SKIP 1013
INTRODUCTION TO PROGRAMMING AND PROBLEM SOLVING
Group 1 (SEMSTER A211)
Assignment 1

Theme:

Beauty / Make Up

Title:

Make Up Organization System

Submitted to:

PROF. MADYA DR. AZMAN B YASIN

Prepared by:

Muhammad Luqman Bin Ahmad Zamri (284495)

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1) **Identify the problem:**

Makeup lately are being used widely in society. Makeup is also important for those who attend certain events or events. Becomes a problem for those who do not have the skills or equipment of makeup. Many users have a desire or even a deep interest in makeup. However, judging from the disposition or development of this makeup activity, it is rather unattractive and gets less attention from social media. Among the services that are usually offered in the field of makeup is just the makeup services that are usually taken by brides, artists, or those who enter the performance activities. Perhaps many are still looking for alternatives and opportunities available that may be limited in terms of acceptance and time.

Not only that the skill of handling makeup tools and knowing the quantity and pressure required when makeup is also something very important. Lack of knowledge and knowledge about makeup makes a person less confident and does not dare to try to do makeup activities. This is undeniable because if viewed in terms of time, equipment and technique, all these aspects are scrutinized very well. This is because, all these aspects will affect the robustness, durability and also the softness of the makeup result itself.

Based on the observations on the website of makeup, in the view of an educator, many of the users are skilled and have a fairly extensive knowledge about them, some may even have a lot of experience and challenging in the field of makeup. Therefore, it becomes difficult for those who do not know or are deadlocked in finding a solution to further introduce this knowledge of makeup to the public. This is because, the lack of a platform or system that focuses on the science of cosmetology. They argue that this knowledge no longer needs to be expanded due to the development of technology which has led to the search for ways to use cosmetic equipment and knowledge. not only that, there are also among the teaching staff who have problems in financial management in managing makeup.

What is Make up?

Make-up or makeup may be refer to cosmetics that is use in face-to face interactions, theatrical makeup and renewing or restoring an interpersonal or intimate relationship. Cosmetics are made up of a variety of chemical substances taken from either natural or manufactured sources. Cosmetics serve a variety of functions. Cleanse and protect the body or skin using those developed for personal care and skin care. Makeup may be used to disguise imperfections, accentuate one's natural features (such as the eyebrows and eyelashes), add colour to a person's face, and even transform the look of the face totally to resemble a new person, creature, or item. Cosmetics may also be intended to give the body a pleasant scent.

Though most nations' legal definitions of cosmetics are wider, in certain Western countries, cosmetics are widely understood to refer exclusively to makeup goods like lipstick, mascara, eye shadow, foundation, blush, highlighter, bronzer, and a variety of other products.

Cleansers, toners, serums, moisturisers, and balms are examples of skin-care cosmetics that may be used to wash, exfoliate, and protect the skin while also renewing it. Shampoo and body wash, which are meant for more general personal care, may be used to cleanse the body.

Makeup can be used to conceal blemishes, enhance natural features (such as the eyebrows and eyelashes), add colour to a person's face, and—in the case of more extreme forms of makeup used for performances, fashion shows, and people in costume. It also can be used to completely transform the appearance of the face to resemble a different person, creature, or object. Contouring is a technique for modifying one's look that tries to sculpt a specific part of the face. Cosmetics may also be intended to give the body a pleasant scent.

History of Makeup

Cosmetics have been used by the ancient Egyptians and Sumerians for thousands of years. Cosmetic usage remained in Europe until the middle Ages where the face was whitened and the cheeks rouged. While views toward cosmetics changed over time, with cosmetic use being publicly frowned upon at numerous stages in Western history. Regardless of changes in societal views regarding cosmetics, many people were able to reach their ideals of look via the use of cosmetics on occasion.

Early notable advancements in cosmetics, according to one source, Ancient Egyptians used kohl, Castor oil was also utilised as a protective balm in ancient Egypt. In the nineteenth century, the Romans Vaseline and lanolin described skin treatments consisting of beeswax, olive oil, and rose water.

During this historical period, lack of control of cosmetic production and usage, as well as scientific understanding about the effects of different substances on the human body, resulted in deformities, blindness, and death. Cosmetics of the period were either chemically problematic or manufactured from natural substances like food colouring, berries and beetroot. The widespread use of harmful cosmetics such as ceruse (white lead) during the Renaissance in Europe and the mascara Lash Lure in the early twentieth century are two examples.

Throughout the 19th century, there were many incidents of lead poisoning from red and white lead cosmetics and powders, resulting in eye puffiness, teeth enamel damage, and skin discoloration, with prolonged use known to cause death. White lead was also used in Japan to make ‘oshiroi’, a white face paint. In the second part of the nineteenth century, cosmetics scientists developed makeup free of dangerous substances like lead.

In 1909, ‘Eugène Schueller’ founded L'Oréal, which is now owned by Liliane Bettencourt (26%), Nestlé (28%), and the remaining 46% is publicly traded. Although most modern makeup is associated with women, an increasing number of males are using it to conceal or conceal facial flaws such as acne and dark circles, as well as using

eyeshadow, mascara, and lipstick. Males are increasingly being targeted by cosmetics makers, with certain things made specifically for men.

Types of Makeup

Cosmetics are meant to be applied externally and are used for a variety of purposes, including medical. These things may be used on the face, body, and hair. Depending on the manufacturer, cosmetics may be used for skincare, personal care, or changing one's look.

Primers are being use before applying makeup, they create a thin, smooth layer over the surface of the skin that allows cosmetics to be applied easily and evenly. Some primers are coloured, and the tint may either match or colour correct the wearer's skin tone, employing greens, oranges, and purples to balance out the skin tone and fix redness, purple shadows, or orange discoloration, respectively.

Concealer is a cream or liquid used to conceal scars or other flaws. Concealer is used after priming the face to level out the skin tone before applying foundation. For greater coverage, concealer is frequently thicker than foundation or tinted primers. A lighter concealer for the eyes, a heavier concealer for stage makeup, and colour correcting concealers meant to repair skin discolouration are also available.

Foundation is a cream, liquid, mousse, or powder product that is used to the whole face to achieve a smooth and even skin tone in the user. Foundation is offered in formulas that may give sheer, matte, dewy, or full coverage to the complexion, and it offers a lesser degree of coverage than concealer.

Rouge or blusher is a cream, liquid, mousse, or powder that is applied to the whole face to provide the user a smooth and even skin tone. Foundation comes in a variety of formulations that provide sheer, matte, dewy, or full coverage to the skin, and it provides less coverage than concealer.

Bronzer is a powder, cream, or liquid that adds colour to the skin, usually in bronze or tan colours, to give the skin a tanned look and to improve the colour of the face.

Bronzer, like highlighter, may include ingredients that provide a shimmer or glitter look, and is available in matte, semi-matte, satin, or shimmer finishes.

Highlighter is a substance that is applied to the high points of the face, such as the brows, nose, and cheekbones, as a liquid, cream, or powder. Often, chemicals are added to highlighter to give it a shimmer or glitter aspect. As an alternative, a highlighter may be made using a lighter-toned foundation or concealer.

Eyebrow are used to define, colour, and fill in the brows. [4] [10][11] Eyebrow tinting treatments may also be used to dye the hairs of the eyebrows a darker colour, either temporarily or permanently, without damaging or colouring the flesh underneath the brows.

Eyeshadow is a pigmented powder, cream, or liquid used to highlight, enhance, and modify the form of the region around the eyes, on the eyelid, and below the brows. Although liquid and cream formulations may be applied with the fingers, eyeshadow is traditionally applied using an eyeshadow brush with tiny, rounded bristles. Eyeshadow comes in practically every colour and a variety of textures, ranging from matte with light coverage to glossy, shimmering, sparkly, and highly pigmented. Many different colours and finishes of eyeshadow may be mixed together to generate distinct effects in one look.

Eyeliner is most typically black, it may also be brown, white, or blue. It is intended to accentuate and extend the apparent size or depth of the eye. Eyeliner is available as a pencil, a gel, or a liquid.

Mascara is the application of a viscous, cream-like substance applied with a spiral bristle mascara brush is used to darken, lengthen, thicken, or enhance the eyelashes. Mascara is typically black, brown, or transparent, however a variety of colours, some of which incorporate glitter, are available. Mascara is usually promoted and offered in a variety of formulas with attributes including waterproofing, volume enhancement, length enhancement, and curl enhancement, and may be used in conjunction with an eyelash curler to improve the natural curl of the eyelashes.

Lip products include *Lipstick*, *lip gloss*, *lip liner*, and *lip balms*. Lip cosmetics are often used to provide colour, texture, and moisture to the lips, as well as to define their exterior margins. Lipsticks and lip glosses, which give colour and texture to the lips, are generally available in a variety of colours and textures, including matte, satin, and glossy. Lip stains and other types of lip coloration products saturate the lips with a dye for a short period of time and usually do not change the structure of the lips. Both lip colour and lip liners may be applied straight to the lips, with a brush, or with the fingers, and are waterproof. Lip balms may colour the lips in addition to moisturising and protecting them (for example, by adding UV protection).

Face powder, **setting powders** and **sprays** are used to set foundation or concealer, giving it a matte or uniform appearance and covering tiny imperfections or blemishes. Both powders and setting sprays promise to prevent makeup from melting or seeping into the skin. While setting sprays are usually not coloured, setting powder and face powder may be tinted or translucent, and can be used to bake foundation so that it lasts longer on the face. Tinted face powders may be applied alone, without foundation or concealer, to provide a base with a very light coverage.

Nail polish is a nail colourant that is applied to the fingernails and toes. [4] Nail paints that are transparent and colourless may be used to strengthen nails or as a top or base layer to preserve the nail or nail polish. Nail polish, like eyeshadow, comes in a wide range of colours and styles.

2) Understand the problem:

Concern about the dissemination and development of cosmetic knowledge on social media or on the internet which is limited due to those who do not use or maximize the use of the internet and media. this can be seen because most of them still use old techniques and methods in conveying news, activities and developments of knowledge and the world of makeup. not only that, the increasing development in

the sale of makeup tools is also the cause of the lack of those who want to delve deeper into the knowledge of makeup.

For users or more focused on students which can be seen many of those who are interested in the field of makeup cannot focus and focus more on the knowledge of this makeup. This is because they spend a lot of time to focus on learning and daily activities. Time constraints are also a barrier for them.

3) Identify alternative ways to solve the problem

To solve this problem, there are several ways and alternatives that can be taken to those who are interested in knowing more in depth about makeup. This effort is carried out to students and the public.

1. Open a kiosk at Varsity mall UUM and launch the program about on the use of makeup.
2. Hire workers to handle customers in the kiosk.
3. Create a system for user and tutor.
4. Need to find any sources for makeup info and use.
5. Organize an event for student
6. Ask professional or expert makeup artist to make live in social media for makeup tutorial for once a week.

4) **Select the best way to solve the problem from the list of alternative solutions.**

Create a system where student and teaching stuff or tutor can interact and grow their business

5) **List instructions (steps) that enable you to solve the problem using the selected solution.**

1. User log into the system.
2. User choose to enter as user or tutor
3. If user choose as a user, user need to enter their personal information such as name, age, gender and email
4. The name, price and the description of the makeup class will be displayed.
5. User need to choose their class and categories.
6. User need to insert their other personal info for confirmation
7. If user choose as a tutor, they will have three option
8. If user choose tutorial (T), user can get detail about calculation of makeup class or tutorial.
9. If user choose service(S), user must choose from 2 option
10. User insert number of customer from 2 option
11. User insert distance for makeup services
12. Result will be display
13. If user choose for rent makeup tool(R), user need to insert total day for set A and set B
14. Result will display for total profit.

<table>
<tr><td>USER</td><td>USER</td><td colspan="2">USER</td></tr>
<tr><td rowspan="4">USER</td><td rowspan="4">EYE
FACE
LIPS
FULL</td><td>BASIC</td><td>RM 80</td></tr>
<tr><td>INTERMEDIATE</td><td>RM 150</td></tr>
<tr><td>ADVANCE</td><td>RM 200</td></tr>
<tr><td rowspan="3">TUTOR</td><td>MAKEUP TUORIAL</td><td colspan="2">• Calculate total profit
• calculate discount</td></tr>
<tr><td>MAKEUP SERVICES</td><td colspan="2">• Calculate total services for light & heavy makeup
• Calculate price for distance travel
• Calculate total profit</td></tr>
<tr><td>MAKEUP RENT</td><td colspan="2">• Calculate total rent for set A and Set B
• Calculate price for distance travel
• Calculate total profit</td></tr>
</table>

Class Categories

BASIC	INTERMEDIATE	ADVANCE
8 hour class	10 hour class	12 hour class
Certificate on comlpetion	Certificate on comlpetion	Certificate on comlpetion
1 -year tutorial video access	Lifetime tutorial video access	Lifetime tutorial video access
limited topic	full topic	full topic with additional notes
-	assist support	assist support
-	-	Access to tutor guide class
-	-	Able access tutor certificate
RM 80	RM 150	RM 200

Calculation:

Make Up Services	Calculation	
Makeup Tutorial	Calculation for discount for Student Registration	**tutoprice =80 -(80*20/100);** **tutoprice = 150 - (150*20/100);** **tutoprice = 200 -(200*20/100);**
Makeup Service	Calculation for total customer that purchase for light and heavy makeup. Calculation for total price for total journey. Calculation for total price and profit.	**totalight = custlight*harga1;** **totalheavy = custheavy*harga2;** **custsv = custlight + custheavy;** **totalsv = totalight+totalheavy;** **totalkm = journeysv/13;** **totaljourney = totalkm*2.15;** **totalprofit = totalsv - totaljourney;**
Makeup Rent	Calculation for total makeup set that has been rent for Set A and set B	**totalrent= (rentA*40)+(rentB*80);**

6) Evaluate The Solution

Through observation, the system can assist students or users in finding information and selecting the appropriate package. They are also able to develop talent as the system is available for support from instructors and is complete with guidance. The system also gives them the opportunity to upgrade from students to instructors with the certificates provided. Those who are use this system as instructors can make estimates and cost calculations for different services. This is somewhat helpful in managing their finances.

However, there are some shortcomings as the classes organized are online and this may affect the effectiveness in imparting the knowledge of makeup to students. those who are qualified are also entitled and qualified to have a certificate to become an instructor. in conclusion, high effort should be given from users and students so that this matter is beneficial for the future.

7) Algorithm

ALGORITHM

1. Choose either login as user or tutor
2. If user choose as a user, Insert user information
3. Systems will show the details about the class and package
4. User choose the package
5. user insert information for package

6. If user choose as a tutor, systems will show 3 option to choices for calculation
7. User insert the selection,
8. If User choose option 'Class tutorial", user need to insert class categories.
9. System will display result of price calculation

10. If user choose a service, user insert custheavy, custlight and journey.
11. Systems display calculation for total profit

12. If user choose rent, user insert setA, setB.
13. Systems display calculation for total profit

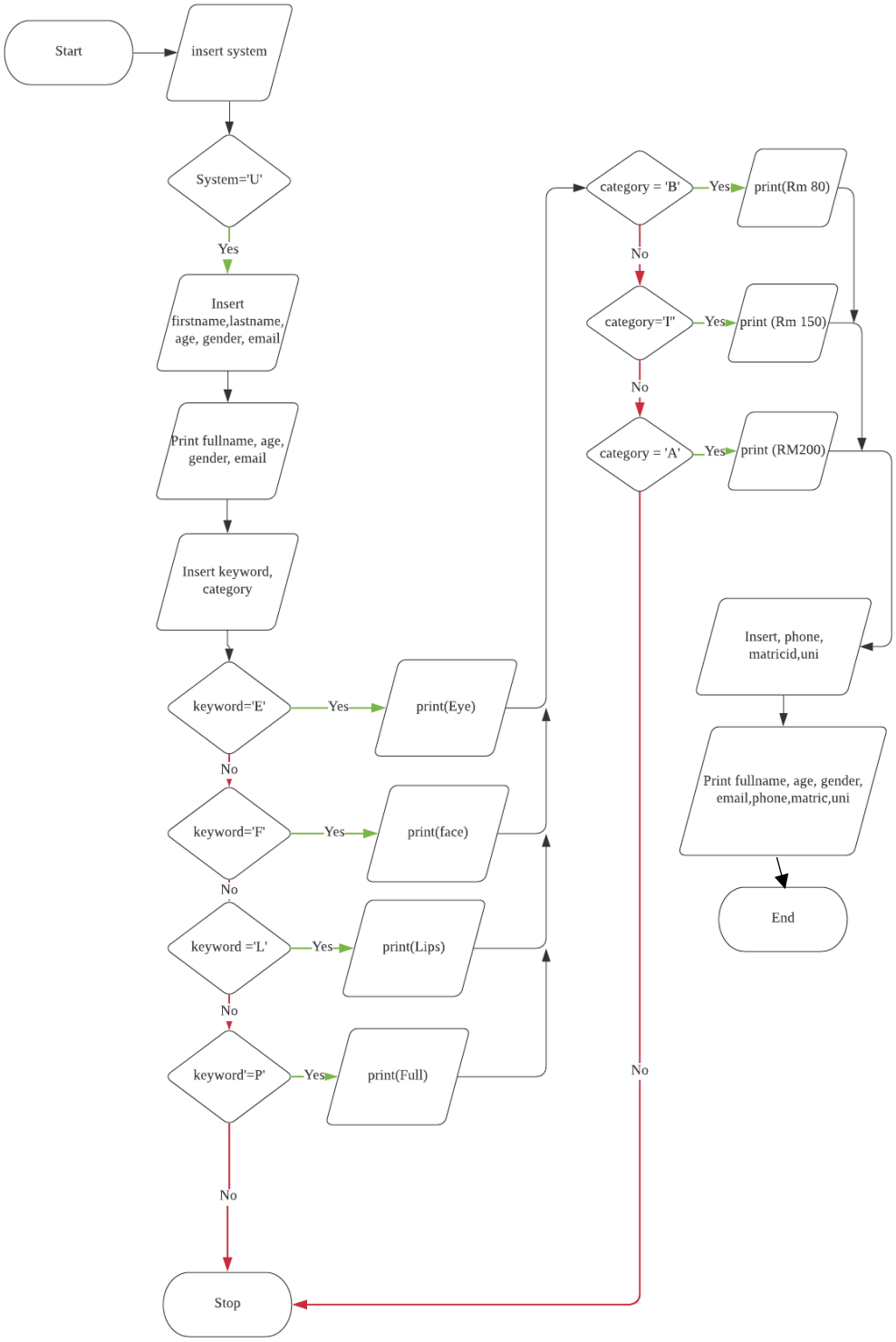
8) Pseudocode

```
Start
    String String firstname; String lastname; String fullname; String email;
    int phone;
    double custlight;  double custheavy;  double totalight;  double totalheavy;
    double totalsv; double custsv; double harga1 = 100; double harga2= 150; double
    journeysv;
    double totalkm; double totaljourney; double totalprofit;
    Output”Enter system:”
    Input system
    Switch system
    Case ‘U’
    Output”Enter firstname’
    Input firstname
    Output”enter lastname”
    Input lastname
    Output”enter  age”
    Input age
    Output”enter gender”
    Input gender
    Output “class Eye, Face, Lips,Full”
    Input class
    Output “Categories basic, aintermediate, advance”
    Input categories
    Output”enter detail confirmation”
    input detailconfirmation
    case ‘T’
    Output “ enter choice tutor, service, rent”
    Input choice
    Switch ope
    Case ‘T’
    Output”enter classcat”
    Input classcat
    If classcat==’B’
    tutoprice =80 -(80*20/100);
    else if classcat ==’I’
    tutoprice = 150 - (150*20/100);
    else if classcat==’A’
    tutoprice = 200 - (150*20/100);
    Case ‘S’
    Output”custlight, custheavy, journey”
    Input custlight
    Inpur custheavy
    Input journey
    totalight = custlight*harga1;
```

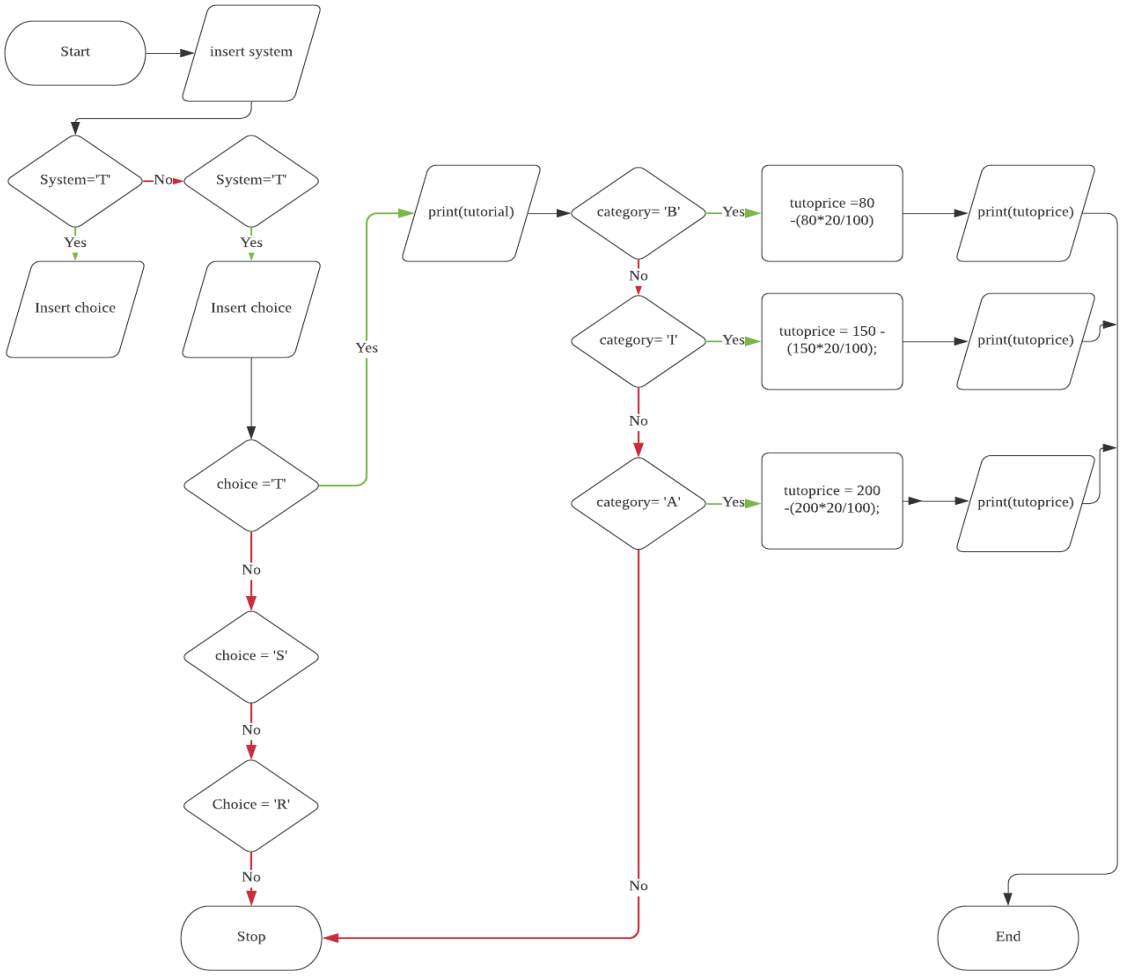
```
        totalheavy = custheavy*harga2;
        custsv = custlight + custheavy;
        totalsv = totalight+totalheavy;
        totalkm = journeysv/13;
        totaljourney = totalkm*2.15;
        totalprofit = totalsv - totaljourney;
        output"totaljourney"

        Case 'R'
        Output "enter setA,SetB)
        Input setA, setB;
        totalrent= (rentA*40)+(rentB*80);
        output " totalrent"

End
```

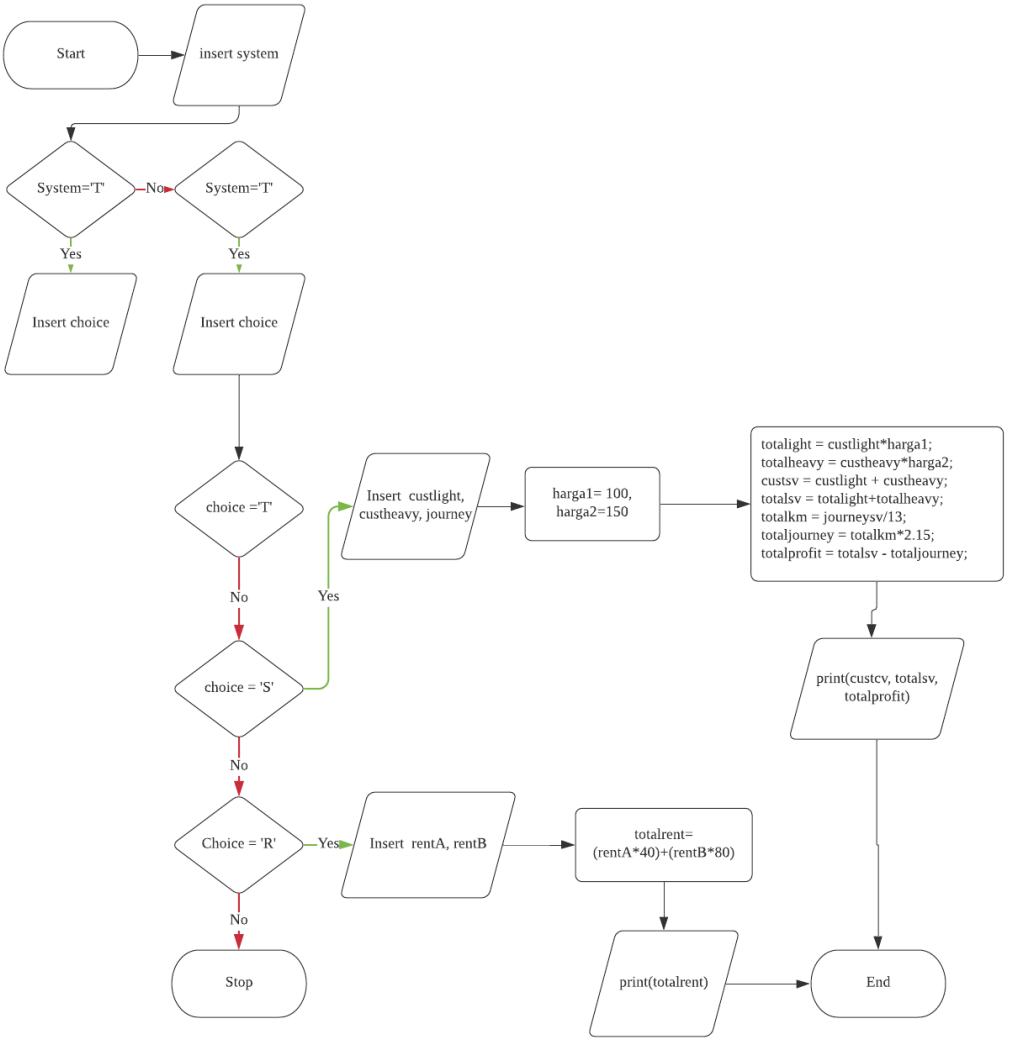
9) Flowchart

Flowchart for user



Flowchart for Tutor




Start
insert system
System='T'
No
System='T'
Yes
Yes
Insert choice
Insert choice
choice ='T'
Insert custlight, custheavy, journey
harga1= 100, harga2=150
totalight = custlight*harga1;
totalheavy = custheavy*harga2;
custsv = custlight + custheavy;
totalsv = totalight+totalheavy;
totalkm = journeysv/13;
totaljourney = totalkm*2.15;
totalprofit = totalsv - totaljourney;
No
Yes
print(custcv, totalsv, totalprofit)
choice = 'S'
No
Choice = 'R'
Yes
Insert rentA, rentB
totalrent= (rentA*40)+(rentB*80)
No
Stop
print(totalrent)
End

