dollar method and returns the result after doing the calculations mentioned before. and also contains object from the WagesClass to show the wages.

6) SubGoldFX: this class is the sub class that extends from the super abstract class Application from JavaFx libraries that's helps create the graphical user interface GUI in java. This class has the subtraction table and has an object from the class CalculationForGold that's sends and receives information to and from the subtraction and total methods. Also this class has two more method another from the start method which are they correctInput which is a boolean type method that takes two parameters of the type string then by using type casting checks if the values the user enters is from a Numbers or not. The other method named calSubtract which returns a string and takes two parameters of a string type this method using type casting to double subtract the two values then returns the result as a

string type to the start method to send in using object to the subtraction method in the CalculationForGold class.

7) Gold : this class is the sub class that extends from the super abstract class Application from JavaFX libraries that's helps create the graphical user interface GUI in java. This class contain the main page design for the gold system which has objects from the classes DollarFX , SubGoldFX and InvoiceFX which contains the stage for all the available options in the gold system.

8) DollarSFX: this class is the sub class that extends from the super abstract class Application and implements the interface EventHandler which are both from JavaFX libraries that's helps create the graphical user interface GUI in java. This class contains the convert from grams to dollars page design and informations and has a parameter type IJDollar from the interface which has been used to create an object from the CalculationForSilver class (Polymorphism) in order to send the information that has been entered from the user to the dollar method and returns the result after doing the calculations mentioned before.and also contains object from the WagesClass to show the wages.

9) SubSilverFX: this class is the sub class that extends from the super abstract class Application from JavaFX libraries that's helps create the graphical user interface GUI in java.This class has the subtraction table and has an object from the class CalculationForSilver that's sends and receives information to and from the

subtraction and total methods. Also this class has two more method another from the start method which are they correctInput which is a boolean type method that takes to parameters of the type string then by using type casting checks if the values the user enters is from a Numbers or not. The other method named calSubtract which returns a string and takes two parameters of a string type this method using type casting to double subtract the two values then returns the result as a string type to the start method to send in using object to the subtraction method in the CalculationForSilver class.

10) Silver: this class is the sub class that extends from the super abstract class Application from JavaFX libraries that's helps create the graphical user interface GUI in java. This class contain the main page design for the silver system which has objects from the classes DollarSFX , SubSilverFX and InvoiceFX which contains the stage for all the available options in the gold system.

11) SubTable : This class has the setter and getter methods (encapsulation) that must be there in order to create the subtraction table in the SubGoldFX class.

12) Wages : the enumeration wages stores the jewelry wages according to its type and here we have Polish handmade professional and special types of jewelry manufacturing with their price.

13) WagesClass: this class is the sub class that extends from the super abstract class Application from JavaFX libraries that's helps create the graphical user interface GUI in Java. This class have object from the wages

class in order to show them in a specific stage by clicking on a button in both DollarFX and DollarSFX class.

14) InvoiceFX: this class is the sub class that extends from the super abstract class Application from JavaFx libraries that's helps create the graphical user interface GUI in java. This class contains The start method which has the invoice entering information page which contains object from the InvoiceTable & FileTable & PrintInvoice class that saves and receives and gives information from this class in order to print it and create a PDF file at the end of integration process also this class has a method named correctInput which is from a boolean type and takes three parameters of type string in order to check them by using type casting for the second and third parameter and checking if they are numbers value and check if the first parameter is a text not number.

15) FileTable : This class has a method named getWriter which takes three parameters of type string reserved from the class InvoiceFX in order to save them to a file “ table.txt” .

16) PrintInvoice: This class has a method named print that receives two parameters of the type string from the class InvoiceFX which are present the name of the pdf file and the total result, this method uses the iText library to create a pdf file by using the information that has been saved in both “Invoice.txt” file which contains the costumer information that has been taken in the InvoiceFX class and the “table.txt” file that

contains the products that has been saved to this file by the user using the InvoiceFX class.

- 17) **InvoiceTable** : This class has the setter and getter methods (encapsulation) that must be there in order to create the invoice table in the InvoiceFX class.
- 18) **IngotFX**: this class is the sub class that extends from the super abstract class Application from JavaFx libraries that's helps create the graphical user interface GUI in java. This class has two method the first method named ingotAnalyzes which is contains all the calculations that must be done in this class. And the start method which contains the design for this page.
- 19) **MainPage**: this class is the sub class that extends from the super abstract class Application from JavaFx libraries that's helps create the graphical user interface GUI in java.its contains the start method that has the main page design for the program and its has objects from the Gold & Silver & IngotFX class in order to access them using a button.
- 20) **Login**: this class is the sub class that extends from the super abstract class Application and implements the interface EventHandler which are both from JavaFx libraries that's helps create the graphical user interface GUI in java. This is the main class in the project which contains three methods first is the main method and the start method which has the first page login details that gives the user the ability to access to the project by entering the write username and password and there is the handle method that has been override from the interface EventHandler which checks if the user enter the right information or not and it won't gives the

access ability to the program till the user enters the right username and password. So it can access to the main page using an object from the MainPage class.

- 21) Application: abstract class from javaFx libraries that contains the start method that's helps creating GUI**
- 22) EventHandler : interface has the abstract method handler which helps with creating actions in javaFx classes.**

Chapter five:

Conclusion

As a conclusion this program wil help the workshop by making every calculation and data in its place also it will reduce the error rate by 99%. This program has two system the first system is the gold management system and the second one is the silver system and also has the ingot analysis, both system has the ability to create pdf invoice and to save the lose in grams in a files and change grams to dollars in a professional way.

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