10) Coding

```
package assignment;
import java.util.Scanner;
class ASG1 {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner sc = new Scanner(System.in);

        System.out.println("Welcome to System House of Makeup :");
        System.out.println("> User");
        System.out.println("> Tutor");
        System.out.println("Enter your account (U/T):");
        char system = sc.next().charAt(0);

        switch (system)
        {
        case 'U':
        String firstname;
        String lastname;
        String fullname;
        boolean matric;
        int age;
        String email;
        char keyword;
        char cate;
        int phone;

        double tp1=80,tp2=150,tp3=200;

        String choice;


        System.out.println("-------------------------------------------------------------------------");
        System.out.println("\t\tWelcome to the E'Beauty Makeup Class");
        System.out.println("-------------------------------------------------------------------------");


        System.out.println("Enter your first name : ");
        firstname = sc.next();
        System.out.println("Enter your lastname name : ");
        lastname = sc.next();
        fullname = firstname +  lastname;

        System.out.println("Enter your age: ");
        age = sc.nextInt();

        System.out.println("Enter your gender (Male/Female) : ");
        char gender = sc.next().charAt(0);

        System.out.println("Enter your Email: ");
        email = sc.next();

        System.out.println("-------------------------------------------------------------------------");
        System.out.println("\t\there your information");
        System.out.println("-------------------------------------------------------------------------");

        System.out.println("Your name : " + fullname);
        System.out.println("Your age :" + age);
        System.out.println("Your gender :" + gender);
        System.out.println("Your email address :" + email);

        System.out.println("-------------------------------------------------------------------------");
        System.out.println("\t\tDetail about the Make Up Class ");
        System.out.println();
        System.out.println("There will be 3 structure or part of face that we will focus on Makeup session");
        System.out.println();
        System.out.println(" > EYE");
        System.out.println(" > FACE");
        System.out.println(" > LIP");
        System.out.println(" > FULL");
        System.out.println();
        System.out.println("We will provide class for each part and there are also have complete session for all part");
        System.out.println();
        System.out.println("For each part or structure, there will have 3 different categories : ");
```

```
System.out.println();
System.out.println(" > BASIC");
System.out.println(" > INTERMIDEATE");
System.out.println(" > ADVANCE");
System.out.println();
System.out.println(" Every part will have different class hour and different topic");
System.out.println("-----------------------------------------------------------------------");
System.out.println("-------------------------------------------------------------------------------------------------------------------------");
System.out.println("\t\tBASIC\t\t|\t\tINTERMEDIATE\t\t|\t\tADVANCE\t\t\t|");
System.out.println("8 hours class\t\t\t|\t10 hours class\t\t\t|\t12 hours class\t\t\t|");
System.out.println("Certificate on completion\t|\tCertificate on completion\t|\tCertificate on completion\t|");
System.out.println("1-year tutorial vid access\t|\tlifetime tutorial video access\t|\tlifetime tutorial video access\t|");
System.out.println("Limited topic\t\t\t|\tFull topic\t\t\t|\tFull topic with extra notes\t|");
System.out.println("\t\t-\t\t|\tAssist support\t\t\t|\tAssist support\t\t\t|");
System.out.println("\t\t-\t\t|\t\t-\t\t\t|\tTutor guide class\t\t|");
System.out.println("\t\t-\t\t|\t\t-\t\t\t|\tAble access tutor certificate\t|");
System.out.println("\t\tRM 80\t\t|\t\tRM150\t\t\t|\t\tRM 200\t\t\t|");
System.out.println("-------------------------------------------------------------------------------------------------------------------------");
System.out.println("P.S Purchasing any 2 advance class allow you to get Tutor Makeup Certificate ");
System.out.println();

System.out.println("Please choose your class option");
System.out.println("- EYE (E) -- FACE (F) -- LIPS (L) -- FULL (P) -");
System.out.println("Insert your choice (Keyword) : ");
keyword = sc.next().charAt(0);
System.out.println();
System.out.println("Please choose your class categories");
System.out.println("- BASIC (B) -- INTERMEDIATE (I) -- ADVANCE (A) -");
System.out.println("Insert your choice (Keyword) : ");
cate = sc.next().charAt(0);
System.out.println();
```

```
if(keyword=='E')                    // class if else
{
    System.out.print("You are choosing class Eye and ");
}
else if(keyword=='F')
{
    System.out.print("You are choosing class Face and ");
}
else if(keyword== 'L')
{
    System.out.print("You are choosing class Lips and ");
}
else if(keyword== 'P')
{
    System.out.print("You are choosing class Full and ");
}


if(cate=='B')                      // categories if else
{
    System.out.println("Basic categories ");
}
else if (cate == 'I')
{
    System.out.println("Intermediate categories ");
}
else if (cate =='A')
{
    System.out.println("Advance categories");
}

switch (cate)
{
case 'B':
    System.out.println("Total price = RM " + tp1);
    break;
```

```
case 'I':
    System.out.println("Total price = RM " + tp2);
    break;

case 'A':
    System.out.println("Total price = RM " + tp3);
    break;
}
System.out.println();
System.out.println(" Please insert your details below for final confirmation ");
System.out.println("Enter your phone number : ");
phone=sc.nextInt();
System.out.println("Enter your University name : ");
String uni=sc.next();
System.out.println("Enter your student id : ");
matric = sc.hasNext();
System.out.println("Your name : " + firstname);
System.out.println("Phone number : " + phone);
System.out.println("Your name : " + fullname);
System.out.println("Your age :" + age);
System.out.println("Your gender :" + gender);
System.out.println("Your email address :" + email);
System.out.println("Your University  :" + uni);
System.out.println("Your phone number :" + phone);
System.out.println("-----------------------------------------------------------------------------------------------------------")

break;

case 'T':



    String tutoll;
    String svs;
    String rent;



    double custlight; // cust for light makeup
    double custheavy; // " " heavy makeup
    double totalight; // income from cust light makeup
    double totalheavy; // " " heavy makeup
    double totalsv; // total income
    double custsv; // total cust for service
    double harga1 = 100;
    double harga2= 150;
    double journeysv;
    double totalkm;
    double totaljourney;
    double totalprofit;

    String makeuprent;
    double rentA;
    double hourA;
    double rentB;
    double hourB;
    double totalrent;


    char classcat;
    double tutoprice;

    System.out.println("-------------------------------------------");
    System.out.println("TUTO SECTION - CALCULATION SERVICE");
    System.out.println("-------------------------------------------");
    System.out.println("Basically there are three service related to makeup Industries");
    System.out.println();
    System.out.println("> Makeup Tutorial (Keyword - T)");
    System.out.println("> Makeup Services (Keyword - S)");
    System.out.println("> Makeup Tool Rent (Keyword - R)");
    System.out.println();
    System.out.println("Enter Services (Keyword) :");
    char ope = sc.next().charAt(0);
```

```
switch (ope)
{
case 'T':

    System.out.println("");
    System.out.println("-------------------------------------------");
    System.out.println("\t\t- MAKEUP TUTORIAL -");
    System.out.println("");
    System.out.println("Make up tutorial can come for 2, 3 or part of face");
    System.out.println("For example, face, eye, lips and full makeup");
    System.out.println("And it can come for 2, 3 or more class categories");
    System.out.println("Let's see if we have 3 class categories");
    System.out.println("");
    System.out.println("-------------------------------------------");
    System.out.println("\tEYE     | Basic");
    System.out.println("\t\t| Intermediate");
    System.out.println("\t\t| Advance");
    System.out.println("\tFACE    | Basic");
    System.out.println("\t\t| Intermediate");
    System.out.println("\t\t| Advance");
    System.out.println("\tLIPS    | Basic");
    System.out.println("\t\t| Intermediate");
    System.out.println("\t\t| Advance");
    System.out.println("\tFULL    | Basic");
    System.out.println("\t\t| Intermediate");
    System.out.println("\t\t| Advance");
    System.out.println("-------------------------------------------");
    System.out.println("");


    System.out.println("\t Basic\t\t|\t Intermediate\t|\tAdvance\t\t");
    System.out.println("\t RM80/Customer\t|\t RM150/Customer\t|\tRM200/Customer\t\t");
    System.out.println();
    System.out.println("As Example....");
    System.out.println(" If The class are registered by student They can get 20% discount");
    System.out.println("> Basic (Keyword - B)");
    System.out.println("> Intermediate (Keyword - I)");
    System.out.println("> Advance (Keyword - A)");
    System.out.println("Please enter class categories : ");
    classcat=sc.next().charAt(0);

     if (classcat == 'B')
     {
         tutoprice =80 -(80*20/100);
         System.out.println(" Original price : Rm 80");
         System.out.println(" Student price : " + tutoprice);
     }
     else if (classcat == 'I')
     {
         tutoprice = 150 - (150*20/100);
         System.out.println(" Original price : Rm150");
         System.out.println(" Student price : " + tutoprice);
     }
     else if (classcat == 'A')
     {
         tutoprice = 200 -(200*20/100);
         System.out.println(" Original price : Rm 200");
         System.out.println(" Student price : " + tutoprice);
     }


    System.out.println("-------------------------------------------");
    break;
```

```
        case 'S':

            System.out.println("-------------------------------------------");
            System.out.println("\t\t- MAKEUP SERVICE -");
            System.out.println("");
            System.out.println("Makeup service can come for two or more categories");
            System.out.println("For example we have 2 categories");
            System.out.println("> light makeup  --  RM 100");
            System.out.println("> Heavy makeup  --  RM 150");
            System.out.println();
            System.out.println("CALCULATION...");
            System.out.println("Enter Number of customer for light makeup : ");
            custlight=sc.nextDouble();

            System.out.println("Enter Number of customer for heavy makeup : ");
            custheavy=sc.nextDouble();

            System.out.println("Enter Distance(km) your total journey : ");
            journeysv=sc.nextDouble();

            totalight = custlight*harga1;
            totalheavy = custheavy*harga2;
            custsv = custlight + custheavy;
            totalsv = totalight+totalheavy;
            totalkm = journeysv/13;
            totaljourney = totalkm*2.15;
            totalprofit = totalsv - totaljourney;


            System.out.println("Total customer for Makeup service : " + custsv);
            System.out.println("Total income for Makeup service : RM " + totalsv);
            System.out.format("Net profit budget for Makeup service : RM %.2f" , totalprofit);
            System.out.println();

            System.out.println("-------------------------------------------");
            break;


        case 'R':
            System.out.println("-------------------------------------------");
            System.out.println("\t\t- MAKEUP RENT -");
            System.out.println("");
            System.out.println("  SET A     |  SET B");
            System.out.println("  Face Set  |  Full set (Face, Nail, hair)");
            System.out.println("  RM40/Day  |  RM80/Day");
            System.out.println();
            System.out.println("Enter total day Set A has been rent : ");
            rentA = sc.nextDouble();
            System.out.println("Enter total day Set B has been rent : ");
            rentB=sc.nextDouble();

            totalrent= (rentA*40)+(rentB*80);

            System.out.println("Total price for makeup rent service : RM " + totalrent);


            System.out.println("-------------------------------------------");
            break;
            default:
    }
}
}
}
```

USER OUTPUT

```
Welcome to System House of Makeup :
> User
> Tutor
Enter your account (U/T):
U
------------------------------------------------------------------------
                Welcome to the E'Beauty Makeup Class
------------------------------------------------------------------------
Enter your first name :
luqman
Enter your lastname name :
zamri
Enter your age:
21
Enter your gender (Male/Female) :
Male
Enter your Email:
luqman@google.com
------------------------------------------------------------------------
                here your information
------------------------------------------------------------------------
Your name : luqmanzamri
Your age :21
Your gender :M
Your email address :luqman@google.com
------------------------------------------------------------------------
                Detail about the Make Up Class

There will be 3 structure or part of face that we will focus on Makeup session

 > EYE
 > FACE
 > LIP
 > FULL
```

We will provide class for each part and there are also have complete session for all part

For each part or structure, there will have 3 different categories :

 > BASIC
 > INTERMIDEATE
 > ADVANCE

 Every part will have different class hour and different topic

BASIC	INTERMEDIATE	ADVANCE
8 hours class	10 hours class	12 hours class
Certificate on completion	Certificate on completion	Certificate on completion
1-year tutorial vid access	lifetime tutorial video access	lifetime tutorial video access
Limited topic	Full topic	Full topic with extra notes
-	Assist support	Assist support
-	-	Tutor guide class
-	-	Able access tutor certificate
RM 80	RM150	RM 200

P.S Purchasing any 2 advance class allow you to get Tutor Makeup Certificate

Please choose your class option
- EYE (E) -- FACE (F) -- LIPS (L) -- FULL (P) -
Insert your choice (Keyword) :
E

Please choose your class categories
- BASIC (B) -- INTERMEDIATE (I) -- ADVANCE (A) -
Insert your choice (Keyword) :
B

You are choosing class Eye and Basic categories
Total price = RM 80.0

 Please insert your details below for final confirmation
Enter your phone number :
0132548317
Enter your University name :
UUM
Enter your student id :
284495
Your name : luqman
Phone number : 132548317
Your name : luqmanzamri
Your age :21
Your gender :M
Your email address :luqman@google.com
Your University :UUM
Your phone number :132548317

TUTO OUTPUT

1. Class Tutorial Output

```
Welcome to System House of Makeup :
> User
> Tutor
Enter your account (U/T):
T
-------------------------------------------
TUTO SECTION - CALCULATION SERVICE
-------------------------------------------
Basically there are three service related to makeup Industries

> Makeup Tutorial (Keyword - T)
> Makeup Services (Keyword - S)
> Makeup Tool Rent (Keyword - R)

Enter Services (Keyword) :
T

-------------------------------------------
                - MAKEUP TUTORIAL -

Make up tutorial can come for 2, 3 or part of face
For example, face, eye, lips and full makeup
And it can come for 2, 3 or more class categories
Let's see if we have 3 class categories

-------------------------------------------
       EYE     | Basic
               | Intermediate
               | Advance
       FACE    | Basic
               | Intermediate
               | Advance
       LIPS    | Basic
               | Intermediate
               | Advance
       FULL    | Basic
               | Intermediate
               | Advance
-----------------------------------------

        Basic          |       Intermediate   |       Advance
        RM80/Customer  |       RM150/Customer |       RM200/Customer

As Example....
 If The class are registered by student They can get 20% discount
> Basic (Keyword - B)
> Intermediate (Keyword - I)
> Advance (Keyword - A)
Please enter class categories :
I
Original price : Rm150
 Student price : 120.0
-------------------------------------------
```

2. Makeup service Output

```
Welcome to System House of Makeup :
> User
> Tutor
Enter your account (U/T):
T
-------------------------------------------
TUTO SECTION - CALCULATION SERVICE
-------------------------------------------
Basically there are three service related to makeup Industries

> Makeup Tutorial (Keyword - T)
> Makeup Services (Keyword - S)
> Makeup Tool Rent (Keyword - R)

Enter Services (Keyword) :
S
-------------------------------------------
                - MAKEUP SERVICE -

Makeup service can come for two or more categories
For example we have 2 categories
> light makeup  --  RM 100
> Heavy makeup  --  RM 150

CALCULATION...
Enter Number of customer for light makeup :
22
Enter Number of customer for heavy makeup :
9
Enter Distance(km) your total journey :
119
Total customer for Makeup service : 31.0
Total income for Makeup service : RM 3550.0
Net profit budget for Makeup service : RM 3530.32
-------------------------------------------
```

3. Makeup rent Output

```
Welcome to System House of Makeup :
> User
> Tutor
Enter your account (U/T):
T
-------------------------------------------
TUTO SECTION - CALCULATION SERVICE
-------------------------------------------
Basically there are three service related to makeup Industries

> Makeup Tutorial (Keyword - T)
> Makeup Services (Keyword - S)
> Makeup Tool Rent (Keyword - R)

Enter Services (Keyword) :
R
-------------------------------------------
                - MAKEUP RENT -

  SET A     |  SET B
  Face Set  |  Full set (Face, Nail, hair)
  RM40/Day  |  RM80/Day

Enter total day Set A has been rent :
4
Enter total day Set B has been rent :
5
Total price for makeup rent service : RM 560.0
-------------------------------------------
```

Reference:

https://en.wikipedia.org/wiki/Cosmetics

https://en.wikipedia.org/wiki/History_of_cosmetics

https://www.researchgate.net/figure/Pseudo-code-of-the-Routing-and-Forwarding-Module-of-GrAnt-Protocol_fig2_257582046

https://www.instagram.com/enzy.makeupclass/?hl=en

http://www.ieyra.com/2018/01/belajar-teknik-solekan-di-kelas-mekap.html

SKIP 1013
INTRODUCTION TO PROGRAMMING AND PROBLEM SOLVING
Group 1 (SEMSTER A211)
Assignment 1

Theme:

Beauty / Jewellery

Submitted to:

PROF. MADYA DR. AZMAN B YASIN

Prepared by:

Chong Pao Lun (284508)

A211 SKIP1013 GROUP A

ASSIGNMENT 1

1. Identify the problem

Jewelry, or trinkets, consists of decorative items used for personal ornaments such as brooches, rings, necklaces, earrings, pendants, bracelets, and cufflinks. Jewelry can be attached to the body or clothing. From a Western point of view, the term is limited to durable decorations, excluding flowers, for example. Metals such as gold, often combined with jewelry for centuries, have been a common material for jewelry making, but other materials such as shellfish and other plant materials may also be used.Trinkets One of the oldest types of archaeological remains The 100,000-year-old marble made from the shells of Nazariyah is considered the oldest decoration. The basic form of jewelry varies by culture, but is often very durable. In European culture, the most common form of navel decoration has survived from ancient times, but other forms, such as important decorations on the nose or ankles, are much less common in other cultures.

The word jewelery itself comes from the word jewel, which was translated from the Old French "jouel" into English, and the Latin word "jocale", which means toys. In British English, Indian English, New Zealand English, Irish English, Australian English, and South African English, it is written as a jewel, but the American English spelling is a jewel. Both are used in Canadian English, but the two jewelery on the shelves are the mainstream. In French and other European languages, the corresponding term joaillerie includes not only objects worn on the body, but also gorgeous metalwork made of precious metals such as art and church objects. Humans have used rings for a number of one in all a type reasons: functional, normally to recovery garb or hair in place,as a marker of social reputation and personal reputation, as with a wedding ring,as a signifier of some form of affiliation, whether or not or now no longer ethnic, religious or social,to provide talismanic protection (withinside the form of amulets),as an innovative display,as a carrier or photograph of personal meaning – inclusive of love, mourning, a non-public milestone or perhaps luck, superstition.

Renting, also known as hiring or letting, is a contract in which a fee is paid in exchange for the temporary use of another's item, service, or property. When a tenant signs a gross lease, the landlord pays all of the landlord's usual property charges. Renting equipment is one form of renting. The sharing economy might include renting.

There are some reasons to borrow rather than buy. Homes are tax deductible and tax deductible in most jurisdictions. Rent a house when you cannot afford to buy it because of your financial ability, such as “rent as needed.” Reduce the financial risk associated with depreciation and operating expenses, especially for real estate that may be needed in the short term. When

is only needed temporarily (eg for special tools, trucks or skips). When traveling you may or may not own a car or bike, such as renting a car or bike, but need something that doesn't have a

nearby. You want a cheaper alternative to buying, such as renting a movie. Because the person is unwilling to pay the full price of the film, he rents the film at a lower price, but gives up the opportunity to watch it later. Tenants may shift the burden of building maintenance (mowing, snow removal, etc.) to the owner or his/her agent. No need to worry about service life and maintenance. Leases can lead to an imbalance in debt, which puts a strain on a company's balance sheet when purchasing real estate. Rentals are environmentally friendly when used more efficiently by maximizing their use without throwing away, overproducing or using the product. In addition to risk, leasing can provide the owner with regular income. The more departures (number of check-ins), the higher your income. Ultimately, rental income overlaps the purchase price of the product and an outflow that benefits the owner. Leases represent an alternative source of income for untapped inventory compared to an overreliance on, which is often stagnant or slow in the retail business environment.

A jewellery store (American English: jewelry store) is a retail business establishment, that specializes in selling (and also buying) jewellery and watches. Jewellery stores provide many services such as repairs, remodeling, restoring, designing and manufacturing pieces.

Currently, UUM university decided to open a new jewelry store on 1st January 2022, and all the products are imported from other countries. The main reason UUM opened a jewelry rent store is that that is no jewelry rent store in Kedah, and jewelry product is so expensive when buying. During the opening store, UUM found out that is some problems occurred during the processing of payment. First, the UUM rent store needs a lot of people to record and write a receipt in a long period time for the customer during the payment process, then during the process of writing a receipt, UUM found out that is some miscalculations occur and miswriting for the product and more. Thus, UUM decides to make a system which able to print out the information of the customer and the product list that customers rent. There is 4 type of jewelry which is Necklaces, Earrings, Charms, Ring. During the renting process, necklaces will be charged as RM50.5/per item, Earrings will be RM30.5/per item, Charms is RM70.0/per item, and Ring is RM80.0/per item. This product fee already includes the transfer fee, procedure fee, SST, and more. If that is the total quantity more than 5 , that will be a 2% discount for every product .When customers return back they will be charged a procedure fee and SST which is necklaces RM5.5/per item, Earrings will be RM3.5/per item, Charms is RM7.0/per item, and Ring is RM8.0/per item. If the date that has been borrowed is more than 5 date , that will be a extra 4% fee will be charged for every product item UUM rent stores decide to rent their jewelry only for VIP customers so that is a differentiation between the customer.

2. Understand the problem

   For the case about that we know that the system will be only available for VIP customer due to secure. Then, that is the miscalculation and mis-record by the staff occur .Beside that, that will be a long time period for customer waiting to get the receipt. During the renting progress that will be two part which is total quantiy more than 5 and less than 5. For total

quantity less than 5, that will be necklaces will be charged as RM50.5/per item, Earrings will be RM30.5/per item, Charms is RM70.0/per item, and Ring is RM80.0/per item. For total quantity more than 5, every item will be get 2% discount for each product necklaces will be charged as RM49.49/per item, Earrings will be RM29.89/per item, Charms is RM68.6/per item, and Ring is RM78.4/per item.

During returning progress that will be two part which is for date borrow mare than 5 or less than5. For the date less than 5 the price for necklaces RM5.5/per item, Earrings will be RM3.5/per item, Charms is RM7.0/per item, and Ring is RM8.0/per item. That will be 4% charged for every item borrow when the date is more than 5. Each the price for necklaces is RM5.72/per item, Earrings will be RM3.64/per item, Charms is RM7.28/per item, and Ring is RM8.32/per item. For the last part the customer will get a receipt when that is consist of the name, no.vip, address, phone, label number, name of item, type of product ,quantiy of item, price of item, date of item, total price for each item and the total amount need to pay.

Case	Condition	Fomula
Rent	quantity>5	(price*quantity)-((price*quantity)*0.2)
	necklaces	(50.5*quantity)-((50.5*quantity)*0.2)
	Earrings	(30.5*quantity)-((30.5*quantity)*0.2)
	Charms	(70.0*quantity)-((70.0*quantity)*0.2)
	Ring	(80.0*quantity)-((80.0*quantity)*0.2)
	quantity<5	(price*quantity)
	necklaces	(50.5*quantity)
	Earrings	(30.5*quantity)
	Charms	(70.0*quantity)
	Ring	(80.0*quantity)
Return	Date>5	(price*quantity)+((price*quantity)*0.4)
	necklaces	(5.5*quantity)+((5.5*quantity)*0.4)
	Earrings	(3.5*quantity)+((3.5*quantity)*0.4)
	Charms	(7.0*quantity)+((7.0*quantity)*0.4)
	Ring	(8.0*quantity)+((8.0*quantity)*0.4)
	Date<5	(price*quantity)

	necklaces	(5.5*quantity)
	Earrings	(3.5*quantity)
	Charms	(7.0*quantity)
	Ring	(8.0*quantity)

```
==========================================================================================
==========================================================================================
============================WELCOME TO UUM JEWELLERY STORE================================
==========================================================================================
==========================================================================================

Customer Name : LL
Customer VIP Number : 213558
Customer Contact Number : 60123456789
Customer Address : UUM,Sintok

============================RENTING ONLY FOR TOTAL QUANTITY LESS 5 ================================
==========================================================================================
No======Name Of Jewellery====Type Of Jewellery==========Quantity of Jewellery==============Fee========Date
1=======ABC=============Necklaces==================1.0============================RM50.5=======1.0
2=======ABD=============Earrings==================2.0============================RM61.0=======2.0
3=======ABE=============Charms====================3.0============================RM210.0=======3.0
4=======ABF=============Rings=====================4.0============================RM320.0=======4.0
Total Amount need to pay :RM641.5
```

3. Identify alternative ways to solve the problem
   -Hire more people to written the receipt.
   -Hire more people to record the receipt.
   -Using calculator in calculation.
   -Double check the receipt and record correctly.
   -Identify whether the customer is VIP or not
   -Limited the number of customer.
   -Advice the worker to do more faster
   -Cutting worker break or rest time when their didn't finish their work.
   -Making all worker to do over time when job is not completed.
   -Making a system to do all the process of record, writing, calculation, and identify customer.

4. Select the best way to solve the problem from the list of alternative solutions.
   -Making a system to do all the process of record, writing, calculation, and identify customer.

5. List instructions (steps) that enable you to solve the problem using the selected solution.
   - Identify whether customer want to return jewellery
   - Taking customer personal detail
   - Insert the quantity, name and type of product that customer taken

- Making a calculation based on the item name, type and quantity product that customer need to pay
- Date(Punishment) and total quantity(discount) will be count if more than 5 that will be charge 4% and 2% per each.
- Print out a receipt or output for customer

Case	Condition	Fomula
Rent	quantity>5	(price*quantity)-((price*quantity)*0.2)
	necklaces	(50.5*quantity)-((50.5*quantity)*0.2)
	Earrings	(30.5*quantity)-((30.5*quantity)*0.2)
	Charms	(70.0*quantity)-((70.0*quantity)*0.2)
	Ring	(80.0*quantity)-((80.0*quantity)*0.2)
	quantity<5	(price*quantity)
	necklaces	(50.5*quantity)
	Earrings	(30.5*quantity)
	Charms	(70.0*quantity)
	Ring	(80.0*quantity)
Return	Date>5	(price*quantity)+((price*quantity)*0.4)
	necklaces	(5.5*quantity)+((5.5*quantity)*0.4)
	Earrings	(3.5*quantity)+((3.5*quantity)*0.4)
	Charms	(7.0*quantity)+((7.0*quantity)*0.4)
	Ring	(8.0*quantity)+((8.0*quantity)*0.4)
	Date<5	(price*quantity)
	necklaces	(5.5*quantity)
	Earrings	(3.5*quantity)
	Charms	(7.0*quantity)
	Ring	(8.0*quantity)

```
==========================================================================================
==========================================================================================
==============================WELCOME TO UUM JEWELLERY STORE==============================
==========================================================================================
==========================================================================================

Customer Name : LL
Customer VIP Number : 213558
Customer Contact Number : 60123456789
Customer Address : UUM,Sintok

==============================RENTING ONLY FOR TOTAL QUANTITY LESS 5 ==============================
==========================================================================================
No======Name Of Jewellery====Type Of Jewellery==========Quantity of Jewellery==============Fee========Date
1=======ABC=============Necklaces=================1.0============================RM50.5=======1.0
2=======ABD=============Earrings==================2.0============================RM61.0=======2.0
3=======ABE=============Charms====================3.0============================RM210.0=======3.0
4=======ABF=============Rings=====================4.0============================RM320.0=======4.0
Total Amount need to pay :RM641.5
```

```
==========================================================================================
==========================================================================================
==============================WELCOME TO UUM JEWELLERY STORE==============================
==========================================================================================
==========================================================================================

Customer Name : LL
Customer VIP Number : 213558
Customer Contact Number : 60123456789
Customer Address : UUM,Sintok

==============================RENTING ONLY FOR TOTAL QUANTITY MORE 5 ==============================
==========================================================================================
No======Name Of Jewellery====Type Of Jewellery==========Quantity of Jewellery==============Fee========Date
1=======ABC=============Necklaces=================1.0============================RM40.4=======1.0
2=======ABD=============Earrings==================2.0============================RM48.8=======2.0
3=======ABE=============Charms====================3.0============================RM168.0=======3.0
4=======ABF=============Rings=====================4.0============================RM256.0=======4.0
Total Amount need to pay :RM513.2
```

```
==========================================================================================
==========================================================================================
==============================WELCOME TO UUM JEWELLERY STORE==============================
==========================================================================================
==========================================================================================

Customer Name : LL
Customer VIP Number : 213558
Customer Contact Number : 60123456789
Customer Address : UUM,Sintok

==============================RETURN ONLY FOR DATE LESS 5 ==============================
==========================================================================================
No======Name Of Jewellery====Type Of Jewellery==========Quantity of Jewellery==============Fee========Date
1=======ABC=============Necklaces=================1.0============================RM5.5=======1.0
2=======ABD=============Earrings==================2.0============================RM7.0=======2.0
3=======ABE=============Charms====================3.0============================RM21.0=======3.0
4=======ABF=============Rings=====================4.0============================RM32.0=======4.0
Total Amount need to pay :RM65.5
```

```
================================================================================================
================================================================================================
============================WELCOME TO UUM JEWELLERY STORE======================================
================================================================================================
================================================================================================

Customer Name : LL
Customer VIP Number : 213558
Customer Contact Number : 60123456789
Customer Address : UUM,Sintok

============================RENTING ONLY FOR DATE MORE 5 ======================================
================================================================================================
No======Name Of Jewellery====Type Of Jewellery==========Quantity of Jewellery=============Fee========Date
1=======ABC=============Necklaces=================1.0============================RM7.7=======1.0
2=======ABD=============Earrings=================2.0============================RM9.8=======2.0
3=======ABE=============Charms==================3.0============================RM29.4=======3.0
4=======ABF=============Rings==================4.0============================RM44.8=======4.0
Total Amount need to pay :RM91.69999999999999
```

6. Evaluate the solution.

   Renting Part

   -First, inside the system, the system will declare the variable and initialized the variable. Example price1=50.5, price2=30.5, price3=70.0, price4=80.0. Then user need insert the input for name, matric, address, and phone. Next user will need to insert the name and quantity of product according to the type which is Necklaces, Chams, Rings, and Earrings for more total quantity less than 5. After that, that is calculation will be occur and the formula using is the product price = price * quantity. After all the calculation has been done the total amount is the sum of all four type product price. Last, the system will display back the customer information likes name, matric, address, phone, product type, product quantity, product price and total amount need to pay in the form of receipt .

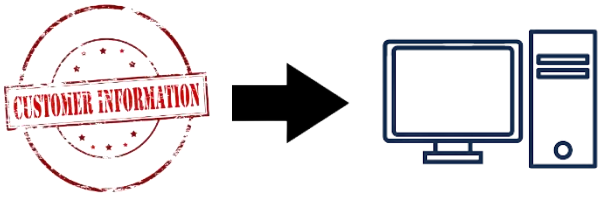
   -Second, user will need to insert the name and quantity of product according to the type which is Necklaces, Chams, Rings, and Earrings for more total quantity more than 5. After that, that is calculation will be occur and the formula using is the product price = (price * quantity)-((price * quantity). *0.2). After all the calculation has been done the total amount is the sum of all four type product price. Last, the system will display back the customer information likes name, matric, address, phone, product type, product quantity, product price and total amount need to pay in the form of receipt .

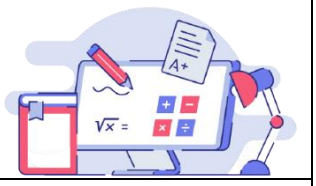
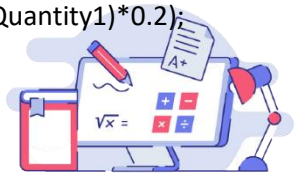
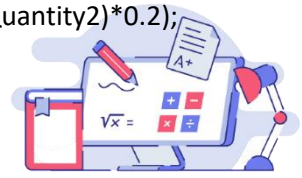
   Return Part

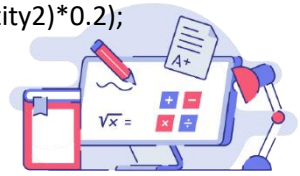
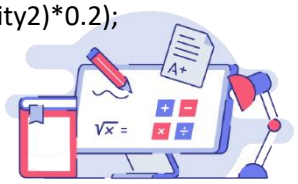
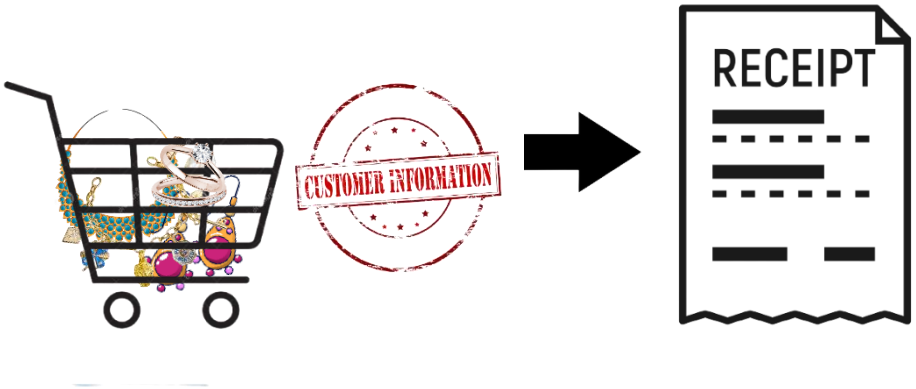
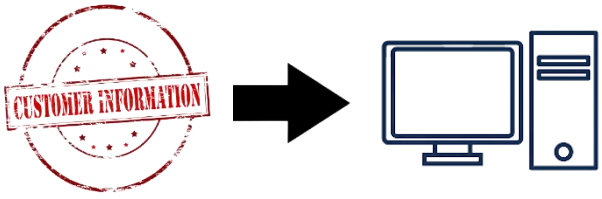
   -First, inside the system, the system will declare the variable and initialized the variable. Example price1=5.5, price2=3.5, price3=7.0, price4=8.0. Then user need insert the input for name, matric, address, and phone. Next user will need to insert the name and quantity of product according to the type which is Necklaces, Chams, Rings, and Earrings for more total quantity less than 5. After that, that is calculation will be occur and the formula using is the product price = price * quantity. After all the calculation has been done the total amount is the sum of all four type product price. Last, the system will display back the customer information likes name, matric, address, phone, product type, product quantity, product price and total amount need to pay in the form of receipt .

   -Second, user will need to insert the name and quantity of product according to the type which is Necklaces, Chams, Rings, and Earrings for more total quantity more than 5. After that, that is calculation will be occur and the formula using is the product price = (price * quantity)+((price * quantity). *0.4). After all the calculation has been done the total amount is the sum of all four type product price. Last, the system will display back the customer information likes name, matric, address, phone, product type, product quantity, product price and total amount need to pay in the form of receipt .

7. Algorithm

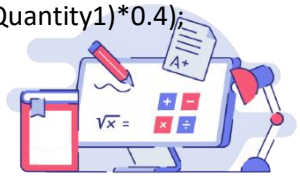
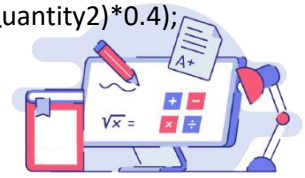
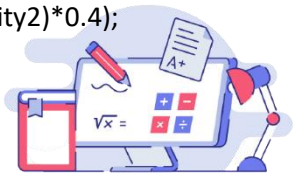
Step1:	Initialized variable double price1=50.5, price2=30.5, price3=70.0, price4=80.0
Step2:	Gather the information of customer(name,matric,phone,address) 
Step3:	User will need to insert the name and quantity of product according to the type which is Necklaces, Chams, Rings, and Earrings for less than 5 quantity.
Step4:	Calculation for Necklaces arrayOfPrice1= price1 * arrayOfQuantity1;
Step5:	Calculation for Earrings arrayOfPrice2= price2 * arrayOfQuantity2;
Step6:	Calculation for Chams arrayOfPrice3= price3 * arrayOfQuantity3;

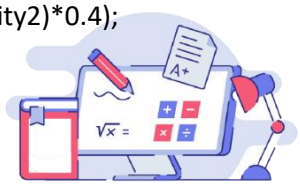
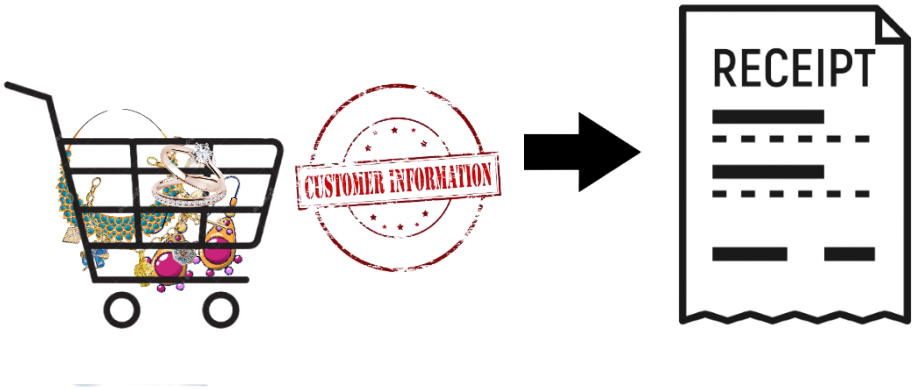
Step7:	Calculation for Rings arrayOfPrice4= price4 * arrayOfQuantity4; 
Step8:	Display a receipt for customer information (name,matric,phone,address) and the information product with the amount of total fee
	User will need to insert the name and quantity of product according to the type which is Necklaces, Chams, Rings, and Earrings for more than 5 quantity.
	Calculation for Necklaces arrayOfPrice1= (price1 * arrayOfQuantity1)-(price1 * arrayOfQuantity1)*0.2); 
	Calculation for Earrings arrayOfPrice2= (price2 * arrayOfQuantity2)-(price2 * arrayOfQuantity2)*0.2); 

	Calculation for Chams arrayOfPrice3= (price2 * arrayOfQuantity2)-(price2 * arrayOfQuantity2)*0.2; 
	Calculation for Rings arrayOfPrice4= (price2 * arrayOfQuantity2)-(price2 * arrayOfQuantity2)*0.2; 
	Display a receipt for customer information (name,matric,phone,address) and the information product with the amount of total fee 
Step2:	Gather the information of customer(name,matric,phone,address) 

Step3:	User will need to insert the name and quantity of product according to the type which is Necklaces, Chams, Rings, and Earrings for less than 5 date. × ? × ? × ? × ?
Step4:	Calculation for Necklaces arrayOfPrice1= price1 * arrayOfQuantity1;
Step5:	Calculation for Earrings arrayOfPrice2= price2 * arrayOfQuantity2;
Step6:	Calculation for Chams arrayOfPrice3= price3 * arrayOfQuantity3;

Step7:	Calculation for Rings arrayOfPrice4= price4 * arrayOfQuantity4;
Step8:	Display a receipt for customer information (name,matric,phone,address) and the information product with the amount of total fee
	User will need to insert the name and quantity of product according to the type which is Necklaces, Chams, Rings, and Earrings for more than 5 date.

	Calculation for Necklaces arrayOfPrice1= (price1 * arrayOfQuantity1)-(price1 * arrayOfQuantity1)*0.4); 
	Calculation for Earrings arrayOfPrice2= (price2 * arrayOfQuantity2)-(price2 * arrayOfQuantity2)*0.4); 
	Calculation for Chams arrayOfPrice3= (price2 * arrayOfQuantity2)-(price2 * arrayOfQuantity2)*0.4); 

	Calculation for Rings arrayOfPrice4= (price2 * arrayOfQuantity2)-(price2 * arrayOfQuantity2)*0.4); 
	Display a receipt for customer information (name,matric,phone,address) and the information product with the amount of total fee 

8. Pseudocode

Start
Declare variable name,address,phone,arrayOfJewellery1,arrayOfJewellery2, arrayOfJewellery3,arrayOfJewellery4
Declare variable arrayOfQuantity1,arrayOfQuantity2,arrayOfQuantity3,arrayOfQuantity4, arrayOfPrice1,arrayOfPrice2,arrayOfPrice3,arrayOfPrice4;
Initialized variable double price1=50.5, price2=30.5, price3=70.0, price4=80.0// for less than 5 quantity
Read name
Read matric
Read address
Read phone
Read arrayOfJewellery1

Read arrayOfQuantity1
arrayOfPrice1= price1 * arrayOfQuantity1;
Display arrayOfPrice1
Read arrayOfJewellery2
Read arrayOfQuantity2
arrayOfPrice2= price2 * arrayOfQuantity2;
Display arrayOfPrice2
Read arrayOfJewellery3
Read arrayOfQuantity3
arrayOfPrice3= price3* arrayOfQuantity3;
Display arrayOfPrice3
Read arrayOfJewellery4
Read arrayOfQuantity4
arrayOfPrice4= price4 * arrayOfQuantity4;
Display arrayOfPrice4
Display name
Display matric
Display phone
Display address
Display arrayOfJewellery1+arrayOfQuantity1+arrayOfPrice1
Display arrayOfJewellery2+arrayOfQuantity2+arrayOfPrice2
Display arrayOfJewellery3+arrayOfQuantity3+arrayOfPrice3
Display arrayOfJewellery4+arrayOfQuantity4+arrayOfPrice4
Display total amount=(arrayOfJewellery1+ arrayOfJewellery2+ arrayOfJewellery+ arrayOfJewellery)
Initialized variable double price1=50.5, price2=30.5, price3=70.0, price4=80.0// for more than 5 quantity
Read name
Read matric
Read address
Read phone
Read arrayOfJewellery1
Read arrayOfQuantity1
arrayOfPrice1= (price1 * arrayOfQuantity1)-((price1 * arrayOfQuantity1)*0.2);
Display arrayOfPrice1
Read arrayOfJewellery2
Read arrayOfQuantity2
arrayOfPrice2= (price2 * arrayOfQuantity2)-((price2 * arrayOfQuantity2)*0.2);
Display arrayOfPrice2
Read arrayOfJewellery3
Read arrayOfQuantity3
arrayOfPrice3= (price3 * arrayOfQuantity3)-((price3 * arrayOfQuantity3)*0.2);

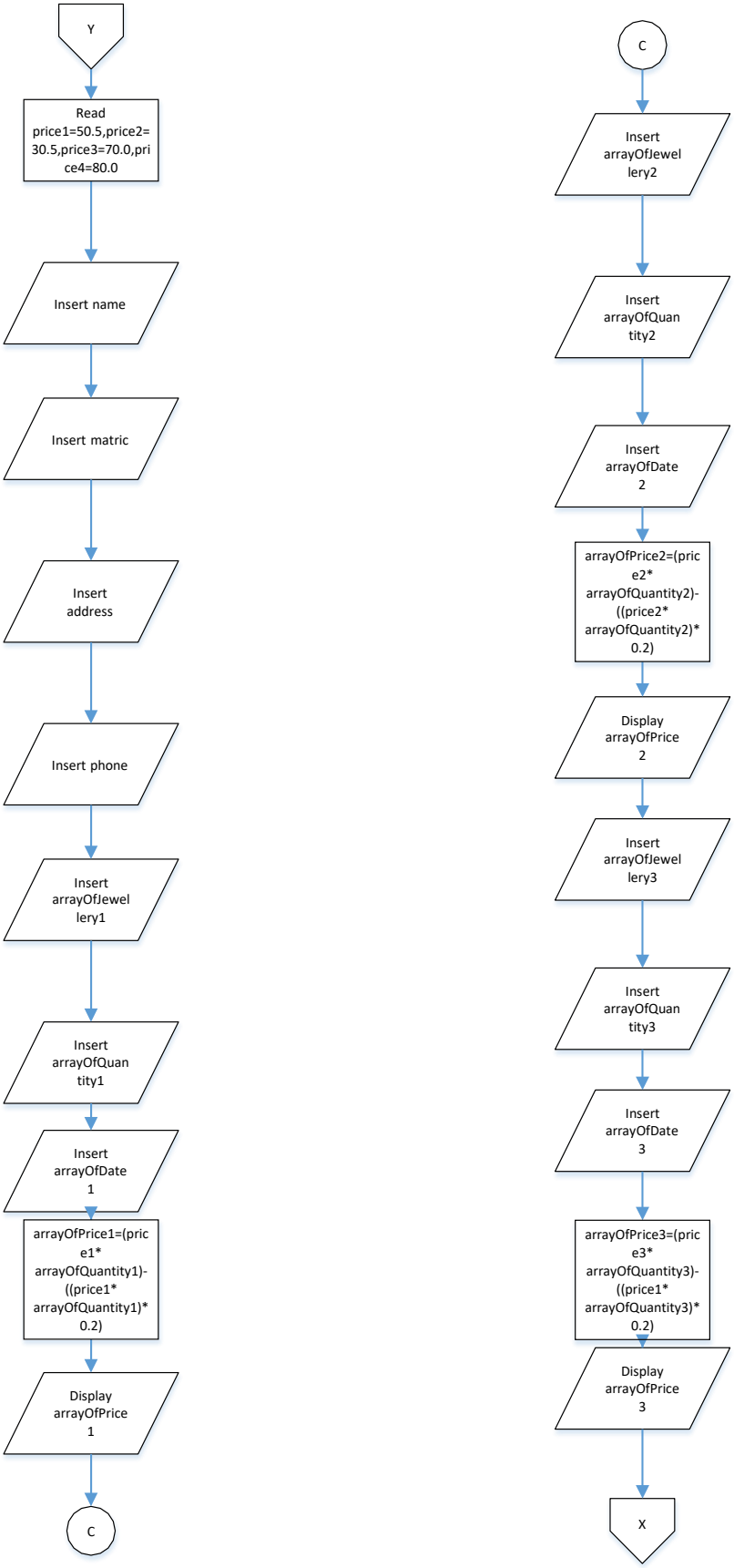
Display arrayOfPrice3
Read arrayOfJewellery4
Read arrayOfQuantity4
arrayOfPrice4= (price4 * arrayOfQuantity4)-((price4 * arrayOfQuantity4)*0.2);
Display arrayOfPrice4
Display name
Display matric
Display phone
Display address
Display arrayOfJewellery1+arrayOfQuantity1+arrayOfPrice1
Display arrayOfJewellery2+arrayOfQuantity2+arrayOfPrice2
Display arrayOfJewellery3+arrayOfQuantity3+arrayOfPrice3
Display arrayOfJewellery4+arrayOfQuantity4+arrayOfPrice4
Display total amount=(arrayOfJewellery1+ arrayOfJewellery2+ arrayOfJewellery+ arrayOfJewellery)
Initialized variable double price1=5.5, price2=3.5, price3=7.0, price4=8.0// for less than 5 date
Read name
Read matric
Read address
Read phone
Read arrayOfJewellery1
Read arrayOfQuantity1
arrayOfPrice1= price1 * arrayOfQuantity1;
Display arrayOfPrice1
Read arrayOfJewellery2
Read arrayOfQuantity2
arrayOfPrice2= price2 * arrayOfQuantity2;
Display arrayOfPrice2
Read arrayOfJewellery3
Read arrayOfQuantity3
arrayOfPrice3= price3* arrayOfQuantity3;
Display arrayOfPrice3
Read arrayOfJewellery4
Read arrayOfQuantity4
arrayOfPrice4= price4 * arrayOfQuantity4;
Display arrayOfPrice4
Display name
Display matric
Display phone
Display address
Display arrayOfJewellery1+arrayOfQuantity1+arrayOfPrice1
Display arrayOfJewellery2+arrayOfQuantity2+arrayOfPrice2

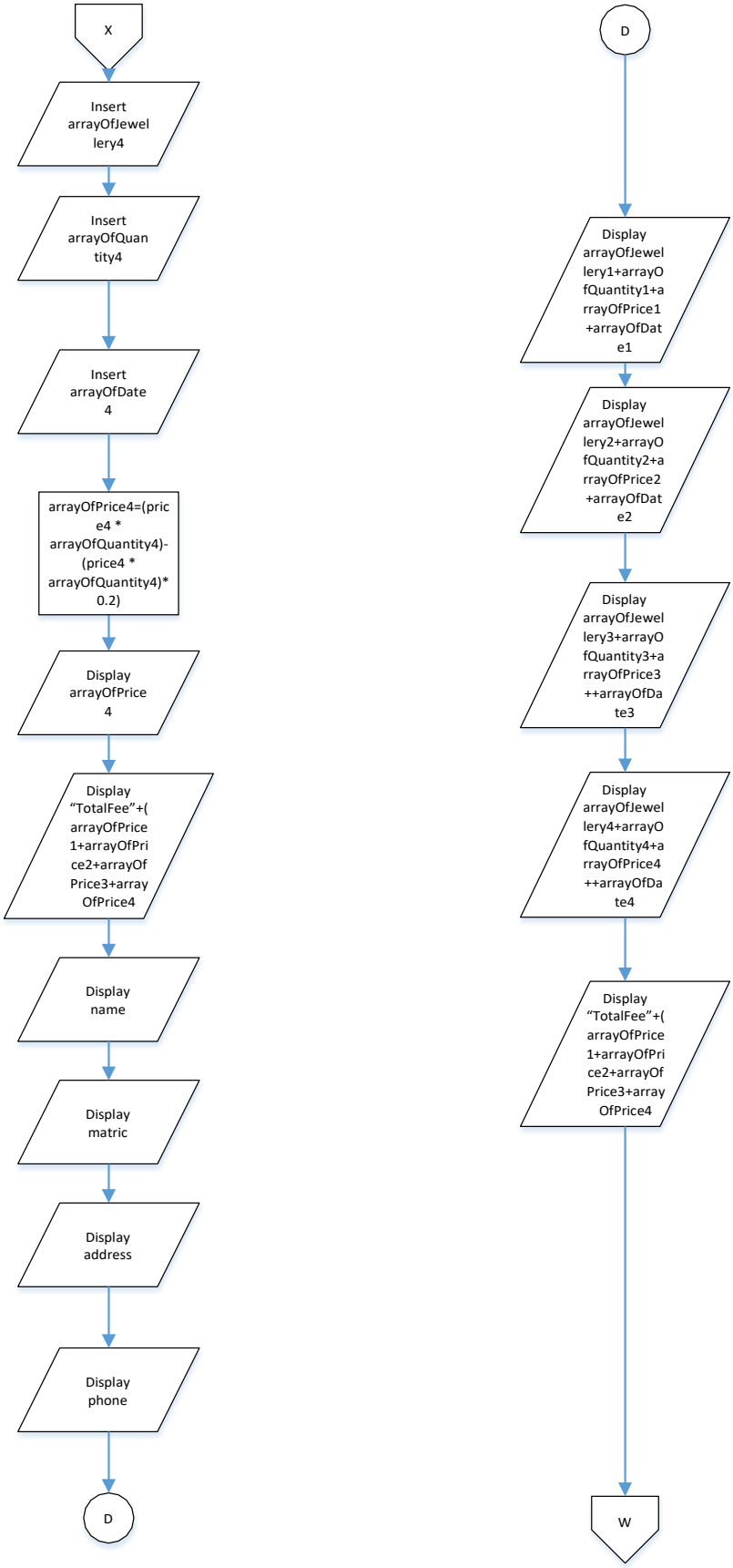
Display arrayOfJewellery3+arrayOfQuantity3+arrayOfPrice3
Display arrayOfJewellery4+arrayOfQuantity4+arrayOfPrice4
Display total amount=(arrayOfJewellery1+ arrayOfJewellery2+ arrayOfJewellery+ arrayOfJewellery)
Initialized variable double price1=5.5, price2=3.5, price3=7.0, price4=8.0// for more than 5 date
Read name
Read matric
Read address
Read phone
Read arrayOfJewellery1
Read arrayOfQuantity1
`arrayOfPrice1= (price1 * arrayOfQuantity1)-((price1 * arrayOfQuantity1)*0.4);`
Display arrayOfPrice1
Read arrayOfJewellery2
Read arrayOfQuantity2
`arrayOfPrice2= (price2 * arrayOfQuantity2)-((price2 * arrayOfQuantity2)*0.4);`
Display arrayOfPrice2
Read arrayOfJewellery3
Read arrayOfQuantity3
`arrayOfPrice3= (price3 * arrayOfQuantity3)-((price3 * arrayOfQuantity3)*0.4);`
Display arrayOfPrice3
Read arrayOfJewellery4
Read arrayOfQuantity4
`arrayOfPrice4= (price4 * arrayOfQuantity4)-((price4 * arrayOfQuantity4)*0.4);`
Display arrayOfPrice4
Display name
Display matric
Display phone
Display address
Display arrayOfJewellery1+arrayOfQuantity1+arrayOfPrice1
Display arrayOfJewellery2+arrayOfQuantity2+arrayOfPrice2
Display arrayOfJewellery3+arrayOfQuantity3+arrayOfPrice3
Display arrayOfJewellery4+arrayOfQuantity4+arrayOfPrice4
Display total amount=(arrayOfJewellery1+ arrayOfJewellery2+ arrayOfJewellery+ arrayOfJewellery)
End

9. Flow Chart

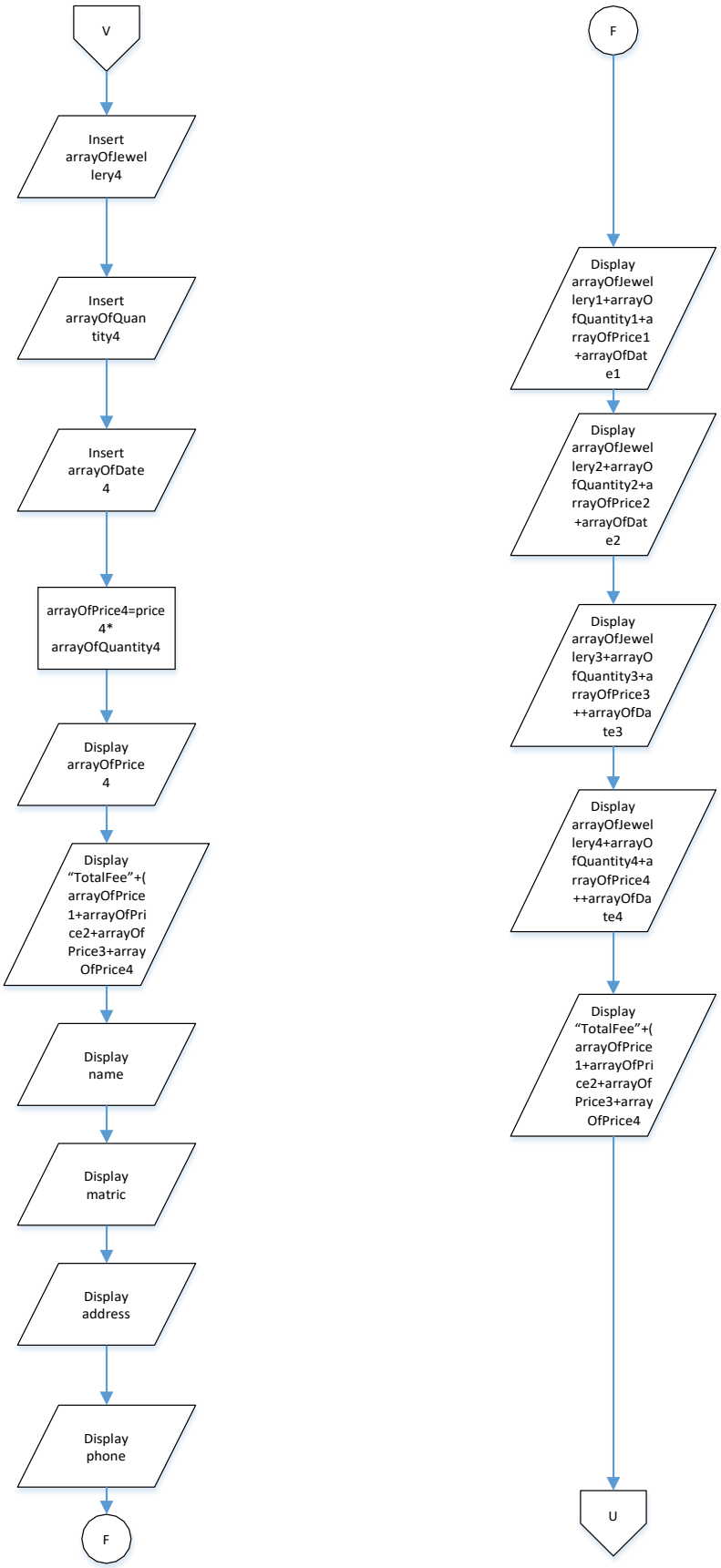
Start
Read price1=50.5,price2= 30.5,price3=70.0,pri ce4=80.0
Insert name
Insert matric
Insert address
Insert phone
Insert arrayOfJewel lery1
Insert arrayOfQuan tity1
Insert arrayOfDate 1
arrayOfPrice1=price 1* arrayOfQuantity1
Display arrayOfPrice 1
A
A
Insert arrayOfJewel lery2
Insert arrayOfQuan tity2
Insert arrayOfDate 2
arrayOfPrice2=price 2* arrayOfQuantity2
Display arrayOfPrice 2
Insert arrayOfJewel lery3
Insert arrayOfQuan tity3
Insert arrayOfDate 3
arrayOfPrice3=price 3* arrayOfQuantity3
Display arrayOfPrice 3
Z

Z
Insert arrayOfJewellery4
Insert arrayOfQuantity4
Insert arrayOfDate4
arrayOfPrice4=price4* arrayOfQuantity4
Display arrayOfPrice4
Display “TotalFee”+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4
Display name
Display matric
Display address
Display phone
B
B
Display arrayOfJewellery1+arrayOfQuantity1+arrayOfPrice1+arrayOfDate1
Display arrayOfJewellery2+arrayOfQuantity2+arrayOfPrice2+arrayOfDate2
Display arrayOfJewellery3+arrayOfQuantity3+arrayOfPrice3++arrayOfDate3
Display arrayOfJewellery4+arrayOfQuantity4+arrayOfPrice4++arrayOfDate4
Display “TotalFee”+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4
Y

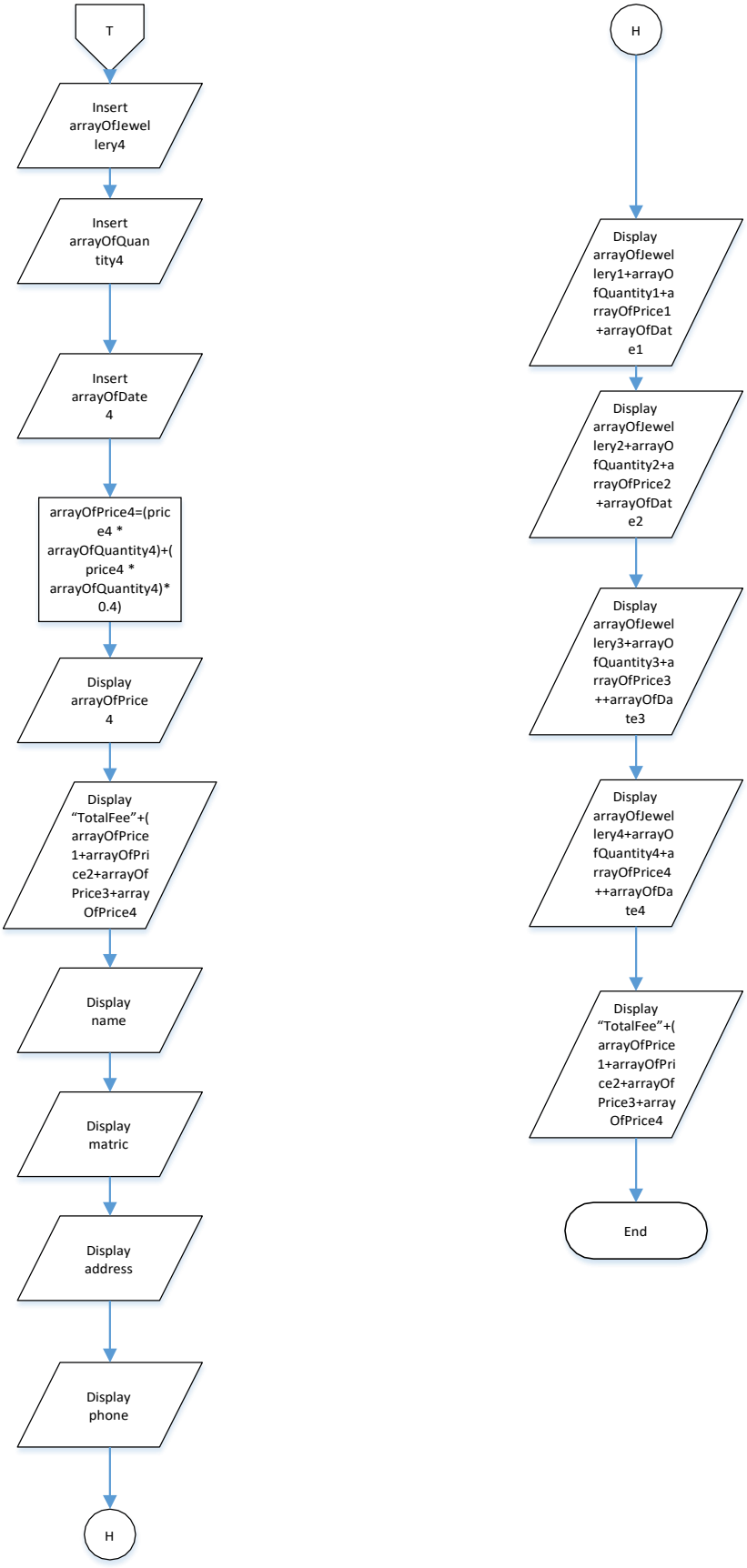

Y
Read price1=50.5,price2=30.5,price3=70.0,price4=80.0
Insert name
Insert matric
Insert address
Insert phone
Insert arrayOfJewellery1
Insert arrayOfQuantity1
Insert arrayOfDate1
arrayOfPrice1=(price1* arrayOfQuantity1)-((price1* arrayOfQuantity1)* 0.2)
Display arrayOfPrice1
C
C
Insert arrayOfJewellery2
Insert arrayOfQuantity2
Insert arrayOfDate2
arrayOfPrice2=(price2* arrayOfQuantity2)-((price2* arrayOfQuantity2)* 0.2)
Display arrayOfPrice2
Insert arrayOfJewellery3
Insert arrayOfQuantity3
Insert arrayOfDate3
arrayOfPrice3=(price3* arrayOfQuantity3)-((price1* arrayOfQuantity3)* 0.2)
Display arrayOfPrice3
X


X
Insert arrayOfJewellery4
Insert arrayOfQuantity4
Insert arrayOfDate4
arrayOfPrice4=(price4 * arrayOfQuantity4)-(price4 * arrayOfQuantity4)* 0.2)
Display arrayOfPrice4
Display “TotalFee”+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4
Display name
Display matric
Display address
Display phone
D
D
Display arrayOfJewellery1+arrayOfQuantity1+arrayOfPrice1+arrayOfDate1
Display arrayOfJewellery2+arrayOfQuantity2+arrayOfPrice2+arrayOfDate2
Display arrayOfJewellery3+arrayOfQuantity3+arrayOfPrice3++arrayOfDate3
Display arrayOfJewellery4+arrayOfQuantity4+arrayOfPrice4++arrayOfDate4
Display “TotalFee”+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4
W

W
Read price1=5.5,price2=3.5,price3=7.0,price4=8.0
Insert name
Insert matric
Insert address
Insert phone
Insert arrayOfJewelery1
Insert arrayOfQuantity1
Insert arrayOfDate1
arrayOfPrice1=price1* arrayOfQuantity1
Display arrayOfPrice1
E
E
Insert arrayOfJewelery2
Insert arrayOfQuantity2
Insert arrayOfDate2
arrayOfPrice2=price2* arrayOfQuantity2
Display arrayOfPrice2
Insert arrayOfJewelery3
Insert arrayOfQuantity3
Insert arrayOfDate3
arrayOfPrice3=price3* arrayOfQuantity3
Display arrayOfPrice3
V


V
Insert arrayOfJewellery4
Insert arrayOfQuantity4
Insert arrayOfDate4
arrayOfPrice4=price4* arrayOfQuantity4
Display arrayOfPrice4
Display "TotalFee"+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4
Display name
Display matric
Display address
Display phone
F
F
Display arrayOfJewellery1+arrayOfQuantity1+arrayOfPrice1+arrayOfDate1
Display arrayOfJewellery2+arrayOfQuantity2+arrayOfPrice2+arrayOfDate2
Display arrayOfJewellery3+arrayOfQuantity3+arrayOfPrice3++arrayOfDate3
Display arrayOfJewellery4+arrayOfQuantity4+arrayOfPrice4++arrayOfDate4
Display "TotalFee"+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4
U

U
Read price1=5.5,price2=3.5,price3=7.0,price4=8.0
Insert name
Insert matric
Insert address
Insert phone
Insert arrayOfJewelery1
Insert arrayOfQuantity1
Insert arrayOfDate1
arrayOfPrice1=(price1* arrayOfQuantity1)+((price1* arrayOfQuantity1)* 0.2)
Display arrayOfPrice1
G
G
Insert arrayOfJewelery2
Insert arrayOfQuantity2
Insert arrayOfDate2
arrayOfPrice2=(price2* arrayOfQuantity2)+((price2* arrayOfQuantity2)* 0.4)
Display arrayOfPrice2
Insert arrayOfJewelery3
Insert arrayOfQuantity3
Insert arrayOfDate3
arrayOfPrice3=(price3* arrayOfQuantity3)+((price3* arrayOfQuantity3)* 0.4)
Display arrayOfPrice3
T


T
Insert arrayOfJewellery4
Insert arrayOfQuantity4
Insert arrayOfDate4
arrayOfPrice4=(price4 * arrayOfQuantity4)+(price4 * arrayOfQuantity4)* 0.4)
Display arrayOfPrice4
Display "TotalFee"+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4
Display name
Display matric
Display address
Display phone
H
H
Display arrayOfJewellery1+arrayOfQuantity1+arrayOfPrice1+arrayOfDate1
Display arrayOfJewellery2+arrayOfQuantity2+arrayOfPrice2+arrayOfDate2
Display arrayOfJewellery3+arrayOfQuantity3+arrayOfPrice3++arrayOfDate3
Display arrayOfJewellery4+arrayOfQuantity4+arrayOfPrice4++arrayOfDate4
Display "TotalFee"+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4
End

```
Coding - Numerical Computation & Expression
package test;

import java.util.Scanner;

public class trying {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		String name,address,phone,arrayOfJewellery1,arrayOfJewellery2,arrayOfJewellery3,arrayOfJewellery4;
		Double arrayOfQuantity1,arrayOfQuantity2,arrayOfQuantity3,arrayOfQuantity4,arrayOfPrice1,arrayOfPrice2,arrayOfPrice3,arrayOfPrice4,arrayOfDate1,arrayOfDate2,arrayOfDate3,arrayOfDate4;
		double price1=50.5, price2=30.5, price3=70.0, price4=80.0;
		int matric=0,nb=0;
		Scanner input= new Scanner(System.in);
		System.out.print("\n============================WELCOME TO UUM JEWELLERY STORE==================================");
		System.out.print("\nlease insert customer name :");
		name=input.next();
		System.out.print("Please insert customer vip number :");
		matric=input.nextInt();
		System.out.print("Please insert your customer address :");
		address=input.next();
		System.out.print("Please insert your customer contact number(Example:601234567890) :");
		phone=input.next();
		System.out.print("\n============================RENTING ONLY FOR TOTAL QUANTITY LESS 5 ================================\n");
		 System.out.print("Please insert the name Necklaces that you wish to borrow :");
		 arrayOfJewellery1 = input.next();
System.out.print("Please insert the quantity of Necklaces that you wish toborrow :");
		 arrayOfQuantity1 = input.nextDouble();
		 System.out.print("Please insert the dates of jewellery that you has to return :");
		 arrayOfDate1 = input.nextDouble();
		arrayOfPrice1= price1 * arrayOfQuantity1;
		System.out.print("Total Fee : RM"+ arrayOfPrice1);
		System.out.print("\nPlease insert the name Earrings that you wish to borrow :");
```

```
43.                     arrayOfJewellery2 = input.next();
44.                     System.out.print("Please insert the quantity of Earrings that you wish to
    borrow :");
45.                     arrayOfQuantity2 = input.nextDouble();
46.                     System.out.print("Please insert the dates of jewellery that you has to return
    :");
47.                     arrayOfDate2 = input.nextDouble();
48.                    arrayOfPrice2= price2 * arrayOfQuantity2;
49.                    System.out.print("Total Fee : RM"+ arrayOfPrice2);
50.                    System.out.print("\nPlease insert the name Charms that you wish to borrow
    :");
51.                     arrayOfJewellery3 = input.next();
52.                     System.out.print("Please insert the quantity of Charms that you wish to
    borrow :");
53.                     arrayOfQuantity3 = input.nextDouble();
54.                     System.out.print("Please insert the dates of jewellery that you has to return
    :");
55.                     arrayOfDate3 = input.nextDouble();
56.                    arrayOfPrice3= price3 * arrayOfQuantity3;
57.                    System.out.print("Total Fee : RM"+ arrayOfPrice3);
58.                    System.out.print("\nPlease insert the name Rings that you wish to borrow :");
59.                     arrayOfJewellery4 = input.next();
60.                     System.out.print("Please insert the quantity of Rings that you wish to borrow
    :");
61.                     arrayOfQuantity4 = input.nextDouble();
62.                     System.out.print("Please insert the dates of jewellery that you has to return
    :");
63.                     arrayOfDate4 = input.nextDouble();
64.                    arrayOfPrice4= price4 * arrayOfQuantity4;
65.                    System.out.print("Total Fee : RM"+ arrayOfPrice4);
66.                    System.out.print("Amount need to pay
    :"+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4));
67.67.
68.68.
            System.out.print("\n==========================================================
    ========================================");
69.69.
            System.out.print("\n==========================================================
    ========================================");
70.                 System.out.print("\n============================WELCOME TO UUM
    JEWELLERY STORE==================================");
71.
            System.out.print("\n==========================================================
    ========================================");
```

```
System.out.print("\n==================================================================================================");
System.out.print("\n");
System.out.print("\nCustomer Name : "+name);
System.out.print("\nCustomer VIP Number : "+matric);
System.out.print("\nCustomer Contact Number : "+phone);
System.out.print("\nCustomer Address : "+address+"\n");
System.out.print("\n==============================RENTING ONLY FOR TOTAL QUANTITY LESS 5 ==================================\n");
System.out.println("==================================================================================================");
System.out.println("No======Name Of Jewellery====Type Of Jewellery==========Quantity of Jewellery==============Fee========Date");
System.out.println("1======="+arrayOfJewellery1+"=============Necklaces==================="+arrayOfQuantity1+"==============================RM"+arrayOfPrice1+"======="+arrayOfDate1);
System.out.println("2======="+arrayOfJewellery2+"=============Earrings==================="+arrayOfQuantity2+"==============================RM"+arrayOfPrice2+"======="+arrayOfDate2);
System.out.println("3======="+arrayOfJewellery3+"=============Charms==================="+arrayOfQuantity3+"==============================RM"+arrayOfPrice3+"======="+arrayOfDate3);
System.out.println("4======="+arrayOfJewellery4+"=============Rings==================="+arrayOfQuantity4+"==============================RM"+arrayOfPrice4+"======="+arrayOfDate4);
System.out.println("Total Amount need to pay :RM"+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4));
System.out.print("\n==============================RENTING ONLY FOR TOTAL QUANTITY MORE 5 ==================================\n");
System.out.print("Please insert the name Necklaces that you wish to borrow :");
arrayOfJewellery1 = input.next();
System.out.print("Please insert the quantity of Necklaces that you wish toborrow :");
arrayOfQuantity1 = input.nextDouble();
```

```
94.                 System.out.print("Please insert the dates of jewellery that you has to return
    :");
95.                 arrayOfDate1 = input.nextDouble();
96.                 arrayOfPrice1= (price1 * arrayOfQuantity1)-((price1 *
    arrayOfQuantity1)*0.2);
97.                 System.out.print("Total Fee : RM"+ arrayOfPrice1);
98.                 System.out.print("\nPlease insert the name Earrings that you wish to borrow
    :");
99.                 arrayOfJewellery2 = input.next();
100.                    System.out.print("Please insert the quantity of Earrings that you wish
    to borrow :");
101.                    arrayOfQuantity2 = input.nextDouble();
102.                    System.out.print("Please insert the dates of jewellery that you has to
    return :");
103.                    arrayOfDate2 = input.nextDouble();
104.                    arrayOfPrice2= (price2 * arrayOfQuantity2)-((price2 *
    arrayOfQuantity2)*0.2);
105.                    System.out.print("Total Fee : RM"+ arrayOfPrice2);
106.                    System.out.print("\nPlease insert the name Charms that you wish to
    borrow :");
107.                    arrayOfJewellery3 = input.next();
108.                    System.out.print("Please insert the quantity of Charms that you wish
    to borrow :");
109.                    arrayOfQuantity3 = input.nextDouble();
110.                    System.out.print("Please insert the dates of jewellery that you has to
    return :");
111.                    arrayOfDate3 = input.nextDouble();
112.                    arrayOfPrice3= (price3 * arrayOfQuantity3)-((price3 *
    arrayOfQuantity3)*0.2);
113.                    System.out.print("Total Fee : RM"+ arrayOfPrice3);
114.                    System.out.print("\nPlease insert the name Rings that you wish to
    borrow :");
115.                    arrayOfJewellery4 = input.next();
116.                    System.out.print("Please insert the quantity of Rings that you wish
    to borrow :");
117.                    arrayOfQuantity4 = input.nextDouble();
118.                    System.out.print("Please insert the dates of jewellery that you has to
    return :");
119.                    arrayOfDate4 = input.nextDouble();
120.                    arrayOfPrice4= (price4 * arrayOfQuantity4)-((price4 *
    arrayOfQuantity4)*0.2);
121.                    System.out.print("Total Fee : RM"+ arrayOfPrice4);
122.                    System.out.print("Amount need to pay
    :"+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4));
123.
```

```
124.
        System.out.print("\n==================================================
    ========================================");
125.
        System.out.print("\n==================================================
    ========================================");
126.                    System.out.print("\n============================WELCOME
    TO UUM JEWELLERY STORE================================");
127.
        System.out.print("\n==================================================
    ========================================");
128.
        System.out.print("\n==================================================
    ========================================");
129.                    System.out.print("\n");
130.                    System.out.print("\nCustomer Name : "+name);
131.                    System.out.print("\nCustomer VIP Number : "+matric);
132.                    System.out.print("\nCustomer Contact Number : "+phone);
133.                    System.out.print("\nCustomer Address : "+address+"\n");
134.                    System.out.print("\n============================RENTING
    ONLY FOR TOTAL QUANTITY MORE 5 ================================\n");
135.
        System.out.println("==================================================
    ========================================");
136.                    System.out.println("No======Name Of Jewellery====Type Of
    Jewellery==========Quantity of Jewellery=============Fee========Date");
137.
        System.out.println("1======="+arrayOfJewellery1+"=============Necklaces=====
    ============"+arrayOfQuantity1+"============================RM"+arrayOfPrice1
    +"======="+arrayOfDate1);
138.
        System.out.println("2======="+arrayOfJewellery2+"=============Earrings======
    ============"+arrayOfQuantity2+"============================RM"+arrayOfPrice2
    +"======="+arrayOfDate2);
139.
        System.out.println("3======="+arrayOfJewellery3+"=============Charms=======
    ============"+arrayOfQuantity3+"============================RM"+arrayOfPrice
    3+"======="+arrayOfDate3);
140.
        System.out.println("4======="+arrayOfJewellery4+"=============Rings========
    ============"+arrayOfQuantity4+"============================RM"+arrayOfPrice
    4+"======="+arrayOfDate4);
141.
142.                    System.out.println("Total Amount need to pay
    :RM"+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4));
```

```
143.
144.                         double price11=5.5, price21=3.5, price31=7.0, price41=8.0;
145.                         System.out.print("\n============================RETURN
    ONLY FOR DATE LESS 5 ================================\n");
146.                          System.out.print("Please insert the name Necklaces that you wish to
    borrow :");
147.                          arrayOfJewellery1 = input.next();
148.                          System.out.print("Please insert the quantity of Necklaces that you
    wish to borrow :");
149.                          arrayOfQuantity1 = input.nextDouble();
150.                          System.out.print("Please insert the dates of jewellery that you has to
    return :");
151.                          arrayOfDate1 = input.nextDouble();
152.                         arrayOfPrice1= price11 * arrayOfQuantity1;
153.                         System.out.print("Total Fee : RM"+ arrayOfPrice1);
154.                         System.out.print("\nPlease insert the name Earrings that you wish to
    borrow :");
155.                          arrayOfJewellery2 = input.next();
156.                          System.out.print("Please insert the quantity of Earrings that you wish
    to borrow :");
157.                          arrayOfQuantity2 = input.nextDouble();
158.                          System.out.print("Please insert the dates of jewellery that you has to
    return :");
159.                          arrayOfDate2 = input.nextDouble();
160.                         arrayOfPrice2= price21 * arrayOfQuantity2;
161.                         System.out.print("Total Fee : RM"+ arrayOfPrice2);
162.                         System.out.print("\nPlease insert the name Charms that you wish to
    borrow :");
163.                          arrayOfJewellery3 = input.next();
164.                          System.out.print("Please insert the quantity of Charms that you wish
    to borrow :");
165.                          arrayOfQuantity3 = input.nextDouble();
166.                          System.out.print("Please insert the dates of jewellery that you has to
    return :");
167.                          arrayOfDate3 = input.nextDouble();
168.                         arrayOfPrice3= price31 * arrayOfQuantity3;
169.                         System.out.print("Total Fee : RM"+ arrayOfPrice3);
170.                         System.out.print("\nPlease insert the name Rings that you wish to
    borrow :");
171.                          arrayOfJewellery4 = input.next();
172.                          System.out.print("Please insert the quantity of Rings that you wish
    to borrow :");
173.                          arrayOfQuantity4 = input.nextDouble();
174.                          System.out.print("Please insert the dates of jewellery that you has to
    return :");
```

```
175.                         arrayOfDate4 = input.nextDouble();
176.                         arrayOfPrice4= price41 * arrayOfQuantity4;
177.                         System.out.print("Total Fee : RM"+ arrayOfPrice4);
178.                         System.out.print("Amount need to pay :"+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4));
179.
180.
            System.out.print("\n==========================================================================================");
181.
            System.out.print("\n==========================================================================================");
182.                         System.out.print("\n============================WELCOME TO UUM JEWELLERY STORE==================================");
183.
            System.out.print("\n==========================================================================================");
184.
            System.out.print("\n==========================================================================================");
185.                         System.out.print("\n");
186.                         System.out.print("\nCustomer Name : "+name);
187.                         System.out.print("\nCustomer VIP Number : "+matric);
188.                         System.out.print("\nCustomer Contact Number : "+phone);
189.                         System.out.print("\nCustomer Address : "+address+"\n");
190.                         System.out.print("\n============================RETURN ONLY FOR DATE LESS 5 ================================\n");
191.
            System.out.println("==========================================================================================");
192.                         System.out.println("No======Name Of Jewellery====Type Of Jewellery==========Quantity of Jewellery==============Fee========Date");
193.
            System.out.println("1======="+arrayOfJewellery1+"=============Necklaces============="+arrayOfQuantity1+"============================RM"+arrayOfPrice1+"======="+arrayOfDate1);
194.
            System.out.println("2======="+arrayOfJewellery2+"=============Earrings============="+arrayOfQuantity2+"============================RM"+arrayOfPrice2+"======="+arrayOfDate2);
195.
            System.out.println("3======="+arrayOfJewellery3+"=============Charms============="+arrayOfQuantity3+"============================RM"+arrayOfPrice3+"======="+arrayOfDate3);
```

```
196.
            System.out.println("4=======+arrayOfJewellery4+"=============Rings========
    ==============+arrayOfQuantity4+"============================RM"+arrayOfPrice
    4+"======="+arrayOfDate4);
197.
198.                        System.out.println("Total Amount need to pay
    :RM"+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4));
199.
200.
201.                        System.out.print("\n============================RENTING
    ONLY FOR DATE MORE 5 ================================\n");
202.                         System.out.print("Please insert the name Necklaces that you wish to
    borrow :");
203.                         arrayOfJewellery1 = input.next();
204.                         System.out.print("Please insert the quantity of Necklaces that you
    wish to borrow :");
205.                         arrayOfQuantity1 = input.nextDouble();
206.                         System.out.print("Please insert the dates of jewellery that you has to
    return :");
207.                         arrayOfDate1 = input.nextDouble();
208.                        arrayOfPrice1=  (price11  *  arrayOfQuantity1)+((price11  *
    arrayOfQuantity1)*0.4);
209.                        System.out.print("Total Fee : RM"+ arrayOfPrice1);
210.                        System.out.print("\nPlease insert the name Earrings that you wish to
    borrow :");
211.                         arrayOfJewellery2 = input.next();
212.                         System.out.print("Please insert the quantity of Earrings that you wish
    to borrow :");
213.                         arrayOfQuantity2 = input.nextDouble();
214.                         System.out.print("Please insert the dates of jewellery that you has to
    return :");
215.                         arrayOfDate2 = input.nextDouble();
216.                        arrayOfPrice2=  (price21  *  arrayOfQuantity2)+((price21  *
    arrayOfQuantity2)*0.4);
217.                        System.out.print("Total Fee : RM"+ arrayOfPrice2);
218.                        System.out.print("\nPlease insert the name Charms that you wish to
    borrow :");
219.                         arrayOfJewellery3 = input.next();
220.                         System.out.print("Please insert the quantity of Charms that you wish
    to borrow :");
221.                         arrayOfQuantity3 = input.nextDouble();
222.                         System.out.print("Please insert the dates of jewellery that you has to
    return :");
223.                         arrayOfDate3 = input.nextDouble();
```

```
224.                    arrayOfPrice3= (price31 * arrayOfQuantity3)+((price31 *
    arrayOfQuantity3)*0.4);
225.                    System.out.print("Total Fee : RM"+ arrayOfPrice3);
226.                    System.out.print("\nPlease insert the name Rings that you wish to
    borrow :");
227.                     arrayOfJewellery4 = input.next();
228.                     System.out.print("Please insert the quantity of Rings that you wish
    to borrow :");
229.                     arrayOfQuantity4 = input.nextDouble();
230.                     System.out.print("Please insert the dates of jewellery that you has to
    return :");
231.                     arrayOfDate4 = input.nextDouble();
232.                    arrayOfPrice4= (price41 * arrayOfQuantity4)+((price41 *
    arrayOfQuantity4)*0.4);
233.                    System.out.print("Total Fee : RM"+ arrayOfPrice4);
234.                    System.out.print("Amount need to pay
    :"+(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4));
235.
236.
            System.out.print("\n==================================================
    ========================================");
237.
            System.out.print("\n==================================================
    ========================================");
238.                    System.out.print("\n============================WELCOME
    TO UUM JEWELLERY STORE==================================");
239.
            System.out.print("\n==================================================
    ========================================");
240.
            System.out.print("\n==================================================
    ========================================");
241.                    System.out.print("\n");
242.                    System.out.print("\nCustomer Name : "+name);
243.                    System.out.print("\nCustomer VIP Number : "+matric);
244.                    System.out.print("\nCustomer Contact Number : "+phone);
245.                    System.out.print("\nCustomer Address : "+address+"\n");
246.                    System.out.print("\n============================RENTING
    ONLY FOR DATE MORE 5 ================================\n");
247.
            System.out.println("==================================================
    ========================================");
248.                    System.out.println("No======Name Of Jewellery====Type Of
    Jewellery==========Quantity of Jewellery==============Fee========Date");
```

```
249.
            System.out.println("1======="+arrayOfJewellery1+"=============Necklaces=====
        ============="+arrayOfQuantity1+"============================RM"+arrayOfPrice1
        +"======="+arrayOfDate1);
250.
            System.out.println("2======="+arrayOfJewellery2+"=============Earrings======
        ============="+arrayOfQuantity2+"============================RM"+arrayOfPrice2
        +"======="+arrayOfDate2);
251.
            System.out.println("3======="+arrayOfJewellery3+"=============Charms=======
        ============="+arrayOfQuantity3+"============================RM"+arrayOfPrice
        3+"======="+arrayOfDate3);
252.
            System.out.println("4======="+arrayOfJewellery4+"=============Rings========
        ============="+arrayOfQuantity4+"============================RM"+arrayOfPrice
        4+"======="+arrayOfDate4);
253.                        Double
        total;total=(arrayOfPrice1+arrayOfPrice2+arrayOfPrice3+arrayOfPrice4);
254.                        System.out.printf("Total Amount need to pay :RM %.2f",total);
255.                }
256.
257.
258.                }
```

```
============================WELCOME TO UUM JEWELLERY STORE=================================
lease insert customer name :LL
Please insert customer vip number :284505
Please insert your customer address :UUM,Sintok
Please insert your customer contact number(Example:601234567890) :60123456789
Please insert the name Necklaces that you wish to borrow :SKIK1013
Please insert the quantity of Necklaces that you wish to borrow :2
Total Fee : RM101.0
Please insert the name Earrings that you wish to borrow :SKIP1013
Please insert the quantity of Earrings that you wish to borrow :2
Total Fee : RM61.0
Please insert the name Charms that you wish to borrow :MPU1043
Please insert the quantity of Charms that you wish to borrow :2
Total Fee : RM140.0
Please insert the name Rings that you wish to borrow :MPU1013
Please insert the quantity of Rings that you wish to borrow :2
Total Fee : RM160.0Amount need to pay :462.0
============================================================================================
============================================================================================
============================WELCOME TO UUM JEWELLERY STORE=================================
============================================================================================
============================================================================================

Customer Name : LL
Customer VIP Number : 284505
Customer Contact Number : 60123456789
Customer Address : UUM,Sintok
============================================================================================
No======Name Of Jewellery====Type Of Jewellery==========Quantity of Jewellery==============Fee
1=======SKIK1013=============Necklaces==================2.0============================RM101.0
2=======SKIP1013=============Earrings==================2.0============================RM61.0
3=======MPU1043=============Charms====================2.0============================RM140.0
4=======MPU1013=============Rings=====================2.0============================RM160.0
Total Amount need to pay :RM462.0
```

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- *Kunz, PhD, DSc, George Frederick (1917). Magic of Jewels and Charms. John Lippincott Co.* URL: Magic Of jewels: Chapter VII Amulets George Frederick Kunz, a gemmologist for Tiffany's, built the collections of banker J.P. Morgan and of the American Natural History Museum in New York City. This chapter deals entirely with using jewels and gemstones in jewellery for talismanic purposes in Western cultures.
- ^ *Manutchehr-Danai, Mohsen, ed. (2009). "magical jewelry". Dictionary of Gems and Gemology. Berlin: Springer. doi:10.1007/978-3-540-72816-0. ISBN 978-3-540-72795-8. magical jewelry [...] articles of jewelry worn for their magical belief, medicinal powers, or superstitions reasons.*

ASSIGNMENT 1

Name : Thivya Sri a/p Sivakumar

Matric no : 284594

Topic : Beauty

Subtopic : Perfume

Customized Organic Perfume Monthly Subscription

1. Identify the problem

Perfume is a mixture of fragrant essential oils or fragrances, fixatives and solvents, usually in liquid form. Ancient texts and archaeological excavations show the use of perfumes in some of the earliest human civilizations. Modern perfumery began in the late 19th century with the commercial synthesis of fragrance compounds. Two types of ingredients are used in perfume and they are natural (derived from plant materials) and synthetic (created through chemical synthesis).

Natural ingredients have been used since the beginning of perfumery. Various methods are used to extract and concentrate the fragrant parts into raw materials. Depending on the method of extraction, the resulting raw material will be an essential oil, absolute, or CO2 extract. In the late 19th century perfumers began using synthetic ingredients, which allowed them to expand their palettes beyond natural oils and absolutes. With these materials perfumers can reinvent naturally occurring smells and create entirely new scents. Synthetic ingredients make up to 80% of many modern perfumes. Fragrances are made of raw materials that have different rates of evaporation. Raw materials are classified as top, middle or base notes according to their volatility. Most fragrances are built with a combination of top, middle and base notes to balance the fragrance as it evolves over time.

- Top notes (*high volatility + low tenacity—they evaporate the fastest)*

Top notes are the scents you detect first after spraying a perfume. Top notes usually evaporate quickly, remain for only the first five to fifteen minutes. Their main purpose is to give off an initial scent and then transition smoothly into the next part of the fragrance. As a result, top notes generally consist of lighter and smaller molecules.

- Middle notes *(intermediate volatility and tenacity)*

The middle notes or modifiers add complexity to a fragrance. Because they make up around 50 percent of the total scent, middle notes usually last longer than top notes. Middle notes appear as the top notes start to fade.

- Base notes *(low volatility + high tenacity—they last the longest)*

Base notes are what help the middle notes last longer. They accentuate and extend the longevity of the middle notes. Along with middle notes, base notes form the foundation of the fragrance. The base notes will determine the main characteristics of a fragrance.

Perfume products vary in price because they vary in strength and they are classified by strength as well. The fragrance concentration of a particular perfume refers to the fragrance's strength. The higher the concentration the purer the fragrance. It contains a greater amount of perfume oils therefore the cost of the fragrance is greater. Besides, the greater the concentration of perfume oils the longer the perfume lasts on the wearers which is usually referred to as tenacity.

Organic perfumes are better than synthetic perfumes. Organic perfumes are made from 100% naturally-sourced ingredients, usually plant-based, and extracted without chemical intervention. Organic perfumes do not contain ingredients grown with chemicals, pesticides or toxins, which can cause skin sensitivity and environmental damage. Organic perfumes are simply a better choice for our health and for the environment.

Customization is the action of making or changing something according to the buyer's or user's needs. It is also defined as to make or change something to personal or unique specifications. Personalized or customized perfumes is where customers can choose the ingredients they prefer and order the perfume. They can experience their favorite fragrance by choosing the ingredients from top note, middle note and base note.

From the UUM Hostel Management feedback, there are many unused perfumes that are thrown into the trash bins. Some students throw away the unused perfumes because certain fragrances causes health problems like migraines, headaches and respiratory difficulties. Different students have different level of fragrance sensitivity, so they need to use perfumes in which the ingredients suits them. Some students do not like synthetic perfumes and looking for organic perfumes that do not cause health problems. Some students throw away the unused perfumes because they do not like the readymade fragrance and prefer customized fragrance. Because of the large amount of perfume in a bottle, students unable to finish the perfume before the expiry date and some students throw away the old unused perfume after they change to the new one. The used perfume

bottles which are empty now are also thrown away and increases the amount of waste in the hostel area.

Besides, due to the longer distance from UUM to town, it is difficult for students to get the perfume each time when it has finishes or when the students want to change the perfume. So, students need to purchase the perfumes each and every time by going to the cosmetic shops or shopping malls. This increases the travelling cost of students and also the time taken to purchase it.

Because of this, the management plans to develop a system where students can get their customized organic perfumes every month with only one subscription. The users need to select the top, middle and base notes of the perfume, strength of the perfume and also the amount of perfume whether 10ml, 15ml or 20ml. That selected perfume will be delivered to the user every month. This reduces the wastage of unused perfumes where that amount of perfume is sufficient for 1 month. If the user desires to change the customized perfume for the following month, they can change it by selecting the 3 notes using the system. There will be discount provided with the exchange of empty perfume bottles from students. This reduces the wastage of empty perfume bottles.

2. Understand the problem

Some students throw away the unused perfumes because certain fragrances causes health problems. A person might have a fragrance sensitivity to certain odors that irritate the senses, causing allergy-like symptoms such as migraines, headaches and respiratory difficulties, when exposed to fragranced products. Some experts estimate that as many as 30% of all people may have sensitivities to certain odors. Besides, synthetic perfumes contains chemicals which might also cause health issues. Because of this, students throw away the unused perfumes if they face these types of health issues after using the perfume. Different students have different level of fragrance sensitivity. So, they need to select the ingredients used for making a customized perfume for them.

Students throw away the unused perfumes if they do not like or prefer the readymade fragrance. Perfumes that are no longer used become waste and thrown away into the trash bins. This increases the amount of waste in hostel area. Perfumes are considered as hazardous wastes. If there is still perfume in the bottle it is considered Household Hazardous Waste (HHW). Household hazardous waste (HHW) must not be included in curbside garbage, recycling collection, or poured down the drain. HHW, if not disposed of properly, can be harmful to people, animals and the environment. In addition, empty bottles of perfumes are also thrown away. It increases the amount of wastes when the used and empty perfume bottles are thrown away. The students prefer to use personalized or customized organic perfumes rather than readymade perfumes.

Students money is being waste for unused perfumes. Because they do not like the readymade fragrance, they do not use the perfume and purchase the other perfume. Besides, some students couldn’t finish the perfume bottle before the expiry date. Because of the larger amount of perfume in a bottle, they couldn’t finish it before expiry date and thus their money will be wasted

for that unused perfume. Because of this, students need accurate amount of perfume so that they can finish using the perfume before expiry date.

Students need to purchase every time when they desire to change the perfume or when it has finished by going to the shop. This Increases the time taken of students to purchase the perfume. Travelling cost of students also increases because of the longer distance to purchase the perfumes.

Moreover, billing miscalculation might happen when calculating the price manually using calculator. The price of the organic perfumes is also higher. Basically, organic refers to any product whose ingredients are naturally grown without the use of any kind of artificial chemicals. That said, organic perfume is defined as any fragrance whose ingredients have been manufactured solely from natural products. Because of the natural ingredients, the price of organic perfume is higher compare to synthetic perfume.

3. Identify alternative ways to solve the problem

- Open a customized organic perfume kiosk in Varsity Mall, UUM.
- Students choose the customized perfumes by selecting the top notes, middle notes and base notes manually using forms.
- Hire workers to handle customers in the kiosk.
- Perfume subscription can be done manually using papers.
- Sell perfumes with accurate amount where customers can use the perfume for 1 month and without wasting.
- Students bring their used empty perfume bottles to the kiosk to get discount when purchasing new perfumes.
- Students need to purchase each time when the perfume has finished.
- Calculate the price of the perfumes using calculator.
- Create a system where each student can choose the top, middle and base notes for customized perfume, subscribe one time, receive the perfume of 10ml, 15ml or 20ml every month and enables students to select the 3 bases for customized perfume for the next month.

4. Select the best way to solve the problem from the list of alternative solutions.
   Create a system where each student can choose the top, middle and base notes for customized perfume, subscribe one time, receive the perfume of 10ml, 15ml or 20ml every month and enables students to select the 3 bases for customized perfume for the next month.

5. List instructions (steps) that enable you to solve the problem using the selected solution.

a. User log into the system.
b. User need to enter their personal information such as name, ic number and phone number.

c. The top, middle and base notes of the perfumes will be displayed.
d. User need to choose the amount of perfume whether 10 ml, 15 ml or 20 ml.
e. User need to choose the ingredients for top, middle and base notes of the perfumes.
f. User choose the strength of each notes.
g. User need to name the perfume as it is a customized perfume.
h. User need to input the number of used empty perfume bottles if there is any to get discount.
i. User need to input the location of delivery whether inside or outside campus and address (hostel name for UUM students).
j. System will calculate the discount for the exchange of used perfume bottles.
k. System will calculate the total price with delivery fees after deduct the discount.
l. The price and item description will be displayed.
m. User can change the type of perfume for next month using the system. If the user does not want to change, the same type of perfume will be delivered every month.
n. User can pause or unsubscribe the plan if they choose to do so.

User need to choose one ingredient from top, one from middle and one from base notes. User also need to choose fragrance strength to make customized perfume.

Notes	Available Ingredients	Price for 10ml	Price for 15ml	Price for 20ml
Top Note	• Orange • Neroli • Lavender	RM 3	RM 4.50	RM 6
Middle Note	• Chamomile • Geranium • Juniper	RM 5	RM 7.50	RM 10
Base Note	• Cedar • Pine • Vetiver	RM 2	RM 3	RM 4
	Total	RM 10	RM 15	RM 20

Table 1: Price of top note, middle note and base note for 10 ml, 15 ml and 20 ml

Price according to fragrance strength	Lower Strength	Medium Strength	Higher Strength
Top Note	1 * price of top note	2 * price of top note	3 * price of top note
Middle Note	1 * price of middle note	2 * price of middle note	3 * price of middle note
Base Note	1 * price of base note	2 * price of base note	3 * price of base note

Table 2: Price of top note, middle note and base note according to fragrance strength

Calculation :

	Inside Campus delivery	Outside Campus delivery
10 ml	Delivery fee = RM 2 Empty bottle discount = number of empty bottles * 0.05% 10 ml Perfume price = fragrance strength top note + fragrance strength middle note + fragrance strength base note total = perfume price – empty bottle discount + delivery fee	Delivery fee = RM 4 Empty bottle discount = number of empty bottles * 0.05% 10 ml Perfume price = fragrance strength top note + fragrance strength middle note + fragrance strength base note total = perfume price – empty bottle discount + delivery fee
15 ml	Delivery fee = RM 2 Empty bottle discount = number of empty bottles * 0.05% 15 ml Perfume price = fragrance strength top note + fragrance strength middle note + fragrance strength base note total = perfume price – empty bottle discount + delivery fee	Delivery fee = RM 4 Empty bottle discount = number of empty bottles * 0.05% 15 ml Perfume price = fragrance strength top note + fragrance strength middle note + fragrance strength base note total = perfume price – empty bottle discount + delivery fee
20 ml	Delivery fee = RM 2 Empty bottle discount = number of empty bottles * 0.05% 20 ml Perfume price = fragrance strength top note + fragrance strength middle note + fragrance strength base note total = Perfume price – empty bottle discount + delivery fee	Delivery fee = RM 4 Empty bottle discount = number of empty bottles * 0.05% 20 ml Perfume price = fragrance strength top note + fragrance strength middle note + fragrance strength base note total = Perfume price – empty bottle discount + delivery fee

Table 3 : Calculation of price for 10 ml, 15 ml and 20 ml

6. Evaluate the solution

By using this system, students can customize their perfume by choosing their favorite ingredients from top note, middle note and also base note. They also can customize the strength of each notes by

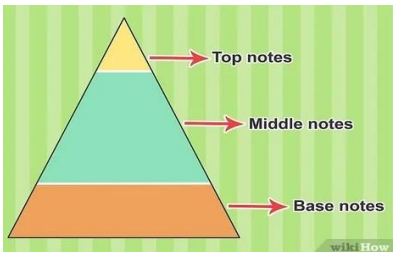
choosing lower strength, medium strength or higher strength. By choosing the ingredients for customized perfume, health problems like headache can be reduced. This is because, students can select the ingredients according to their fragrance sensitivity. Besides, students can get organic perfume with lower price. Organic perfumes are better than synthetic perfumes in term of health. By using the perfume monthly subscription system, the wastage of unused perfume and empty perfume bottles can be reduced. This system also helps students to reduce the amount of money wasted due to the unused perfume. This is because, 10 ml, 15 ml or 20 ml of perfume will be given to students each month after they have subscribed and it is sufficient for 1 month. They will get another perfume with the same amount for the next month without ordering. This reduces the wastage of perfumes that are no longer used. Users also can adjust the frequency of delivery with full flexibility. Users' next order will automatically be placed on the same order date next month. This system is flexible because users can change the type of perfume to be delivered in the following month. With this, they can experience different types of perfumes. They also can pause or unsubscribe the plan. There will be discount provided with the exchange of empty perfume bottles from students. This reduces the wastage of empty perfume bottles.

7. Algorithm

Step 1: Initialize variable for customer personal information, perfume notes and price

Step 2 : User enter personal information (Name, Ic Number, Phone Number, Address)

Step 3: The top, middle and base ingredients of perfumes and its price will be displayed



Step 4: User enter the size of perfume – 10 ml, 15 ml and 20 ml

Step 5 : User choose their desired ingredients for top(30%), middle(50%) and base(20%) notes to make customize perfume.

Step 6: User choose the fragrance strength for each notes. (1- Low, 2- Medium, 3-High)

Step 7: System calculates price of the perfume according to notes and its strength
pricetopnote = size * 0.3 * topNoteStr;
pricemiddlenote = size * 0.5 * midNoteStr;
pricebasenote = size * 0.2 * baseNoteStr;

Step 8: User enter a name for the customized perfume

Step 9: User enter number of empty perfume bottles to get 5% discount for each

Step 10: User enter location of delivery (Inside UUM - RM 2, Outside UUM – RM 4) and address

Step 11: Calculation of discount for used perfume bottles
Empty bottle discount = number of empty bottles * 0.05%

Step 12: Calculation of total price with delivery fees after deduct the discount
total = product price – empty bottle discount + delivery fee

Step 13: System displays the item description

Step 14: System displays information about next month's plan.

8. Pseudocode

START

String name; String IC; String phoneNum; String topNote; String midNote; String baseNote;

String perfumeName;

int size; int empBottles; int topNoteStr; int midNoteStr; int baseNoteStr;

double price; double location; double locationPrice; double total; double discount; double pricetopnote; double pricemiddlenote; double pricebasenote;

Output “Enter your name: ”

Input name

Output “Enter your IC Number: “

Input IC

Output “Enter your phone number: “

Input PhoneNumber

Output “Ingredients Available for Top Note, Middle Note and Base note”

Output "Price of each note for 10ml, 15ml and 20ml"

Output “The size of bottle in ml 10 or 15 or 20”

Input size

Output “Enter the ingredient for top note”

Input topNote

Output “Enter strength of top note; 1-lower 2-medium 3-higher”

Input topNoteStr

Calculate pricetopnote = size * 0.3 * topNoteStr;

Output “Enter the ingredient for middle note”

Input midNote

Output “Enter strength of middle note; 1-lower 2-medium 3-higher”

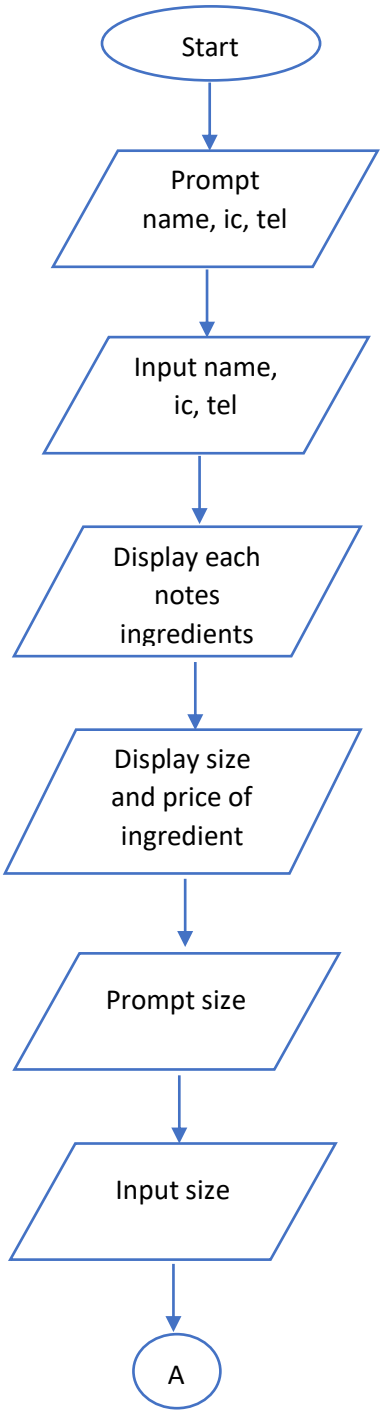
Input midNoteStr

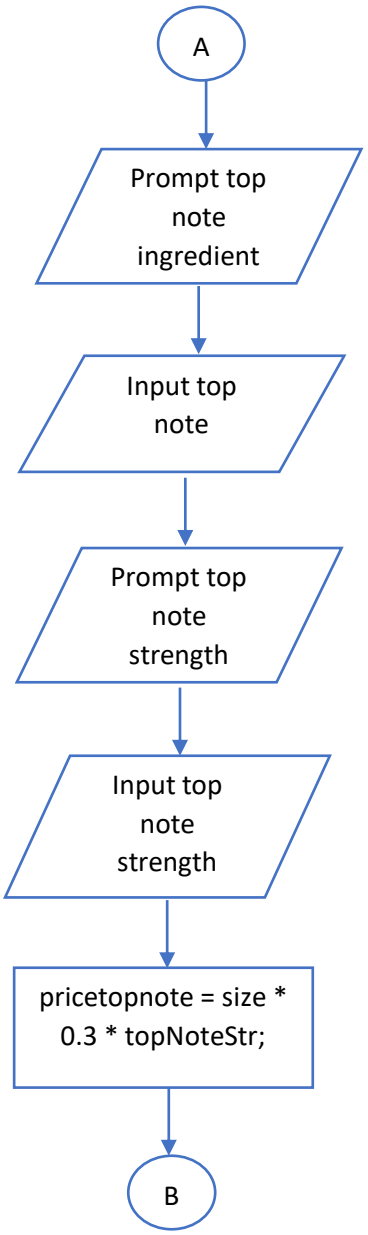
Calculate pricemiddlenote = size * 0.5 * midNoteStr;

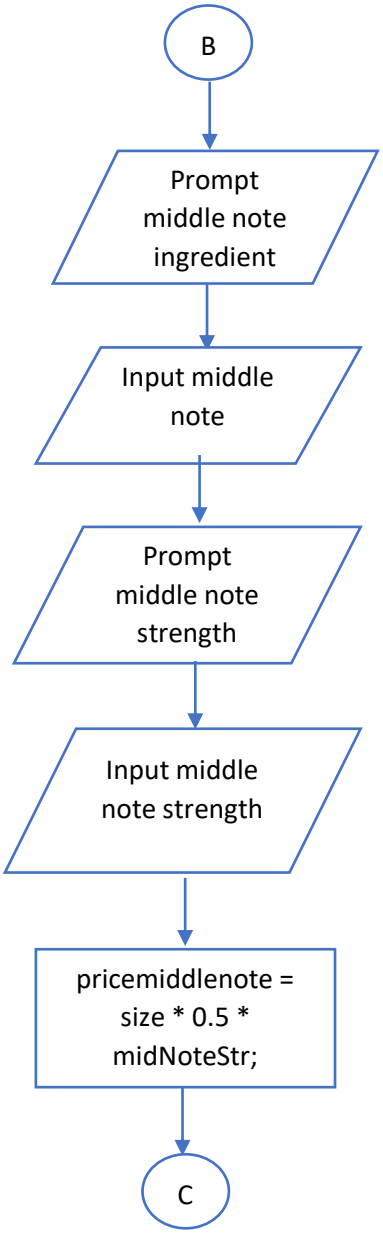
Output “Enter the ingredient for base note”

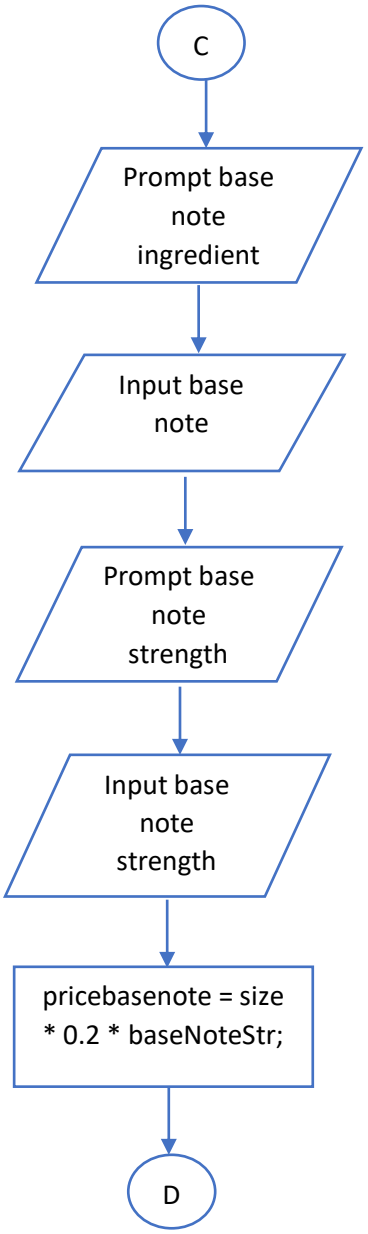
```
        Input baseNote
        Output “Enter strength of base note; 1-lower 2-medium 3-higher”
        Input baseNoteStr
        Calculate pricebasenote = size * 0.2 * baseNoteStr;
        Output "Enter a name for customized perfume: "
        Input perfumeName
        Calculate price = pricetopnote + pricemiddlenote + pricebasenote;
        Output "Enter the number of empty bottles: "
        Input empBottles
        Calculate discount = empBottles * 0.05 * price;
        Output "Enter the location; 1 for Inside UUM or 2 for Outside UUM:  "
        Input location
        Output “Enter address”
        Input address
        Calculate locationPrice = location * 2;
        Calculate total = (price + locationPrice) - discount;
        Output description
        “Name of your perfume is " + perfumeName
        "The size of perfume is "+ size + " ml"
        "Top note is "+ topNote
        "Middle note is "+ midNote
        "Base note is "+ baseNote
        “The total price is RM "+ total
End
```

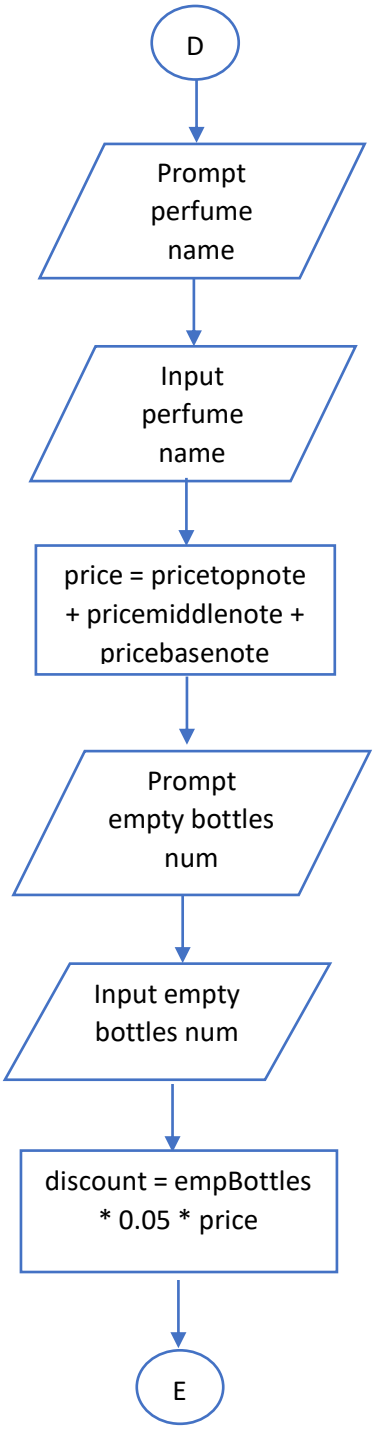
9.0 Flowchart

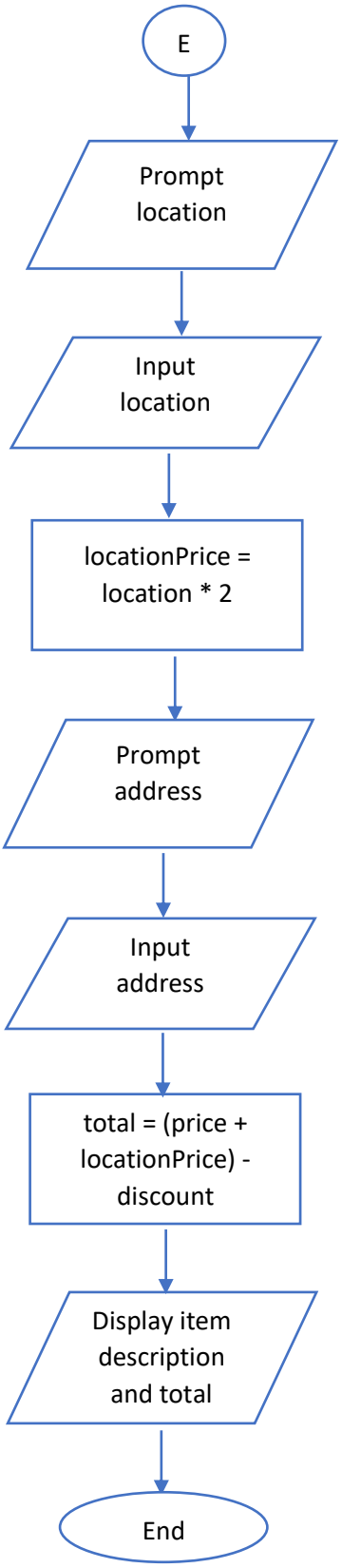





B
Prompt middle note ingredient
Input middle note
Prompt middle note strength
Input middle note strength
pricemiddlenote = size * 0.5 * midNoteStr;
C


C
Prompt base note ingredient
Input base note
Prompt base note strength
Input base note strength
pricebasenote = size * 0.2 * baseNoteStr;
D


D
Prompt perfume name
Input perfume name
price = pricetopnote + pricemiddlenote + pricebasenote
Prompt empty bottles num
Input empty bottles num
discount = empBottles * 0.05 * price
E


E
Prompt location
Input location
locationPrice = location * 2
Prompt address
Input address
total = (price + locationPrice) - discount
Display item description and total
End

10. Coding - Numerical Computation & Expression

```
package assignment1;
import java.util.Scanner;

public class Assignment1 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub

		String name;
		String IC;
		String phoneNum;
		String topNote;
		String midNote;
		String baseNote;
		String perfumeName;
		int size;
		int empBottles;
		int topNoteStr;
		int midNoteStr;
		int baseNoteStr;
		double price;
		double location;
		double locationPrice;
		double total;
		double discount;
		double pricetopnote;
		double pricemiddlenote;
		double pricebasenote;
		String address;

		System.out.println("    \n   Welcome to UUM Customize your
perfume System \n");

	System.out.println("=============================================
======\n");

		Scanner scan = new Scanner(System.in);
		System.out.print("Enter your name: ");
		name = scan.next();

		System.out.print("Enter your IC number: ");
		IC = scan.next();
```

```
System.out.print("Enter your phone number: ");
           phoneNum = scan.next();


      System.out.println("\n**********************************************
*********");
           System.out.println("Available ingredients for each note");
           System.out.println("\n  Top Notes|  Middle Notes  | Base
Notes");
           System.out.println("-----------------------------------------
---");
           System.out.println("Orange     |  Chamomile     |
Cedarwood");
           System.out.println("Neroli     |  Geranium      | Pine");
           System.out.println("Lavender   |  Juniper       | Vetiver");
           System.out.println("");
           System.out.println("Price of each note for 10ml, 15ml and
20ml");
           System.out.println("\n  Top Notes    |  Middle Notes  | Base
Notes");
           System.out.println("-----------------------------------------
---");
           System.out.println("10 ml - RM 3   |  10 ml - RM 5   | 10 ml
- RM 2");
           System.out.println("15 ml - RM 4.5 |  15 ml - RM 7.5 | 15 ml
- RM 3");
           System.out.println("20 ml - RM 6   |  20 ml - RM 10  | 20 ml
- RM 4");

           System.out.print("\nEnter the size of bottle in ml 10 or 15
or 20: ");
           size = scan.nextInt();

           System.out.print("Enter the ingredient for top note: ");
           topNote = scan.next();

           System.out.print("Enter the strength of top note; 1-lower 2-
medium 3-higher: ");
           topNoteStr = scan.nextInt();

           pricetopnote = size * 0.3 * topNoteStr;

           System.out.print("\nEnter the ingredient for middle note:
");
           midNote = scan.next();
```

```
System.out.print("Enter the strength of middle note; 1-lower 2-medium
3-higher: ");
           midNoteStr = scan.nextInt();

           pricemiddlenote = size * 0.5 * midNoteStr;

           System.out.print("\nEnter the ingredient for base note: ");
           baseNote = scan.next();

           System.out.print("Enter the strength of base note; 1-lower
2-medium 3-higher: ");
           baseNoteStr = scan.nextInt();

           pricebasenote = size * 0.2 * baseNoteStr;

           System.out.print("Enter a name for customized perfume: ");
           perfumeName = scan.next();

           price = pricetopnote + pricemiddlenote + pricebasenote;


     System.out.println("\n**********************************************
*********");

           System.out.print("Enter the number of empty bottles: ");
           empBottles = scan.nextInt();
           discount = empBottles * 0.05 * price;


           System.out.print("Enter the location; 1 for Inside UUM or 2
for Outside UUM:  ");
           location = scan.nextDouble();
           locationPrice = location *  2;

           System.out.print("Enter address:  ");
           address = scan.next();


     System.out.println("\n**********************************************
*********");

           total = (price + locationPrice) - discount;

           System.out.println("Your Customized perfume description");
           System.out.println("Name of your perfume is " +
perfumeName);
```

```
System.out.println("The size of perfume is "+ size + " ml");
           System.out.println("Top note is "+ topNote);
           System.out.println("Middle note is "+ midNote);
           System.out.println("Base note is "+ baseNote);


      System.out.println("\n**********************************************
*********");
           System.out.println("\nThe total price is RM " + total);
           System.out.println("Thank you for ordering! The perfume will
be delivered in 2 working days.");


      System.out.println("\n**********************************************
*********");

           System.out.println("The same customized perfume will be
delivered to you every month.");
           System.out.println("You also can change your plan by
designing new perfume for next month.");


      }

}
```

Output

```
   Welcome to UUM Customize your perfume System

=====================================================

Enter your name: Thivya
Enter your IC number: 000904090948
Enter your phone number: 0175454321

*****************************************************
Available ingredients for each note

  Top Notes|  Middle Notes   | Base Notes
-------------------------------------------
Orange     |  Chamomile      | Cedarwood
Neroli     |  Geranium       | Pine
Lavender   |  Juniper        | Vetiver

Price of each note for 10ml, 15ml and 20ml

  Top Notes    |  Middle Notes   | Base Notes
-----------------------------------------------
10 ml - RM 3   |  10 ml - RM 5   | 10 ml - RM 2
15 ml - RM 4.5 |  15 ml - RM 7.5 | 15 ml - RM 3
20 ml - RM 6   |  20 ml - RM 10  | 20 ml - RM 4
```

```
Enter the size of bottle in ml 10 or 15 or 20: 10
Enter the ingredient for top note: Orange
Enter the strength of top note; 1-lower 2-medium 3-higher: 1

Enter the ingredient for middle note: Juniper
Enter the strength of middle note; 1-lower 2-medium 3-higher: 2

Enter the ingredient for base note: Pine
Enter the strength of base note; 1-lower 2-medium 3-higher: 3
Enter a name for customized perfume: Thi

**************************************************
Enter the number of empty bottles: 2
Enter the location; 1 for Inside UUM or 2 for Outside UUM:  1
Enter address:  Inasis tnb

**************************************************
Your Customized perfume description
Name of your perfume is Thi
The size of perfume is 10 ml
Top note is Orange
Middle note is Juniper
Base note is Pine

**************************************************
```

```
The total price is RM 19.1
Thank you for ordering! The perfume will be delivered in 2 working days.

**************************************************
The same customized perfume will be delivered to you every month.
You also can change your plan by designing new perfume for next month.
```

References

1. https://wonderopolis.org/wonder/why-do-people-get-headaches-from-certain-scents
2. https://osmanthos.com/perfume-ingredients
3. https://educalingo.com/en/dic-en/perfumery
4. https://www.peelregion.ca/scripts/waste/how-to-sort-your_waste.pl?action=search&query=Perfume%2C%20essential%20oil%20or%20cologne%20and%20bottle

SKIP 1013
INTRODUCTION TO PROGRAMMING AND PROBLEM SOLVING
Group 1 (SEMSTER A211)
Assignment 1

Theme :

Beauty / Skin Care

Title :

Skin Care Consultancy System

Submitted to :

PROF. MADYA DR. AZMAN B YASIN

Prepared by :

William Ng Wei Yi (284613)

A211 SKIP1013 GROUP A

ASSIGNMENT 1

1. Identify problem

From the feedback from the department of student community, due to the location of UUM university is deviate from city, which is bring a lot of inconvenient for the student to reach the hospital, pharmacy, shopping mall to get the skin care consultancy for the advice of chemical skin care product that is suitable or certified of product. Because of this the management department of university decided to create a system at for the Unit of Hospitality to helps student get the basic skin care consultancy to overcome the issue of consuming time to travel to the city area and the basic chemical certified of skin product that suitable for specific skin problem. The system mainly functions to provide the basic consultancy of student skin problem to provide solution and to check the contain of chemical percentage for their skin care product which is suitable to solve the user skin problem. This system able to let user to choose based on their symptoms they facing to print out the category of the skin problem which can be Oily skin, Dry Skin, Mixed Skin, and Sensitive Skin. Based on the category the system will provide the calculation of skin care product which required input of the product in (g)gram and the chemical contain to calculate the most suitable percentage for the skin problem ((chemical/weight of product)*100%) if more than 10% the product is not certified and not suitable for the skin problem. The consultancy system will be replacing the handwriting to avoid any human mistake and minimize the manpower and the budget hired more professional staff to check the chemical contain and provide the basic consultancy advice. Due to the covid 19, user able to get the basic consultancy by the system without any physical contact.

What is Skin ?

Skin is a layer of usually soft, flexible exterior tissue that covers a vertebrate animal's body and has three primary functions: protection, regulation, and feeling.

All mammals have some hair on their skin, even marine mammals like whales, dolphins, and porpoises that appear to be hairless. The skin interfaces with the environment and is the first line of defence from external factors.

The exoskeleton of arthropods, for example, has a different developmental origin, structure, and chemical makeup than other animal coverings. The adjective cutaneous (from Latin cutis' skin') implies "of the skin." The skin is an integumentary system organ in animals that is made up of numerous layers of ectodermal tissue that protects the underlying muscles, bones, ligaments, and internal organs. Amphibians, reptiles, and birds all have distinct types of skin. Extra skeletal apparatus such as bovid (cattle) and rhino horns, cervid antlers, giraffid nosecones, armadillos' osteoderm, and os penis/os clitoris' skin (containing cutaneous and subcutaneous tissues) play critical roles in the formation, structure, and function.

What is Skin Care?

Skin care encompasses a variety of procedures that help to maintain the integrity of the skin, improve its appearance, and alleviate skin disorders. They can include proper nutrition, avoiding excessive sun exposure, and using emollients appropriately. Cosmetics, botulinum toxin, exfoliation, fillers, laser resurfacing, microdermabrasion, peels, retinol therapy, and ultrasonic skin treatment are all methods for improving appearance. In many situations, such as skin that is either excessively dry or too wet, dermatitis prevention, and skin injury prevention, skin care is a typical daily activity.

Wound healing, radiation therapy, and some drugs all include skin care as part of the treatment.

Background of the Skin Care

Skin care is at the interface and one of the daily essential at between the cosmetics and dermatology.

Cosmetics are defined by the US Federal Food, Drug, and Cosmetic Act as products that are used to cleanse or beautify the skin (for instance, shampoos and lipstick). Although some products, such as moisturizing sunscreens and anti-dandruff shampoos, are regulated under both categories, medications that are intended to diagnose, cure, mitigate, treat, or prevent disease or to affect the structure or function of the body (for example, sunscreens and acne creams) have their own category. Individual behaviours, as well as environmental and working settings, are all factors in skin care.

There is a plethora of products on the market that cater to oily, dry, or sensitive skin types, but how can you know which one you have?

Dr. Leslie Baumann, dermatologist, and author of "The Skin Type Solution," told TODAY Style in an email, "Most individuals... are wrong when they guess their skin type." "They are completely mistaken regarding whether they have oily or dry skin, as well as whether or not they have sensitive skin."

It's especially difficult to determine your true skin type because it changes over time and is influenced by factors such as climate, hormones, and diet. (There's also considerable controversy about whether "regular" and "sensitive" skin are indeed skin types.)

Dermatologists offer information on how to determine your skin type, as well as skin care treatments and cleanser and moisturiser recommendations for each.

2. Understand the problem

Due to a distance issue, students are unable to receive skin care consultation. The user cannot afford the huge amount of to travel fee to the store or pharmacy, which is located in the city. The user is unable to pinpoint the source of their skin problem. The university aims to keep the unit's hospitality budget as low as possible. Because of the covid 19, any consultation must avoid physical contact. Student users are unsure of the chemical percentages that are appropriate for their skin problems. The percentage of chemical skin care products that are certified is unknown to the student. The handwriting of consultant advice can be caused the mistake by humans. A large budget is required. Different skin care products have varying chemical content percentages. (Chemicals contain in gram(g) /Product net weight in gram(g)) *100%), If the percentage is greater than 10%, the test is considered a failure. Passing all three chemical contain tests equals a recognized product that is best for skin problems.

Eventually, the goal to having a system is to automate and systemize of the work in order to improving the minimize the budget and also the system able to ready to support and provide the service for the user 24/7 whenever they are facing any skin problem and also the risk of having the suitable also need to be attention for the specific skin problem which may having the huge negative impact to their health and skin. Based on the research for to solved the problem as below;

Four Major Skin Problem & Symptoms Chemical Contain

1. Oily Skin

Natural oils are secreted by the skin to keep it hydrated, but for oily skin, this process can go into overdrive, especially if the pores are wide. This can translate to an oily film on your face throughout the day, as well as frequent breakouts. If you have oily skin, stay away from heavy lotions and moisturizers. However, this does not negate the importance of hydration. Every Skin care contain the certain chemical for treating and balancing our skin compatibility to achieve the best result. However, the more of chemical contain doesn't mean it can help to improving the result more efficiency so the suitable chemical contain percentage in the skin care is very important for the best result of treatment.

The Oily Skin individual facing the symptoms as :	Recommended Chemical Contain for Oily Skin
• a shiny or greasy appearance. • very large or obvious pores on the skin. • skin that looks thick or rough. • Occasional persistent pimples. • clogged pores and blackheads.	• Alcohol (g) • Glycogen(g) • Zinc Sulfate(g)

Table 1.0 Oily Skin

2. Dry Skin

Since it's commonly covered in a layer of dead skin cells, dry skin seems drab. Light reflects in all directions off these rough skin cells, whereas hydrated skin has a smooth surface that reflects light equally, making it appear more radiant. Many factors can lead to dry skin, including sun exposure, hot showers, and over-exfoliating with products like salicylic or glycolic acid. However, if you have dry skin, the most crucial thing you can do is stay hydrated. Avoiding very hot showers and steering clear of products containing detergents or sulfates, which can irritate the skin. Every Skin care contain the certain chemical for treating and balancing our skin compatibility to achieve the best result. However, the more of chemical contain doesn't mean it can help to improving the result more efficiency, so the suitable chemical contain percentage in the skin care is very important for the best result of treatment.

The Dry Skin individual facing symptoms as below :	Recommended Chemical Contain for Oily Skin
• Dehydration • Flakes, rough texture • Cracks in the skin • Itch • Skin feels painful, may sting or burning	• Alcohol (g) • Sucrose (g) • Magnesium Sulfate (g)

Table 1.1 Dry Skin

3. Mix / Combination Skin

Combination skin lacks a common description, and some physicians believe it isn't a legitimate skin type like oily or dry. Seasonal changes in skin type are possible. In the winter, you'll be dry, and in the summer, you'll be greasy. Some people misunderstand it to mean oily in the T-zone, although this is a skin type that is categorized as oily. If your T-zone is oilier than the rest of your face, Day suggests applying a cream designed for oily skin only on those regions. Every Skin care contain the certain chemical for treating and balancing our skin compatibility to achieve the best result. However, the more of chemical contain doesn't mean it can help to improving the result more efficiency, so the suitable chemical contain percentage in the skin care is very important for the best result of treatment.

The Mix Skin individual facing symptoms as below :	Recommended Chemical Contain for Oily Skin
• Having the oily and dry skin spots • Experience Mild breakouts and dryness at the same time • Have larger pore on nose, chin, and forehead • Skin get oiler in summer, drier in winter	• Alcohol (g) • Glucoside (g) • Sodium Sulphate (g)

Table 1.2 Mix/Combination Skin

4. Sensitive Skin

"Sensitive skin is skin prone to inflammation,". Acne, rosacea, and contact dermatitis, a type of red, itchy rash, are common in people with sensitive skin. Those with sensitive skin are more likely to experience stinging or burning. People with sensitive skin may have allergic

reactions to particular substances, so they should avoid using extremely harsh compounds in any aesthetic items they use, including skin care. People with acne, for example, should avoid isopropyl myristate, a common chemical in hair conditioners. Every Skin care contain the certain chemical for treating and balancing our skin compatibility to achieve the best result. However, the more of chemical contain doesn't mean it can help to improving the result more efficiency, so the suitable chemical contain percentage in the skin care is very important for the best result of treatment.

The Sensitive Skin individual facing symptoms as below :	Recommended Chemical Contain for Oily Skin
• Your Skin is itchy • You Feel Stinging and burning • Your Skin is dry • Get sunburn easily	• Alcohol (g) • Perfume serum (g) • Potassium Sulphate (g)

Table 1.3 Sensitive Skin

3. Identify alternative ways to solve problem
    - The campus pharmacy provides the physical consultancy
    - Using the handwriting to provide the information of skin care consultancy and information
    - Needed a lot of related professionals in campus pharmacy to give the skin care consultancy
    - Provide the physical paper to let user filled the information of the skin problem and calculate for the chemical of skin care product
    - All consultant information record in physical paper by handwritten
    - Staff need to be working 24/7 to always standby for providing support
    - Increase budget to hire more staff to handle physical working
    - Double checking needs to done for second confirmation
    - Create system to automate all the info of skin care consultancy, calculation for chemical contain.
    - System automates to check the certified product and the most suitable product for user.

4. Select the best way to solve the problem from the list of alternative solutions
    - Create system to automate all the info of skin care consultancy, calculation for chemical contain.
    - System automates to check the certified product and the most suitable product for user.

5. List instructions (steps) that enable you to solve the problem using the selected solution
    - Key in user information
    - Based on the symptoms of skin problem facing by the user key in the group of skin problem
    - System will print the consultancy advice and solution for their skin problem

- Based on the skin problem system required the input of net weight of the product in gram(g)
- Key in Product name
- Key in the 3/3 type of chemical contain of the product in gram(g)
- Chemical contain percentage = (Chemicals contain in gram(g) /Product net weight in gram(g)) *100%) ,If the percentage >= 10% : "The chemical contain is too high !"
- Pass the 3/3 chemical percentage = Certified product, most suitable, highly recommended
- Pass 2/3 chemical percentage = Certified product, least suitable
- Pass 1/3 chemical percentage = NOT certified product, NOT suitable
- Pass 0/3 Chemical percentage = NOT Certified product, DO NOT USE !
- Print out all the skin care consultancy information and the product chemical contain and the certified of the skin care product

Type of Symptoms Based on the symptoms key in the numeric number to identify and category the type of skin problem	**Consultancy/Advice of solution** Print in "String"	**Percentage of Chemical Contain** In gram(g) (Percentage>=10%): failed
Group ('1') Oily Skin • a shiny or greasy appearance. • very large or obvious pores on the skin. • skin that looks thick or rough. • Occasional persistent pimples. • clogged pores and blackheads.	• Important of hydration Oiliness does not mean that your face is hydrated. All skin types need hydration. This helps to balance them, as well as maintain their natural characteristics and protective barriers. • Make intelligent choices in your diet. The better you eat, the more beautiful your skin. Avoid fatty and fried foods because this can increase oiliness and the incidence of pimples. To help control the oiliness, it is also best to limit yourself to one drink a night and eating spicy foods no more than once a week. Include more carrots, cantaloupe, and spinach in your meal - high in vitamin A and can slow oil production.	1. Input for the product name 2. Required input the net weight of the skin care product in gram(g) 3. Input for Chemical contain in gram(g) • Alcohol (g) • Glycogen (g) • Zinc Sulfate (g) (Chemical weight(g)/product net weight(g))*100
Group ('2') Dry Skin • Dehydration • Flakes, rough texture • Cracks in the skin • Itch • Skin feels painful, may sting or burning	• Moisturize Moisturizers provide a seal over your skin to keep water from escaping. Apply moisturizer several times a day and after bathing. • Use warm water and limit bath time. Long showers or baths and hot water remove oils from your skin. Limit your bath or shower to five to	1. Input for the product name 2. Required input the net weight of the skin care product in gram(g) 3. Input for Chemical contain in gram(g) • Alcohol (g) • Sucrose (g)

	10 minutes and use warm, not hot, water. • Avoid harsh, drying soaps. It's best to use cleansing creams or gentle skin cleansers and bath or shower gels with added moisturizers. Choose mild soaps that have added oils and fats. Avoid deodorant and antibacterial detergents, fragrance, and alcohol.	• Magnesium Sulfate (g) (Chemical weight(g)/product net weight(g))*100
Group ('3') Mix Skin/Combination skin • Having the oily and dry skin spots • Experience Mild breakouts and dryness at the same time • Have larger pore on nose, chin, and forehead • Skin get oiler in summer, drier in winter	• Use the gentle facial cleanser Your skin's surface becomes covered with dirt, excess oils, and impurities throughout the day. Make sure to use a facial cleanser that will help mattify your oily T-zone without over-drying your cheeks and under-eye area. • Hydrate your skin Regardless of your skin type, using a moisturizer is essential to keep your skin looking and feeling healthy. For combination skin, your best bet is to opt for a moisturizer that's hydrating while not feeling heavy or greasy.	1. Input for the product name 2. Required input the net weight of the skin care product in gram(g) 3. Input for Chemical contain in gram(g) • Alcohol (g) • Glucoside (g) • Sodium Sulfate (g) (Chemical weight(g)/product net weight(g))*100
Group ('4') Sensitive Skin • Your Skin is itchy • You Feel Stinging and burning • Your Skin is dry • Get sunburn easily	• Cleanse your skin with micellar water. When it comes to sensitive skin, it's a good idea to stay away from foaming cleansers. Instead, try micellar water, a gentle, no-rinse cleansing option. Micellar water is powered by tiny micelles • Never skip out on moisturizer. While you may be nervous about layering on extra skin care products if you have sensitive skin, skipping out on moisturizer shouldn't be an option. Llightweight cream helps strengthen and repair skin barrier to help resist visible signs of aging that a weakened barrier can accentuate.	1. Input for the product name 2. Required input the net weight of the skin care product in gram(g) 3. Input for Chemical contain in gram(g) • Alcohol (g) • Perfume serum (g) • Potassium Sulfate (g) (Chemical weight(g)/product net weight(g))*100

Table 2.0 Categorize Skin Care Problem and Product Chemical Percentage

Calculation and condition table

Chemical Percentage Contain Calculation and Certified Product	
Chemical percentage	(Chemical weight(g)/product net weight(g))*100; 1. Chemical 1 = ((chemical_weight/product_weight)*100)=xx%; 2. Chemical 3 = ((chemical_weight/product_weight)*100)=xx%; 3. Chemical 3 = ((chemical_weight/product_weight)*100)= xx%;
Condition	• If chemical (%) > 10% : "The chemical contain is too high !" • 3/3 : (c1<10 && c2<10 && c3<10); • 0/3 : (c1>10 && c2>10 && c3>10); • 1/3 : (c1<10 || 2<10 || c3<10);

	• 2/3 : (c1<10 && c2<10 || c1<10 && c3<10 || c2<10 && c3<10)
Certified	Percentage <10% : Pass; • Pass 3/3 Chemical (%) : Certified product, most suitable, highly recommended; • Pass 2/3 Chemical (%) : Certified Product, least suitable ; • Pass 1/3 Chemical (%) : NOT certified product, NOT suitable; • Pass 0/3 Chemical percentage : NOT Certified product, DO NOT USE !;

Table 2.1 Total and Discount Calculation

6. Evaluate the solution

By using this Skin care consultant system able to help the University to decrease the budget in hired the professional to work on duty. This system also helps to minimize the manpower in the unit of hospitality in UUM. The 7/24 system always ready to provide consultancy service whenever student face the skin problem and quickly let student identify the skin problem and using the specific product to treat their skin problem. All the human mistakes also can be avoided since the system can calculate the chemical percentage calculation automate. The system initialized with the chemical condition to helps to make the certified and the most suitable product for the user in order to let user use the safe product from the market. To system allows user to insert the weight of the product and the weight of the chemical of the product to certified to product when every single percentage of chemical is less than 10%. All physical handwriting can be avoided with the consultancy information was develop in

the system. Due to the covid 19, all basic consultancy and avoid the face-to-face service minimize the chance of infection covid-19.

Firstly, the system required the user personal information as name, matric number, phone number, email address, and the system print again which input from the user for the second confirmation of the user personal information. Secondly, based on the symptoms the system will print the type of the skin problem and the consultancy advise for the user skin problem. At this phase system required input from user for the name of product and the net weight of the product. User key in the weight of the chemical contain for the each of the chemical contain in the product in gram(g). To calculate the percentage of chemical contain ((chemical_weight/product_weight)*100)=xx%; The system will print the result of user personal information, product name, product net weight and the calculation result of chemical contain in percentage (%).

The certified product rules are also print at the end of the program to aware user the percentage (%) of chemical in the product below 10% is better to pass the certified and according to the rules to identify the certified of the product. In the three types of chemical if 3 of them are below than 10% the product is a certified product, most suitable, highly recommended. If 2 of the chemical percentage below than 10% the product is a certified product, least suitable. If only 1 of the chemical percentage below than 10%, the product is Not a certified product, Not Suitable! If all of them is higher than 10% of chemical percentage, the product is not a certified product, Do Not Use! By the rules user can easily identify and check how safe to use the skin care product for their skin treatment and daily skin care essential.

7. Algorithm

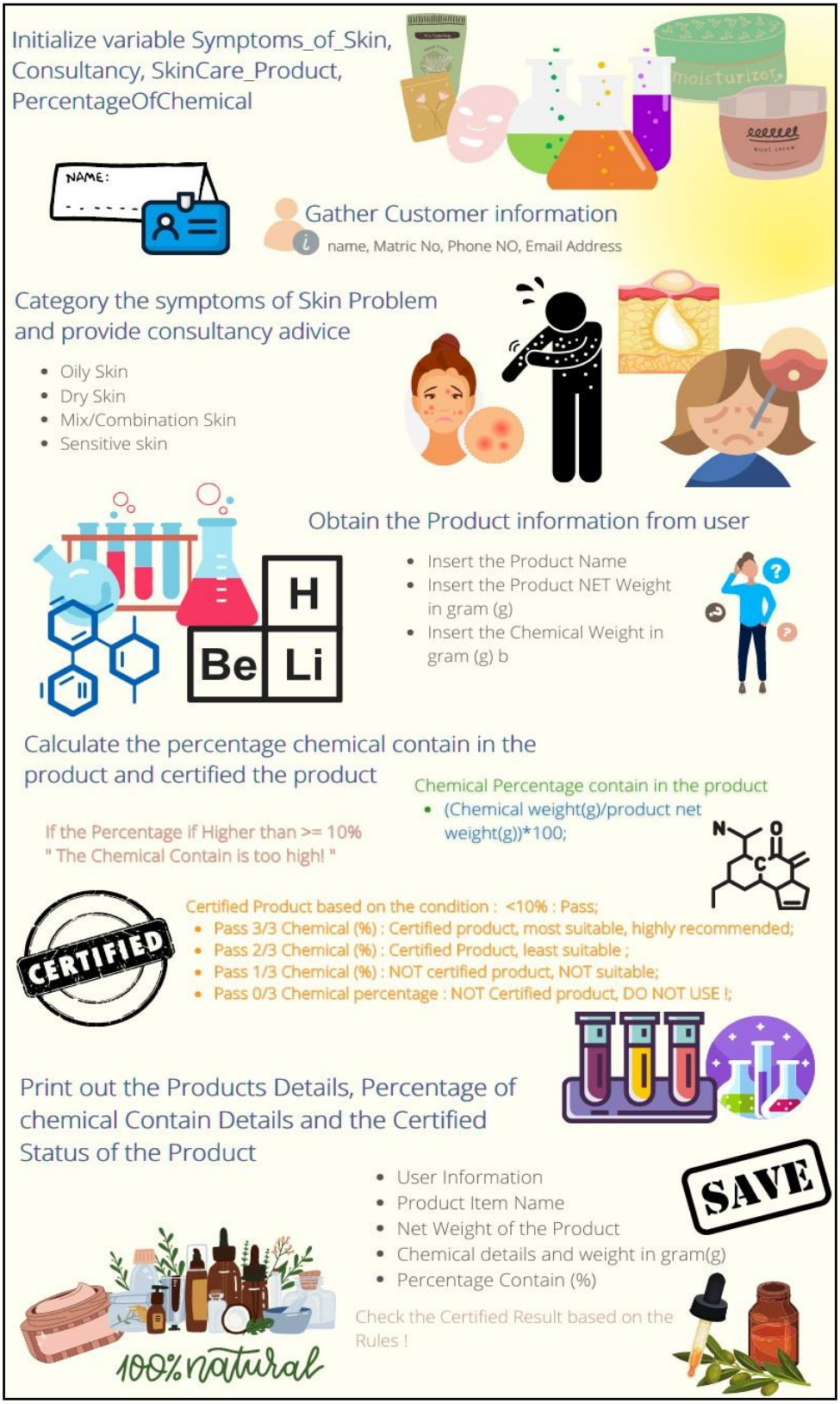


Figure 1.0 Algorithm

8. Pseudo code

- Problem 1: System provide the basic skin care consultancy and advice based on the skin problem symptom.
- Problem 2 : Obtain the skin care product information, net weight of product, chemical weight of the product
- Problem 3 : Calculate chemical percentage of the product and certified the product based on the rules.

```
Start
    String name, phone, email, matric, product1, product2, product3, product4;
    int product_weight1, product_weight2, product_weight3, product_weight4;
    double oilc1,oilc2,oilc3,dryc1,dryc2,dryc3,mixc1,mixc2,mixc3,senc1,senc2,senc3,oilp1, oilp2,
    oilp3, dryp1, dryp2, dryp3, mixp1, mixp2, mixp3, senp1, senp2, senp3;
    Output Please insert your name ;
    Input name;
    Output Please insert your Matric No;
    Input matric;
    Output Please insert your phone number;
    Input phone;
    Output Please insert email address;
    Input email;
    Output
    Group'1' Oily Skin; // and the consultancy information
    Insert the product name;
    Insert the product net_weight;
    Insert the chemical_weight;
    Input
    product_name1;
    Product_weight1; // in gram(g)
    Oilc1; // first chemical weight in gram(g)
    Oilc2; //second chemical weight in gram(g)
    Oilc3; //third chemical weihght in gram(g)
    oilp1 = ((oilc1/product_weight1)*100);
    oilp2 = ((oilc2/product_weight1)*100);
    oilp3 = ((oilc3/product_weight1)*100);
    Output
    Group'2' Dry Skin; // and the consultancy information
    Insert the product name;
    Insert the product net_weight;
    Insert the chemical_weight;
    Input
    product_name2;
    Product_weigh2t; // in gram(g)
    dryc1; // first chemical weight in gram(g)
    dryc2; //second chemical weight in gram(g)
    dryc3; //third chemical weihght in gram(g)
    dryp1 = ((dryc1/product_weight2)*100);
    dryp2 = ((dryc2/product_weight2)*100);
    dryp3 = ((dryc3/product_weight2)*100);
```

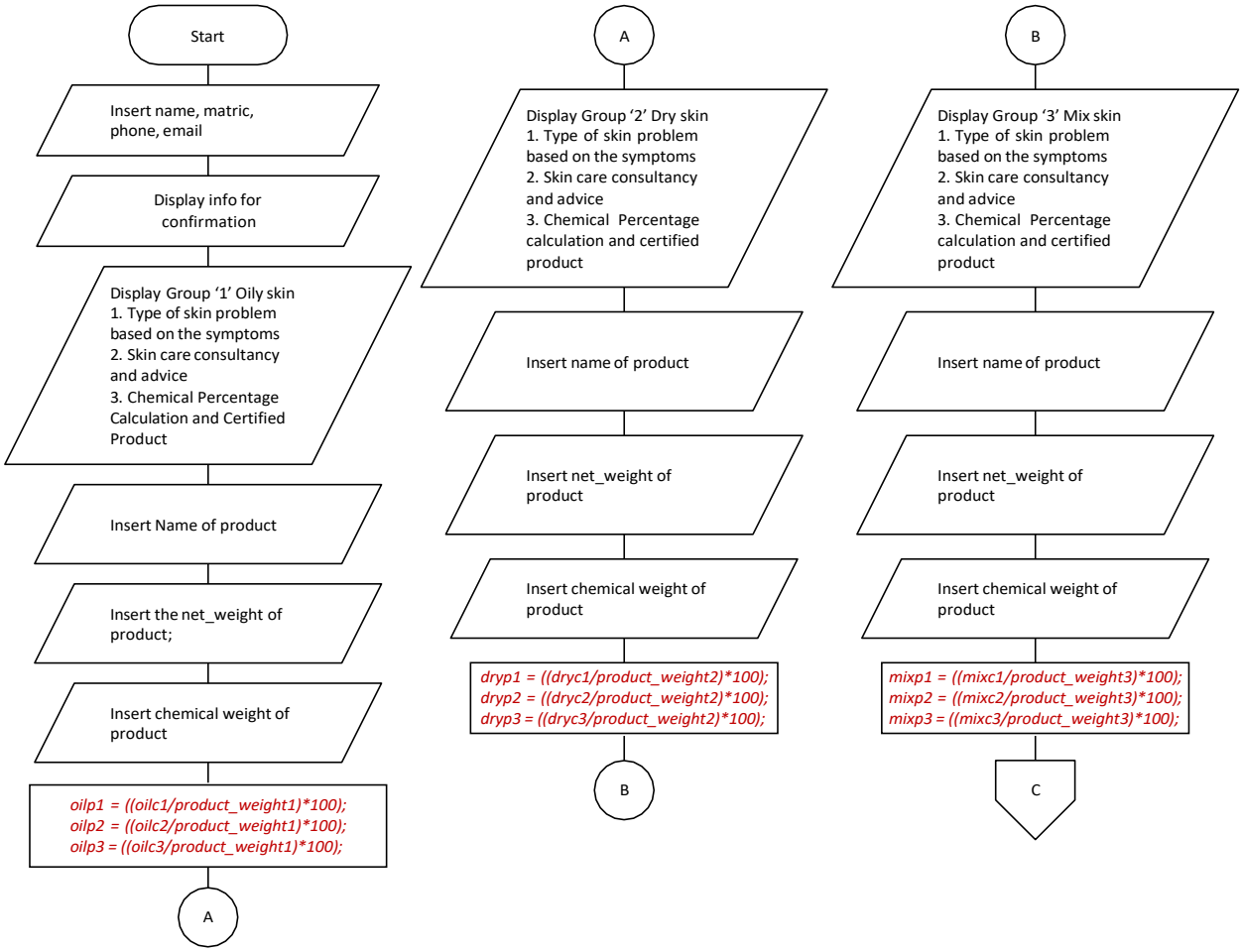
Output
Group'2' Mix/Combination Skin; // and the consultancy information
Insert the product name;
Insert the product net_weight;
Insert the chemical_weight;
Input
product_name3;
Product_weight3; // in gram(g)
mixc1; // first chemical weight in gram(g)
mixc2; //second chemical weight in gram(g)
mixc3; //third chemical weihght in gram(g)
*mixp1 = ((mixc1/product_weight3)*100);*
*mixp2 = ((mixc2/product_weight3)*100);*
*mixp3 = ((mixc3/product_weight3)*100);*
Output
Group'3' Sensitive Skin; // and the consultancy information
Insert the product name;
Insert the product net_weight;
Insert the chemical_weight;
Input
product_name3;
Product_weight3; // in gram(g)
senc1; // first chemical weight in gram(g)
senc2; //second chemical weight in gram(g)
senc3; *//third chemical weihght in gram(g)*
*senp1 = ((senc1/product_weight3)*100);*
*senp2 = ((senc2/product_weight3)*100);*
*senp3 = ((senc3/product_weight3)*100);*
Display information name, matric, phone, email;
Display Product_Name; weight; Chemical_contain(g); percentage;
Output
Group '1' Dry Skin;
Product_weight1;
Chemical_weight;
Percentage;
Output
Group '2' Dry Skin;
Product_weight2;
Chemical_weight;
Percentage;
Output
Group '3' Mix Skin;
Product_weight3;
Chemical_weight;
Percentage;
Output
Group '4' Sensitive Skin;
Product_weight4;
Chemical_weight;
Percentage;
Output

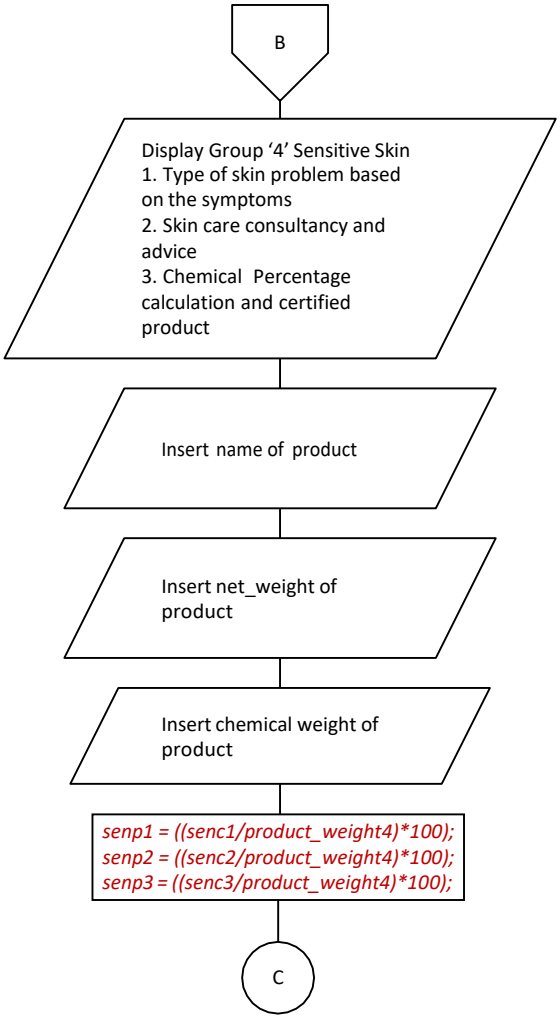
Display the certified rules;
If the Percentage is higher than >=10% The chemical contain is too high !

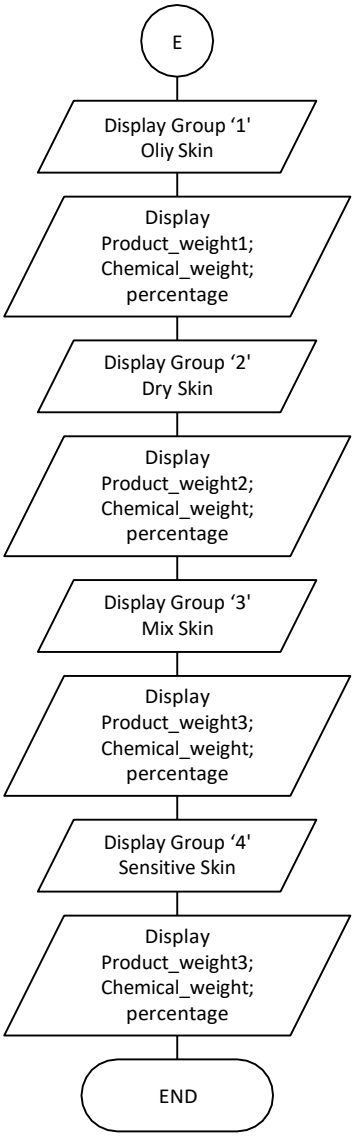
- Pass 3/3 Chemical (%) : Certified product, most suitable, highly recommended;
- Pass 2/3 Chemical (%) : Certified Product, least suitable ;
- Pass 1/3 Chemical (%) : NOT certified product, NOT suitable;
- Pass 0/3 Chemical percentage : NOT Certified product, DO NOT USE !;

End

9. Flow chart


Start
Insert name, matric, phone, email
Display info for confirmation
Display Group '1' Oily skin
1. Type of skin problem based on the symptoms
2. Skin care consultancy and advice
3. Chemical Percentage Calculation and Certified Product
Insert Name of product
Insert the net_weight of product;
Insert chemical weight of product
oilp1 = ((oilc1/product_weight1)*100);
oilp2 = ((oilc2/product_weight1)*100);
oilp3 = ((oilc3/product_weight1)*100);
A
A
Display Group '2' Dry skin
1. Type of skin problem based on the symptoms
2. Skin care consultancy and advice
3. Chemical Percentage calculation and certified product
Insert name of product
Insert net_weight of product
Insert chemical weight of product
dryp1 = ((dryc1/product_weight2)*100);
dryp2 = ((dryc2/product_weight2)*100);
dryp3 = ((dryc3/product_weight2)*100);
B
B
Display Group '3' Mix skin
1. Type of skin problem based on the symptoms
2. Skin care consultancy and advice
3. Chemical Percentage calculation and certified product
Insert name of product
Insert net_weight of product
Insert chemical weight of product
mixp1 = ((mixc1/product_weight3)*100);
mixp2 = ((mixc2/product_weight3)*100);
mixp3 = ((mixc3/product_weight3)*100);
C





10. Coding – Numerical Computation & Expression

```java
package assignment1;
import java.util.Scanner;
public class skincare2 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		String name, phone, email, matric, product1, product2, product3,
product4;
		int product_weight1, product_weight2, product_weight3,
product_weight4;
		double oilc1,oilc2,oilc3,dryc1,
dryc2,dryc3,mixc1,mixc2,mixc3,senc1,senc2,senc3,
				oilp1, oilp2, oilp3, dryp1, dryp2, dryp3, mixp1, mixp2,
mixp3, senp1, senp2, senp3;
		Scanner sc = new Scanner (System.in);

		System.out.println("\n    Welcome to UUM SKIN CARE CONSULTANTCY
SYSTEM");
		System.out.println("\n-----------------------------------------
----------------------\n");
		System.out.print("Please insert your name : ");
		name = sc.next();
		System.out.print("Plase enter your Matric NO. : ");
		matric = sc.next();
		System.out.print("Please insert your phone number : ");
		phone = sc.next();
		System.out.print("Please insert email address : ");
		email = sc.next();

		System.out.println("\n-----------------------------------------
-----\n");
		System.out.println("Hi "+name+" Welcome to UUM SKIN CARE CONSULTANCY
SYSTEM !");
		System.out.println("Please check your information shown as below :
");
		System.out.println("Matric NO : "+matric);
		System.out.println("Phone Number : "+phone);
		System.out.println("Email Address : "+email);
		System.out.println("\n-----------------------------------------
-----\n");

		System.out.println("DO YOU ENCOUNTER THE SKIN PROBLEM AS BELOW : ");

		System.out.println("\nGroup '1' Oily Skin ");
		System.out.println("Symptoms of the Oily Skin as : "+
		"\n a) A shiny or greasy appearance."+
		"\n b) Very large or obvious pores on the skin."+
		"\n c) Skin that looks thick or rough"+
		"\n d) Occasional persistent pimples."+
		"\n e) Clogged pores and blackheads.");
		System.out.println("\nThe Skin care Consultancy advise for your Skin
Problem :");
		System.out.println("•	Important of hydration \n Oiliness does
not mean that your face is hydrated. All skin types need hydration. "
				+ "This helps to balance them, as well as maintain
their natural characteristics and protective barriers. ");
		System.out.println("•	Make intelligent choices in your diet.\n
The better you eat, the more beautiful your skin. "
```

```
                        + "Avoid fatty and fried foods because this can
increase oiliness and the incidence of pimples. "
                        + " \n Include more carrots, cantaloupe, and spinach in
your meal - high in vitamin A and can actually slow oil production. ");

            System.out.println("\n Check the chemical contain in your Skin care
product Here \n ");
            System.out.print("Please enter the Skin Care product name : ");
            product1 = sc.next();
            System.out.print("Please Enter the NET Weight of the product in
gram(g) : ");
            product_weight1 = sc.nextInt();
            System.out.println("Please enter the chemical contain in
gram(g) :");
            System.out.print("1. Alcohol (g) : ");
            oilc1 = sc.nextDouble();
            System.out.print("2. Glycogen (g) : ");
            oilc2 = sc.nextDouble();
            System.out.print("3. Zinc Sulfate (g) : ");
            oilc3 = sc.nextDouble();

            oilp1 = ((oilc1/product_weight1)*100);
            oilp2 = ((oilc2/product_weight1)*100);
            oilp3 = ((oilc3/product_weight1)*100);



      System.out.println("\n*****************************************\n\nGroup
'2' Dry Skin ");
            System.out.println("Sypmtoms of the Dry Skin as : "+
            "\n a) Dehydration "+
            "\n b) Flakes, rough, texture "+
            "\n c) Cracks in the skin "+
            "\n d) Itch "+
            "\n e) Skin feels painful, may sting or burning ");
            System.out.println("\nThe Skin care Consultancy advise for your Skin
Problem :");
            System.out.println("•     Moisturize \n Moisturizers provide a seal
over your skin to keep water from escaping. Apply moisturizer several times a day
and after bathing. ");
            System.out.println("• Use warm water and limit bath time.\n Long
showers or baths and hot water remove oils from your skin. "
                        + "Limit your bath or shower to five to 10 minutes and
use warm, not hot, water.");
            System.out.println("•    Avoid harsh, drying soaps.\n It's best to
use cleansing creams or gentle skin cleansers and bath or shower gels with added
moisturizers. "
                        + "Choose mild soaps that have added oils and fats. \n
Avoid deodorant and antibacterial detergents, fragrance, and alcohol.");

            System.out.println("\n Check the chemical contain in your Skin care
product Here \n ");
            System.out.print("Please enter the Skin Care product name : ");
            product2 = sc.next();
            System.out.print("Please Enter the NET Weight of the product in
gram(g) : ");
            product_weight2 = sc.nextInt();
            System.out.println(" Please enter the chemical contain in
gram(g) :");
```

```
            System.out.print("1. Alcohol (g) : ");
            dryc1 = sc.nextDouble();
            System.out.print("2. Surcose (g) : ");
            dryc2 = sc.nextDouble();
            System.out.print("3. Magnesium Sulfate (g) : ");
            dryc3 = sc.nextDouble();

            dryp1 = ((dryc1/product_weight2)*100);
            dryp2 = ((dryc2/product_weight2)*100);
            dryp3 = ((dryc3/product_weight2)*100);


      System.out.println("\n*****************************************\n\nGroup
'3' Mix/Combination Skin ");
            System.out.println("Sypmtoms of the Mix Skin as : "+
            "\n a) Having the oily and dry skin spots "+
            "\n b) Experience Mild breakouts and dryness at the same time "+
            "\n c) Have larger pore on nose, chin, and forehead "+
            "\n d) Skin get oiler in summer, drier in winter ");
            System.out.println("\nThe Skin care Consultancy advise for your Skin
Problem :");
            System.out.println("•     Use the gentle facial cleanser \n Your
skin's surface becomes covered with dirt, excess oils, and impurities throughout
the day. "
                        + "Make sure to use a facial cleanser that will help
mattify your \n oily T-zone without over-drying your cheeks and under-eye area.
");
            System.out.println("•     Hydrate your skin. \n Regardless of your
skin type, using a moisturizer is essential to keep your skin looking and feeling
healthy. "
                        + "\n For combination skin, your best bet is to opt for
a moisturizer that's hydrating while not feeling heavy or greasy.");

            System.out.println("\n Check the chemical contain in your Skin care
product Here \n ");
            System.out.print("Please enter the Skin Care product name : ");
            product3 = sc.next();
            System.out.print("Please Enter the NET Weight of the product in
gram(g) : ");
            product_weight3 = sc.nextInt();
            System.out.println(" Please enter the chemical contain in
gram(g) :");
            System.out.print("1. Alcohol (g) : ");
            mixc1 = sc.nextDouble();
            System.out.print("2. Glucoside (g) : ");
            mixc2 = sc.nextDouble();
            System.out.print("3. Sodium Sulfate (g) : ");
            mixc3 = sc.nextDouble();

            mixp1 = ((mixc1/product_weight3)*100);
            mixp2 = ((mixc2/product_weight3)*100);
            mixp3 = ((mixc3/product_weight3)*100);



      System.out.println("\n*****************************************\n\nGroup
'4' Sensitive Skin ");
            System.out.println("Sypmtoms of the Sensitive Skin as : "+
            "\n a) Your Skin is itchy "+
```

```
            "\n b) You Feel Stinging and burning "+
            "\n c) Your Skin is dry "+
            "\n d) Get sunburn easily ");
            System.out.println("\nThe Skin care Consultancy advise for your Skin
Problem :");
            System.out.println("•     Cleanse your skin with micellar water \n
When it comes to sensitive skin, it’s a good idea to stay away from foaming
cleansers. "
                        + "Instead, try micellar water, a gentle, no-rinse
cleansing option. \n Micellar water is powered by tiny micelles");
            System.out.println("•     Never skip out on moisturizer. \n While
you may be nervous about layering on extra skin care products if you have
sensitive skin, "
                        + "skipping out on moisturizer shouldn’t be an option.
\n Llightweight cream helps strengthen and repair skin barrier to help resist
visible signs of aging that a weakened barrier can accentuate.");

            System.out.println("\n Check the chemical contain in your Skin care
product Here \n ");
            System.out.print("Please enter the Skin Care product name : ");
            product4 = sc.next();
            System.out.print("Please Enter the NET Weight of the product in
gram(g) : ");
            product_weight4 = sc.nextInt();
            System.out.println(" Please enter the chemical contain in
gram(g) :");
            System.out.print("1. Alcohol (g) : ");
            senc1 = sc.nextDouble();
            System.out.print("2. Perfume Serum (g) : ");
            senc2 = sc.nextDouble();
            System.out.print("3. Potassium Sulfate (g) : ");
            senc3 = sc.nextDouble();

            senp1 = ((senc1/product_weight4)*100);
            senp2 = ((senc2/product_weight4)*100);
            senp3 = ((senc3/product_weight4)*100);


            System.out.println("\nPrint the Consultancy and percentage chemical
contain of skin care product as below  : \n\n");
            System.out.println("\t\t\t\t UUM SKIN CARE CONSULTANCY SYSTEM \n\n--
------------------------------------------------------------------------------
-------------------------------\n");
            System.out.println("NAME : "+name);
            System.out.println("Matric NO. : "+matric);
            System.out.println("Phone Number : "+phone);
            System.out.println("Email Address : "+email +"\n-------------------
------------------------------------------------------------------------------
-------------\n");
            System.out.println("Product name/Weight(g)\t\t\t\tChemical
contain(g)\t\t\t\tPercentage(%)\n");
            System.out.println("-----------------------------------------------
-----------------------------------------------------------------\n");
            System.out.println("Group '1' Oily Skin ");
            System.out.printf("1. "+product1+"\t\t\t\t\tAlcohol(g) :
"+oilc1+"\t\t\t\t%.1f\n",oilp1);
            System.out.printf(product_weight1+"g"+"\t\t\t\t\t\tGlycogen(g) :
"+oilc2+"\t\t\t\t%.1f\n",oilp2);
```

```
            System.out.printf("\t\t\t\t\t\tZinc Sulfate(g) :
"+oilc3+"\t\t\t\t%.1f\n",oilp3);

            System.out.println("\nGroup '2' Dry Skin ");
            System.out.printf("1. "+product2+"\t\t\t\t\tAlcohol(g) :
"+dryc1+"\t\t\t\t%.1f\n",dryp1);
            System.out.printf(product_weight2+"g"+"\t\t\t\t\t\tSurcose(g) :
"+dryc2+"\t\t\t\t%.1f\n",dryp2);
            System.out.printf("\t\t\t\t\t\tMagnesium Sulfate(g) :
"+dryc3+"\t\t\t%.1f\n",dryp3);

            System.out.println("\nGroup '3' Mix Skin ");
            System.out.printf("1. "+product3+"\t\t\t\t\tAlcohol(g) :
"+mixc1+"\t\t\t\t%.1f\n",mixp1);
            System.out.printf(product_weight3+"g"+"\t\t\t\t\t\tGlucoside(g) :
"+mixc2+"\t\t\t\t%.1f\n",mixp2);
            System.out.printf("\t\t\t\t\t\tSodium Sulfate(g) :
"+mixc3+"\t\t\t\t\t%.1f\n",mixp3);

            System.out.println("\nGroup '4' Sensitive Skin ");
            System.out.printf("1. "+product4+"\t\t\t\t\tAlcohol(g) :
"+senc1+"\t\t\t\t%.1f\n",senp1);
            System.out.printf(product_weight4+"g"+"\t\t\t\t\t\tPerfume
Serum(g) : "+senc2+"\t\t\t\t%.1f\n",senp2);
            System.out.printf("\t\t\t\t\t\tPotassium Sulfate(g) :
"+senc3+"\t\t\t%.1f",senp3);

            System.out.println("\n\n-------------------------------------------
-------------------------------------------------------------------\n");
            System.out.println("** NOTE !! Please check your product based on
the rules below : \n");
            System.out.println("If the Percentage is higher than >=10% The
chemical contain is too high !");
            System.out.println("• Pass 3/3 Chemical (%) : Certified product,
most suitable, highly recommended;");
            System.out.println("• Pass 2/3 Chemical (%) : Certified Product,
least suitable ;");
            System.out.println("• Pass 1/3 Chemical (%) : NOT certified
product, NOT suitable;");
            System.out.println("• Pass 0/3 Chemical percentage : NOT Certified
product, DO NOT USE !;");

      System.out.println("\n\n*************************************************
*************************************************************\n");
            System.out.println("                                          THANK
YOU PLEASE COME AGAIN !!                                                 ");

      }

}
```

OUTPUT

```
       Welcome to UUM SKIN CARE CONSULTANTCY SYSTEM

------------------------------------------------------------------------

Please insert your name : william
Plase enter your Matric NO. : 123456
Please insert your phone number : 0183546464
Please insert email address : william@uum.com

-----------------------------------------------------

Hi william Welcome to UUM SKIN CARE CONSULTANCY SYSTEM !
Please check your information shown as below :
Matric NO : 123456
Phone Number : 0183546464
Email Address : william@uum.com

-----------------------------------------------------

DO YOU ENCOUNTER THE SKIN PROBLEM AS BELOW :

Group '1' Oily Skin
Symptoms of the Oily Skin as :
 a) A shiny or greasy appearance.
 b) Very large or obvious pores on the skin.
 c) Skin that looks thick or rough
 d) Occasional persistent pimples.
 e) Clogged pores and blackheads.

The Skin care Consultancy advise for your Skin Problem :
•       Important of hydration
 Oiliness does not mean that your face is hydrated. All skin types need hydration. This helps to balance them, as well as maintain their natural characteristics and protective barriers.
•       Make intelligent choices in your diet.
 The better you eat, the more beautiful your skin. Avoid fatty and fried foods because this can increase oiliness and the incidence of pimples.
 Include more carrots, cantaloupe, and spinach in your meal - high in vitamin A and can actually slow oil production.
```

```
 Check the chemical contain in your Skin care product Here

Please enter the Skin Care product name : Laneigh
Please Enter the NET Weight of the product in gram(g) : 500
Please enter the chemical contain in gram(g) :
1. Alcohol (g) : 51
2. Glycogen (g) : 50
3. Zinc Sulfate (g) : 53

*****************************************

Group '2' Dry Skin
Sypmtoms of the Dry Skin as :
 a) Dehydration
 b) Flakes, rough, texture
 c) Cracks in the skin
 d) Itch
 e) Skin feels painful, may sting or burning

The Skin care Consultancy advise for your Skin Problem :
•       Moisturize
 Moisturizers provide a seal over your skin to keep water from escaping. Apply moisturizer several times a day and after bathing.
•       Use warm water and limit bath time.
 Long showers or baths and hot water remove oils from your skin. Limit your bath or shower to five to 10 minutes and use warm, not hot, water.
•       Avoid harsh, drying soaps.
 It's best to use cleansing creams or gentle skin cleansers and bath or shower gels with added moisturizers. Choose mild soaps that have added oils and fats.
 Avoid deodorant and antibacterial detergents, fragrance, and alcohol.
```

```
 Check the chemical contain in your Skin care product Here

Please enter the Skin Care product name : Innisfree
Please Enter the NET Weight of the product in gram(g) : 300
 Please enter the chemical contain in gram(g) :
1. Alcohol (g) : 23
2. Surcose (g) : 12
3. Magnesium Sulfate (g) : 16

*****************************************

Group '3' Mix/Combination Skin
Sypmtoms of the Mix Skin as :
 a) Having the oily and dry skin spots
 b) Experience Mild breakouts and dryness at the same time
 c) Have larger pore on nose, chin, and forehead
 d) Skin get oiler in summer, drier in winter

The Skin care Consultancy advise for your Skin Problem :
•       Use the gentle facial cleanser
 Your skin’s surface becomes covered with dirt, excess oils, and impurities throughout the day. Make sure to use a facial cleanser that will help mattify your
 oily T-zone without over-drying your cheeks and under-eye area.
•       Hydrate your skin.
 Regardless of your skin type, using a moisturizer is essential to keep your skin looking and feeling healthy.
 For combination skin, your best bet is to opt for a moisturizer that’s hydrating while not feeling heavy or greasy.
```

```
 Check the chemical contain in your Skin care product Here

 Please enter the Skin Care product name : SimpleSkin
 Please Enter the NET Weight of the product in gram(g) : 450
  Please enter the chemical contain in gram(g) :
1. Alcohol (g) : 43
2. Glucoside (g) : 13
3. Sodium Sulfate (g) : 35

*****************************************

Group '4' Sensitive Skin
Sypmtoms of the Sensitive Skin as :
 a) Your Skin is itchy
 b) You Feel Stinging and burning
 c) Your Skin is dry
 d) Get sunburn easily

The Skin care Consultancy advise for your Skin Problem :
•       Cleanse your skin with micellar water
 When it comes to sensitive skin, it’s a good idea to stay away from foaming cleansers. Instead, try micellar water, a gentle, no-rinse cleansing option.
 Micellar water is powered by tiny micelles
•       Never skip out on moisturizer.
 While you may be nervous about layering on extra skin care products if you have sensitive skin, skipping out on moisturizer shouldn’t be an option.
 Llightweight cream helps strengthen and repair skin barrier to help resist visible signs of aging that a weakened barrier can accentuate.
```

```
 Check the chemical contain in your Skin care product Here

Please enter the Skin Care product name : Vaseline
Please Enter the NET Weight of the product in gram(g) : 400
 Please enter the chemical contain in gram(g) :
1. Alcohol (g) : 23
2. Perfume Serum (g) : 41
3. Potassium Sulfate (g) : 21
```

Print the Consultancy and percentage chemical contain of skin care product as below :

UUM SKIN CARE CONSULTANCY SYSTEM

NAME : william
Matric NO. : 123456
Phone Number : 0183546464
Email Address : william@uum.com

Product name/Weight(g)	Chemical contain(g)	Percentage(%)
Group '1' Oily Skin		
1. Laneigh	Alcohol(g) : 51.0	10.2
500g	Glycogen(g) : 50.0	10.0
	Zinc Sulfate(g) : 53.0	10.6
Group '2' Dry Skin		
1. Innisfree	Alcohol(g) : 23.0	7.7
300g	Surcose(g) : 12.0	4.0
	Magnesium Sulfate(g) : 16.0	5.3
Group '3' Mix Skin		
1. SimpleSkin	Alcohol(g) : 43.0	9.6
450g	Glucoside(g) : 13.0	2.9
	Sodium Sulfate(g) : 35.0	7.8
Group '4' Sensitive Skin		
1. Vaseline	Alcohol(g) : 23.0	5.8
400g	Perfume Serum(g) : 41.0	10.3
	Potassium Sulfate(g) : 21.0	5.3

** NOTE !! Please check your product based on the rules below :

If the Percentage is higher than >=10% The chemical contain is too high !
- Pass 3/3 Chemical (%) : Certified product, most suitable, highly recommended;
- Pass 2/3 Chemical (%) : Certified Product, least suitable ;
- Pass 1/3 Chemical (%) : NOT certified product, NOT suitable;
- Pass 0/3 Chemical percentage : NOT Certified product, DO NOT USE !;

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ASSIGNMENT 1

1. Identify the problem
2. Understand the problem
3. Identify alternative ways to solve the problem
4. Select the best way to solve the problem from the list of alternative solutions
5. List instructions(steps)that enable you to solve the problem using the selected solution
6. Evaluate the solution
7. Algorithm
8. Pseudocode
9. Flow chart
10. Coding – Numerical computation &expression

Name : Nurin Andriana binti Mohamad Subri

Matric no: 287957

Topic: beauty

Subtopic: Hair

Le'touch Salon booking system

1. Identify the problem

What is hair? Hair is a protein filament that grows from follicles found in the dermis. Hair is one of the defining characteristics of mammals. The most common interest in hair is focused on hair growth, hair types, and hair care, but hair is also an important biomaterial primarily composed of protein, notably alpha-keratin. Hair also exists in a variety of textures. The three main aspects of hair texture are the curl pattern, volume, and consistency. There is a range of theories about the curl patterns of hair. Scientists have come to believe that the shape of the hair affects the curliness of the individual's hair. As the hair follicle shape determines curl pattern, the hair follicle size determines thickness. While the circumference of the hair follicle expands, so does the thickness of the hair follicle. An individual's hair volume, as a result, can be thin, normal, or thick. The consistency of hair can almost always be grouped into three categories: fine, medium, and coarse. This trait is determined by the hair follicle volume and the condition of the strand. Fine hair has the smallest circumference, coarse hair has the largest circumference, and medium hair is anywhere between the other two. Coarse hair has a more open cuticle than thin or medium hair causing it to be the most porous.

There are various systems that people use to classify their curl patterns. Being knowledgeable of an individual's hair type is a good start to knowing how to take care of one's hair. There is not just one method to discovering one's hair type. Additionally, it is possible, and quite normal to have more than one kind of hair type, for instance having a mixture of both. Type 1 is straight hair, which reflects the most sheen and also the most resilient hair of all of the hair types. It is hard to damage and immensely difficult to curl this hair texture. Because the sebum easily spreads from the scalp to the ends without curls or kinks interrupting its path, it is the oiliest hair texture of all. Type 2 is wavy hair, whose texture and sheen ranges somewhere between straight and curly hair. Wavy hair is also more likely to become frizzy than straight hair. While type A waves can easily alternate between straight and curly styles, type B and C Wavy hair is resistant to styling. Type 3 is curly hair known to have an S-shape. The curl pattern may resemble a lowercase "s", uppercase "S", or sometimes an uppercase "Z" or lowercase "z". This hair type is usually voluminous and damage-prone. Lack of proper care causes less defined curls.

Haircare is an overall term for hygiene and cosmetology involving the hair which grows from the human scalp, and to a lesser extent facial, pubic and other body hair. Haircare routines differ according to an individual's culture and the physical characteristics of one's hair. Hair may be coloured, trimmed, shaved, plucked or otherwise removed with treatments such as waxing, sugaring and threading. Haircare

services are offered in salons, barbershops and day spas, and products are available commercially for home use. Laser hair removal and electrolysis are also available, though these are provided (in the US) by licensed professionals in medical offices or speciality spas. Chemical alterations like perming, colouring can be carried out to change the perceived colour and texture of hair. All of these are temporary alterations because permanent alterations are not possible at this time. Chemical alteration of hair only affects the hair above the scalp; unless the hair roots are damaged, new hair will grow in with natural colour and texture. Hair colouring is the process of adding pigment to or removing pigment from the hair shaft. Hair colouring processes may be referred to as colouring or bleaching, depending on whether the pigment is being added or removed. Most permanent colour changes require that the cuticle of the hair be opened so the colour change can take place within the cuticle. This process, which uses chemicals to alter the structure of the hair, can damage the cuticle or internal structure of the hair, leaving it dry, weak, or prone to breakage. After the hair processing, the cuticle may not fully close, which results in coarse hair or an accelerated loss of pigment. Generally, the lighter the chosen colour from one's initial hair colour, the more damaged it may be. Other options for applying colour to hair besides chemical dyes include the use of such herbs as henna and indigo, or choosing ammonia-free solutions. Besides, Perms and relaxation using relaxer or thermal reconditioning involve chemical alteration of the internal structure of the hair to affect its curliness or straightness. Hair that has been subjected to the use of a permanent is weaker due to the application of chemicals and should be treated gently and with greater care than hair that isn't chemically altered.

There are also treatments of damage that we can do. The first one has split ends. Split ends, known formally as *trichoptilosis*, happen when the protective cuticle has been stripped away from the ends of hair fibres. This condition involves a longitudinal splitting of the hair fibre. Any chemical or physical trauma, such as heat that weathers the hair may eventually lead to split ends. Typically, the damaged hair fibre splits into two or three strands and the split maybe two to three centimetres in length. Split ends are most often observed in long hair but also occur in short hair that is not in good condition. The second one is breakage and other damage. Hair can be damaged by chemical exposure, prolonged or repeated heat exposure (as through the use of heat styling tools), and perming and straightening. Oil is harmful to rough hair and dry scalp as it decreases nourishment for hair leading to split and hair fall. When hair behaves unusually, or a scalp skin disorder arises, it is often necessary to visit not only a qualified physician, but sometimes a dermatologist, or a trichologist. Conditions that require this type of professional help include, but are not limited to, forms of alopecia, hair pulling/picking, hair that sticks straight out, black dots on the hair, and rashes or burns resulting from chemical processes. The gel provides a shiny look but dries the hair and makes it rough.

Most of us do not know how to treat our hair when the hair is damaged. Because of that, there is one place that we should visit when we want to get a treatment which is Hair salons. Hair salons provide men and women with services to clean, condition,

strengthen, cut, style and colour their hair. Opening a hair salon requires that you meet local, state and federal licensing and permit regulations, as well as registering your business as a legal entity, finding staff and marketing your salon. Some many hairstylists and hairdressers have a licence to treat our hair.

Based on the data that we get from the survey, most of the students do not have much time to care for their hair and for sure, it will make the student feel uncomfortable to face the other people in the crowd because sometimes, their hair becomes smelly and frizzy. This is a big reason why students should go to the salon and get treatment because it will make them feel better and less embarrassing in public. We believe that it is very important for students to take care of their hair, but because of the lack of time, the location of the salon is too far and sometimes, student needs to book an appointment manually. Because of that, many students are not putting enough effort into taking care of their hair. For sure, it will lead to many problems such as the dry scalp, damaged hair and so on. Because of these issues, the management comes out with an idea to develop a system and open a salon. This salon will provide many services such as hair treatment, haircut and many more. The price will be different between students and normal customers. Besides, customers do not have to worry anymore about the appointment because this system also provides a booking system online without the customer needing to go manually. Students will get a discount of 25% on weekdays and 30% on weekends. The system will provide a promotion during weekends which means a discount will be given when they get more than 3 services. Normal customers will get 30% and students will get 40% on weekends. The most interesting part of our salon is, customers can get the treatment at their home if they choose to book an appointment at home and a 15% discount also will be given to them. The system will also print out the receipt of booking which contains services that customers chose and the price to be paid. Free cancellation or extending the appointment due to an emergency can be made by using this system.

2. Understand the problem

- Required time to record the information manually
- Double the appointment or miswrite the dates for the appointment
- Difficult for the student to decide the treatment that they want
- Students feel uncomfortable facing other people
- The distance of salon that is far away from UUM
- Waste of time because students need to book an appointment manually
- The price of services in the salon is expensive
- Waste of money due to the cost of travelling to the salon
- Difficult for the students to cancel the appointment

- Price will be different between students, normal customers
- Student discount: 25% weekdays and 30% weekend
- Promotion on weekend (service>=3): students will get a 40% discount and the normal customer will get 30%
- Booking a treatment at home get a 15% discount

3. Identify alternative ways to solve the problem

- Need to use a book to record information data and appointments (date, time)
- hire more workers as customer service
- hire more workers to handle customers
- make templates, brochures or a system to show the package that the salon provided
- sort the information book by ascending order
- make a reminder for every appointment in a digital calendar
- make a system that can record data, book appointments online
- needs to double-check the appointment date and time
- need to remember the date and time for the appointment
- make a system which able to record customer's information and booking for an appointment

4. Select the best ways to solve the problem from the list of alternative solutions

- create a system that can record customer's information, book an appointment and can calculate the discount for students and normal customers

5. List the instructions(steps) that enable you to solve the problem using the selected solution.

- Customers need to fill up their information
- The system will list down services provided
- Customers need to choose whether they want to book for appointment or not
- Customers need to choose the service that they want
- Student discount: 25% weekdays and 30% weekend
- Promotion on weekend (service>=3): students will get a 40% discount and the normal customer will get 30%
- Booking a treatment at home get a 15% discount
- The system will print out the receipt as a confirmation after booking for an appointment

HAIRCUT			
HAIR CUT	**MALE** RM 30	**FEMALE** RM 40	**CHILDREN** RM 15
WASH+BLOW+CUT	**MALE** RM 45	**FEMALE** RM 55	**CHILDREN** RM 20
WASH & BLOW			
WASH + BLOW DRY			RM 25
WASH + BLOW CURL			RM 30
CHEMICAL WORK			
COLOURING ▪ Hair dyeing (changing hair colour)			RM 75
PERMING ▪ Creating waves or curls hair			RM 80
REBONDING ▪ Change hair's texture and create a smooth, straight hair			RM 90
RELAXING ▪ Reduces the curl			RM 80
TREATMENT			
SCALP TREATMENT ▪ For dry and itchy scalp			RM 100
RELAX TREATMENT ▪ Reduce curl, remove frizzy hair, control movement			RM 115
KERATIN TREATMENT ▪ Hair smoothing service ▪ Straightening hair			RM 150

Table 1 service provided by the salon

calculation

Normal customers	**Weekdays & weekends** - **No discount**	**custprice= Total+servicefee**
	- **Weekdays: 25% discount**	**Dis1 = total1 – (total1*0.25)** **studentprice= Dis1+servicefee**
	- **Weekends: 30% discount**	**Dis2 = total2 – (total2*0.30)** **Studentprice1=Dis2+servicefee**
BOTH	- **Booking appointment at home**	**Totalhome= total3-(total3*0.15)** **Allprice = Totalhome+fee**
	Normal customers: - **(service>=3) gets 30% discount**	**Promo = total4-(total4*0.30)** **custprice1 = Promo +servicefee**
	Students: - **(service >=3) gets 40% discount**	**Promo1 = total5-(total5*0.40)** **Studentprice2 = Promo1 + servicefee**

Table 2 calculation for discount and promotion

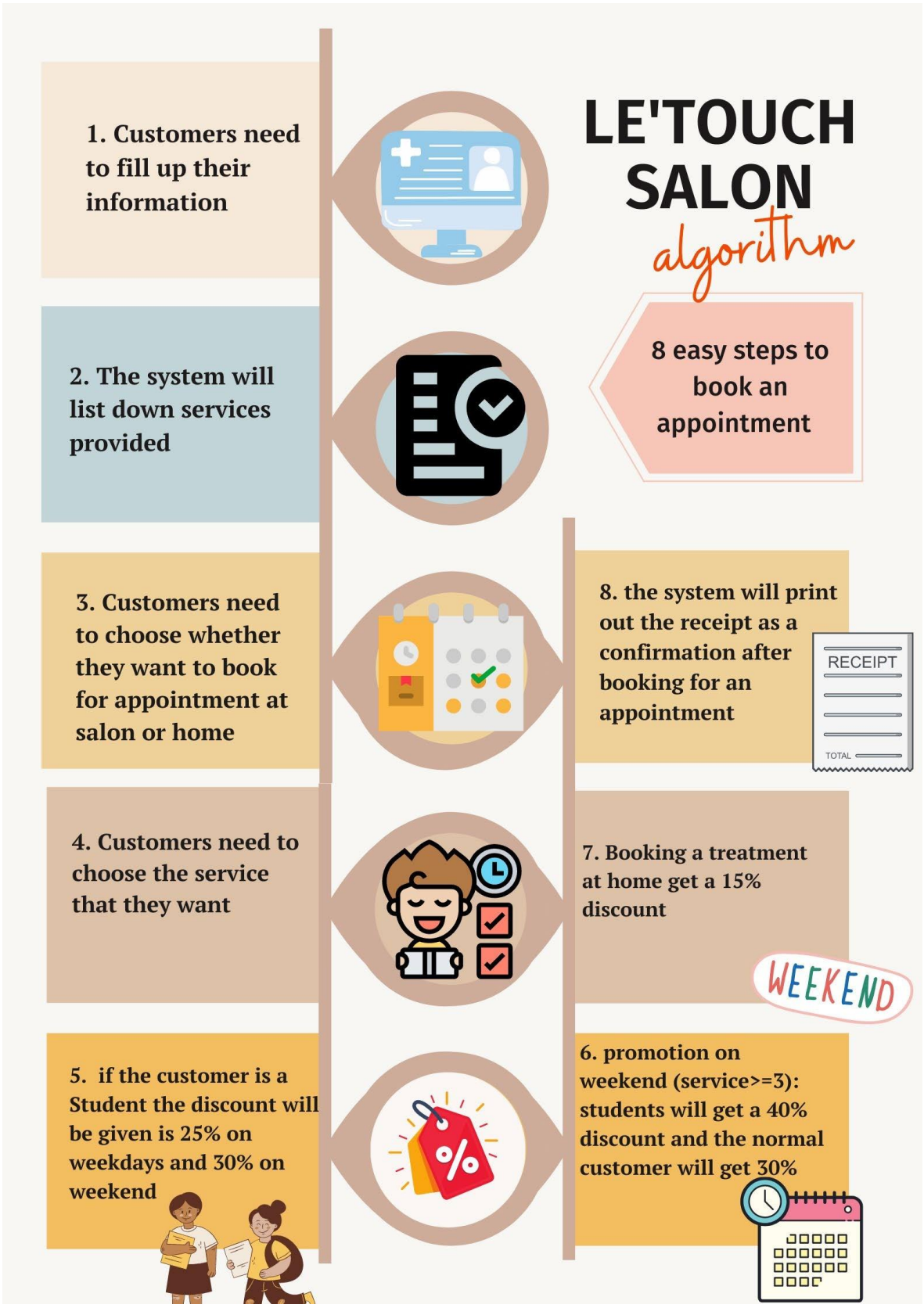
Allprice = total price to be paid after adding both service fee and total treatment after discount

Fee = fee for transportation + tools + distance

6. Evaluate the solution

- Systems online booking provided by Le'touch salon enables to help those students who did not have much time to go and book manually. Besides, students will feel more confident to face people when their hair look beautiful for non-Muslim, and for Muslim students, they will feel more comfortable wearing hijabs without having a hair problem such as damaged hair, itchy scalp and so on. Furthermore, by using these systems, it will lessen the mistake that humans could do for example miswriting dates and times for an appointment, do not answer calls when customers want to book an appointment and so on. Students can budget and save their money because this salon will be given a discount to a student which is on weekdays and weekend students will be given a 25% and 30% discount. There is also a promotion during weekends in which students will get a 40% discount and the normal customer will get 30% on weekends. The most interesting part of our salon is, customers can get the treatment at their home if they choose to book an appointment at home and a 15% discount also will be given to them. It will make things go easier for those customers who do not have transportations or another reason they can't go to the salon.

7. Algorithm


LE'TOUCH SALON
algorithm
8 easy steps to book an appointment
1. Customers need to fill up their information
2. The system will list down services provided
3. Customers need to choose whether they want to book for appointment at salon or home
4. Customers need to choose the service that they want
5. if the customer is a Student the discount will be given is 25% on weekdays and 30% on weekend
6. promotion on weekend (service>=3): students will get a 40% discount and the normal customer will get 30%
7. Booking a treatment at home get a 15% discount
WEEKEND
8. the system will print out the receipt as a confirmation after booking for an appointment
RECEIPT
TOTAL

8. Pseudocode

START

INPUT name, address, phone, gender, IC, servicefee, total, total1, total2, total3, total4,fee, bothcust

custprice = total + servicefee

Dis1 = total1-(total1*0.25)

studentprice = Dis1 + servicefee

Dis2 = total2 –(total2*0.30)

studentprice1 = Dis2 + servicefee

totalhome = (bothcust +fee) *0.15

Allprice = (bothcust+fee) - totalhome

Promo = total4 – (total4*0.30)

custprice1 = Promo + servicefee

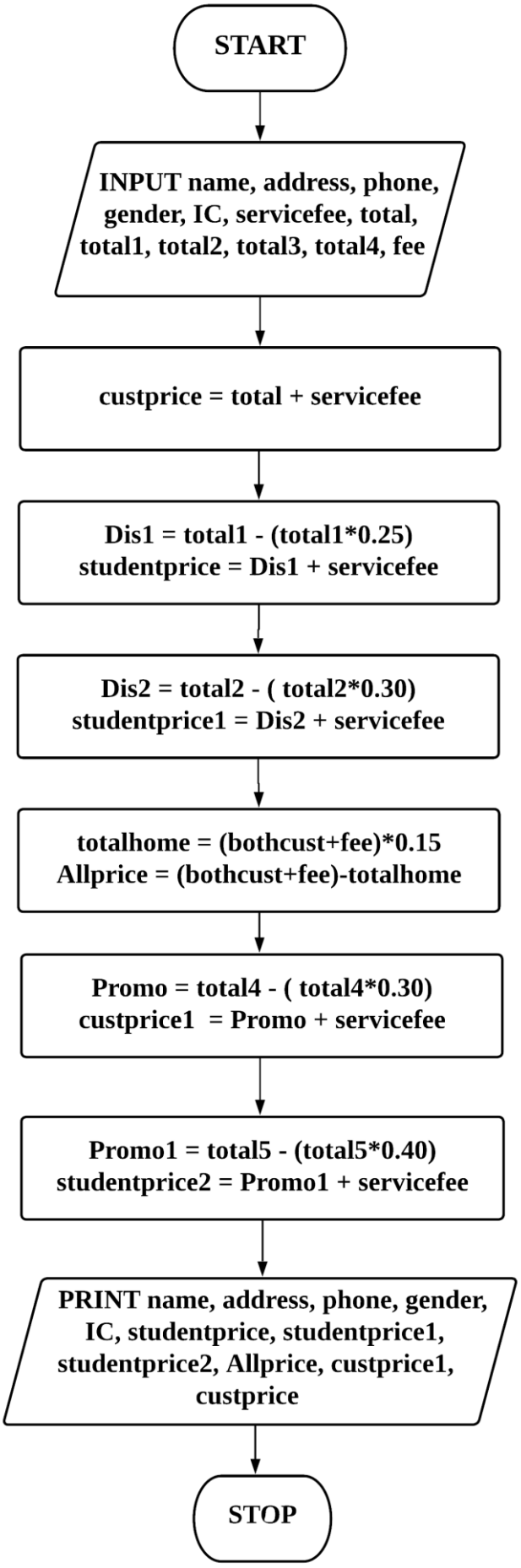
Promo1 = total5 - (total5*0.40)

studentprice2 = Promo1 +servicefee

PRINT name, address, phone, gender, IC, studentprice, studentprice1, studentprice2,Allprice, custprice1, custprice

STOP

9. Flowchart


START
INPUT name, address, phone, gender, IC, servicefee, total, total1, total2, total3, total4, fee
custprice = total + servicefee
Dis1 = total1 - (total1*0.25)
studentprice = Dis1 + servicefee
Dis2 = total2 - (total2*0.30)
studentprice1 = Dis2 + servicefee
totalhome = (bothcust+fee)*0.15
Allprice = (bothcust+fee)-totalhome
Promo = total4 - (total4*0.30)
custprice1 = Promo + servicefee
Promo1 = total5 - (total5*0.40)
studentprice2 = Promo1 + servicefee
PRINT name, address, phone, gender, IC, studentprice, studentprice1, studentprice2, Allprice, custprice1, custprice
STOP

10. Coding – numerical computation and expressions

Coding for a student on weekdays

```
package assignment;
import java.util.Scanner;
public class Studentweekdays {

	public static void main(String[] args) {
		// TODO Auto-generated method stub


		Scanner obj = new Scanner(System.in);

		String name,address,IC;
		   String date;
		   String time;
		   int phone,service,service1;
		   double studentprice,custprice,custprice1;
		   char proceed,gender;
		   boolean weekends=true;
		   double haircutmale =25.0,haircutfemale =30.0;
		   double haircutmale2 = 45.0, haircutfemale2 = 55.0;
		   double wash1= 25.0,wash2= 30.0,relaxing =80.0;
		    double colouring = 75.0,perming=80.0,rebonding = 90.0;
		   double scalp = 100.0, relax =115.0, keratin =150.0;
		   double studentprice1,studentprice2,total;
		   double total1,total2,total3,total4,total5,promo,promo1;
		   double servicefee=15.0,fee=80.0,totalhome;
		   double Dis1,Dis2,Dis3,Allprice,bothcust;


System.out.println("*****************************************");
		System.out.print("\n");
		System.out.println("\tWELCOME TO LE'TOUCH SALON ");
		System.out.print("\n");

System.out.println("*****************************************");

		System.out.println("\t WORKING HOUR");
		System.out.println(" Sunday : closed");
		System.out.println(" Monday - Thursday : 11 am - 9 pm");
		System.out.println(" Friday - Saturday : 10 am - 10 pm");


	   System.out.print("\n");
		   System.out.print("Please Enter Your Name: ");
		   name = obj.nextLine();
		   System.out.print("Please Enter Your IC: ");
		   IC = obj.nextLine();
		   System.out.print("Please Enter Your Address: ");
		   address = obj.nextLine();
		   System.out.print("Please Enter Your Phone Number: ");
		   phone = obj.nextInt();
		   System.out.print("Please Enter your gender: ");
		   gender = obj.next().charAt(0);
```

```
            System.out.print("\n");
               System.out.println("PERSONAL DETAILS ");
               System.out.print("\n");
               System.out.println("Name: " + name);
               System.out.println("IC: " + IC);
               System.out.println("Address: " + address);
               System.out.println("Phone Number: " + phone);
               System.out.println("Gender : " + gender);
               System.out.println("");
System.out.print("Do you want to book for appointment at home(Y/N) : ");
               proceed= obj.next().charAt(0);
               System.out.println("");
               System.out.print("Do you a student? ");
               char student = obj.next().charAt(0);

               System.out.print("Set your Time and Date : ");
              time = obj.nextLine();
               date = obj.nextLine();

               System.out.println("");
               System.out.println("SERVICES");
               System.out.println("");
               System.out.println(" 1 : Haircut ");
               System.out.println(" 2 : Wash & Blow ");
               System.out.println(" 3 : Chemical Work ");
               System.out.println(" 4 : Treatment");


           System.out.println("");
            System.out.print(" Please Enter the number of services : ");
            service = obj.nextInt();

            System.out.println(" \nChemical Work: ");
                System.out.println("");
                System.out.print("1.Colouring :");
                System.out.println("\t\t\t\t\tRM 75");
                System.out.print("2.Perming :");
                System.out.println("\t\t\t\t\tRM 80");
                System.out.print("3.Rebonding :");
                System.out.println("\t\t\t\t\tRM 90");
                System.out.print("4.Relaxing :");
                System.out.println("\t\t\t\t\tRM 80");
                System.out.println("");
                System.out.print("Please Enter your choice: ");
                service1 = obj.nextInt();

            // student on weekdays

            Dis1= perming-(perming*0.25);
            System.out.println("");
            System.out.println("Perming                  : RM "+ perming);
            System.out.println("Price after discount : RM "+ Dis1);
            System.out.println("");


            System.out.println("");
            System.out.print("Do you want to proceed? (Y/N)");
```

```
                proceed = obj.next().charAt(0);


                   studentprice = Dis1+servicefee;
                   System.out.println("");
                   System.out.println("******RECEIPT******");
                   System.out.println("");
                System.out.println("Time and Date For Appointment:" + time + date);
                   System.out.println("");
                   System.out.println("Perming     : RM " + Dis1);
                   System.out.println("Service fee : RM " + servicefee);
                   System.out.println("\n");
                System.out.println("TOTAL price to be paid : RM " + studentprice );
                   System.out.println("");
                   System.out.println("Thank you for your booking !");
                   System.out.println(" ps: cancel anytime");



        }

}
```

OUTPUT

```
*****************************************

WELCOME TO LE'TOUCH SALON

*****************************************
WORKING HOUR
Sunday : closed
Monday - Thursday : 11 am - 9 pm
Friday - Saturday : 10 am - 10 pm

Please Enter Your Name: NURIN
Please Enter Your IC: 12345678
Please Enter Your Address: UUM, SINTOK
Please Enter Your Phone Number: 0142529591
Please Enter your gender: F

PERSONAL DETAILS

Name: NURIN
IC: 12345678
Address: UUM, SINTOK
Phone Number: 142529591
Gender : F

Do you want to book an appointment at home(Y/N) : N

Do you a student?  Y
Set your Time and Date : 1:00 PM 20/12

SERVICES
```

```
1 : Haircut
2 : Wash & Blow
3 : Chemical Work
4 : Treatment

Please Enter the number of services : 3

Chemical Work:

1.Colouring :                          RM 75
2.Perming :                            RM 80
3.Rebonding :                          RM 90
4.Relaxing :                           RM 80

Please Enter your choice: 2

Perming              : RM 80.0
Price after discount : RM 60.0


Do you want to proceed? (Y/N)Y

******RECEIPT******

Time and Date For Appointment:1:00 PM 20/12

Perming     : RM 60.0
Service fee : RM 15.0


TOTAL price to be paid : RM 75.0

Thank you for your booking !
ps: cancel anytime
```

```java
package assignment;
import java.util.Scanner;
public class Studentweekends {

	public static void main(String[] args) {
		// TODO Auto-generated method stub


		Scanner obj = new Scanner(System.in);

		String name,address,IC;
		   String date;
		   String time;
		   int phone,service,service1;
		   double studentprice,custprice,custprice1;
		   char proceed,gender;
		   boolean weekends=true;
		   double haircutmale =25.0,haircutfemale =30.0;
		   double haircutmale2 = 45.0, haircutfemale2 = 55.0;
		   double wash1= 25.0,wash2= 30.0,relaxing =80.0;
		    double colouring = 75.0,perming=80.0,rebonding = 90.0;
		   double scalp = 100.0, relax =115.0, keratin =150.0;
		   double studentprice1,studentprice2,total;
		   double total1,total2,total3,total4,total5,Promo,Promo1,Allprice;
		   double servicefee=15.0, totalhome, fee = 80.0;
		   double Dis1, Dis2, Dis3,bothcust;


System.out.println("*****************************************");
                    System.out.print("\n");
                    System.out.println("\tWELCOME TO LE'TOUCH SALON ");
                    System.out.print("\n");

System.out.println("*****************************************");

                    System.out.println("\t WORKING HOUR");
                    System.out.println(" Sunday : closed");
                    System.out.println(" Monday - Thursday : 11 am - 9 pm");
                    System.out.println(" Friday - Saturday : 10 am - 10 pm");


                     System.out.print("\n");
                    System.out.print("Please Enter Your Name: ");
                    name = obj.nextLine();
                    System.out.print("Please Enter Your IC: ");
                    IC = obj.nextLine();
                    System.out.print("Please Enter Your Address: ");
                    address = obj.nextLine();
                    System.out.print("Please Enter Your Phone Number: ");
                    phone = obj.nextInt();
                    System.out.print("Please Enter your gender: ");
                    gender = obj.next().charAt(0);


                   System.out.print("\n");
                    System.out.println("PERSONAL DETAILS ");
```

```
                System.out.print("\n");
                System.out.println("Name: " + name);
                System.out.println("IC: " + IC);
                System.out.println("Address: " + address);
                System.out.println("Phone Number: " + phone);
                System.out.println("Gender : " + gender);
                System.out.println("");
System.out.print("Do you want to book an appointment at home(Y/N) : ");
                proceed= obj.next().charAt(0);
                System.out.println("");
                System.out.print("Do you a student? ");
                char student = obj.next().charAt(0);


                System.out.print("Set your Time and Date : ");
                 time = obj.nextLine();
                date = obj.nextLine();

                System.out.println("");
                System.out.println("SERVICES");
                System.out.println("");
                System.out.println(" 1 : Haircut ");
                System.out.println(" 2 : Wash & Blow ");
                System.out.println(" 3 : Chemical Work ");
                System.out.println(" 4 : Treatment");


         System.out.println("");
        System.out.print(" Please Enter the number of services : ");
        service = obj.nextInt();

            System.out.println(" \nTreatment: ");
            System.out.println("");
            System.out.print("1.Scalp Treatment :");
            System.out.println("\t\t\t\tRM 100");
            System.out.print("2.Relax Treatment :");
            System.out.println("\t\t\t\tRM 115");
            System.out.print("3.Keratin Treatment :");
            System.out.println("\t\t\t\tRM 150");

            System.out.println("");
            System.out.print("Please Enter your choice : ");
            service1 = obj.nextInt();


        Dis2 = keratin-(keratin*0.30);
        System.out.println("");
        System.out.println("Keratin Treatment    : RM "+keratin);
        System.out.println("Price after discount : RM "+Dis2);
        System.out.println("");
        System.out.print("Do you want to proceed? (Y/N) ");
        proceed = obj.next().charAt(0);



  studentprice1 = Dis2+ servicefee;
  System.out.println("");
  System.out.println("**********RECEIPT**********");
  System.out.println("");
```

```
        System.out.println("Time and Date For Appointment :" + time + date);
        System.out.println("");
        System.out.println("Keratin Treatment : RM "+ Dis2);
        System.out.println("Service fee       : RM "+ servicefee);
        System.out.println("\n");
        System.out.println("TOTAL price to be paid : RM "+ studentprice1);
        System.out.println("");
        System.out.println("Thank you for your booking !");
        System.out.println(" ps: cancel anytime");


}}
```

OUTPUT

```
****************************************

      WELCOME TO LE'TOUCH SALON

****************************************
       WORKING HOUR
 Sunday : closed
 Monday - Thursday : 11 am - 9 pm
 Friday - Saturday : 10 am - 10 pm

Please Enter Your Name: NURIN
Please Enter Your IC: 7654321
Please Enter Your Address: UUM,SINTOK
Please Enter Your Phone Number: 1234567
Please Enter your gender: F

PERSONAL DETAILS

Name: NURIN
IC: 7654321
Address: UUM,SINTOK
Phone Number: 1234567
Gender : F

Do you want to book an appointment at home(Y/N) : N

Do you a student?  Y
Set your Time and Date : 5:00 PM 25/12

SERVICES

 1 : Haircut
 2 : Wash & Blow
```

```
 3 : Chemical Work
 4 : Treatment

 Please Enter the number of services : 4

Treatment:

1.Scalp Treatment :                    RM 100
2.Relax Treatment :                    RM 115
3.Keratin Treatment :                  RM 150

Please Enter your choice : 3

Keratin Treatment    : RM 150.0
Price after discount : RM 105.0

Do you want to proceed? (Y/N)  Y

**********RECEIPT**********

Time and Date For Appointment :5:00 PM 25/12

Keratin Treatment : RM 105.0
Service fee       : RM 15.0


TOTAL price to be paid : RM 120.0

Thank you for your booking !
 ps: cancel anytime
```

Coding for a normal customer

```java
package assignment;
import java.util.Scanner;
public class Normalcustomer {

	public static void main(String[] args) {
		// TODO Auto-generated method stub


		Scanner obj = new Scanner(System.in);

		   String name,address,IC;
		   String date;
		   String time;
		   int phone,service,service1;
		   double studentprice,custprice,custprice1;
		   char proceed,gender;
		   boolean weekends=true;
		   double haircutmale =25.0,haircutfemale =30.0;
		   double haircutmale2 = 45.0, haircutfemale2 = 55.0;
		   double wash1= 25.0,wash2= 30.0, relaxing =80.0;
		   double colouring = 75.0,perming=80.0,rebonding = 90.0;
		   double scalp = 100.0, relax =115.0, keratin =150.0;
		   double studentprice1,studentprice2,total;
		   double total1,total2,total3,total4,total5,promo1,promo;
		   double fee=80.0,totalhome,servicefee=15.0;
		   double Dis1,Dis2,Dis3,Allprice,bothcust;


System.out.println("*****************************************");
		   System.out.print("\n");
		   System.out.println("\tWELCOME TO LE'TOUCH SALON ");
		   System.out.print("\n");

System.out.println("*****************************************");

		   System.out.println("\t WORKING HOUR");
		   System.out.println(" Sunday : closed");
		   System.out.println(" Monday - Thursday : 11 am - 9 pm");
		   System.out.println(" Friday - Saturday : 10 am - 10 pm");


		  System.out.print("\n");
		   System.out.print("Please Enter Your Name: ");
		   name = obj.nextLine();
		   System.out.print("Please Enter Your IC: ");
		   IC = obj.nextLine();
		   System.out.print("Please Enter Your Address: ");
		   address = obj.nextLine();
		   System.out.print("Please Enter Your Phone Number: ");
		   phone = obj.nextInt();
		   System.out.print("Please Enter your gender: ");
		   gender = obj.next().charAt(0);



		  System.out.print("\n");
		   System.out.println("PERSONAL DETAILS ");
		   System.out.print("\n");
		   System.out.println("Name: " + name);
```

```
                System.out.println("IC: " + IC);
                System.out.println("Address: " + address);
                System.out.println("Phone Number: " + phone);
                System.out.println("Gender : " + gender);
                System.out.println("");
System.out.print("Do you want to book an appointment at home(Y/N) : ");
                proceed= obj.next().charAt(0);
                System.out.println("");

                System.out.print("Do you a student? (Y/N)    ");
                char student = obj.next().charAt(0);


                //if N

                System.out.print("Set your Time and Date : ");
                 time = obj.nextLine();
                date = obj.nextLine();
               System.out.println("");
                System.out.println("");
                System.out.println("SERVICES");
                System.out.println("");
                System.out.println(" 1 : Haircut ");
                System.out.println(" 2 : Wash & Blow ");
                System.out.println(" 3 : Chemical Work ");
                System.out.println(" 4 : Treatment");


            System.out.println("");
            System.out.print(" Please Enter the number of services : ");
            service = obj.nextInt();

            System.out.println(" \nTreatment: ");
            System.out.println("");
            System.out.print("1.Scalp Treatment :");
            System.out.println("\t\t\t\tRM 100");
            System.out.print("2.Relax Treatment :");
            System.out.println("\t\t\t\tRM 115");
            System.out.print("3.Keratin Treatment :");
            System.out.println("\t\t\t\tRM 150");

            System.out.println("");
            System.out.print("Please Enter your choice : ");
            service1 = obj.nextInt();


          total= relax;
          System.out.println("");
          System.out.println(" Relax Treatment : RM"+ total);
          System.out.println("");
          System.out.print("Do you want to proceed? (Y/N) ");
          proceed = obj.next().charAt(0);

             custprice = total+servicefee;
             System.out.println("");
         System.out.println("**********RECEIPT**********");
         System.out.println("");
        System.out.println("Time and Date For Appointment :" + time + date);
        System.out.println("");
```

```
            System.out.println("Relax Treatment : RM "+ total);
            System.out.println("Service fee     : RM "+ servicefee);
            System.out.println("");
            System.out.println("TOTAL price to be paid: RM "+ custprice);
            System.out.println("\n");
            System.out.println("Thank you for your booking !");
             System.out.println(" ps: cancel anytime");




      }

}
```

OUTPUT

```
****************************************

      WELCOME TO LE'TOUCH SALON

****************************************
       WORKING HOUR
 Sunday : closed
 Monday - Thursday : 11 am - 9 pm
 Friday - Saturday : 10 am - 10 pm

Please Enter Your Name: NURIN
Please Enter Your IC: 7654321
Please Enter Your Address: UUM,SINTOK
Please Enter Your Phone Number: 1234567
Please Enter your gender: F

PERSONAL DETAILS

Name: NURIN
IC: 7654321
Address: UUM,SINTOK
Phone Number: 1234567
Gender : F

Do you want to book an appointment at home(Y/N) : N

Do you a student? (Y/N)   N
Set your Time and Date : 11 AM 23/12


SERVICES

 1 : Haircut
 2 : Wash & Blow
 3 : Chemical Work
 4 : Treatment

 Please Enter the number of services : 4
```

```
Treatment:

1.Scalp Treatment :                     RM 100
2.Relax Treatment :                     RM 115
3.Keratin Treatment :                   RM 150

Please Enter your choice : 2

 Relax Treatment : RM115.0

Do you want to proceed? (Y/N) Y

**********RECEIPT**********

Time and Date For Appointment :11 AM 23/12

Relax Treatment : RM 115.0
Service fee     : RM 15.0

TOTAL price to be paid: RM 130.0


Thank you for your booking !
 ps: cancel anytime
```

Coding for customers who book a treatment at home

```java
package  assignment;
import java.util.Scanner;
public class Bookinghome {

	public static void main(String[] args) {
		// TODO Auto-generated method stub

		Scanner obj = new Scanner (System.in);


		 String name,address,IC;
		   String date;
		   String time;
		   int phone,service,service1;
		   double studentprice,custprice,custprice1;
		   char proceed,gender;
		   boolean weekends=true;
		   double haircutmale =25.0,haircutfemale =30.0;
		   double haircutmale2 = 45.0, haircutfemale2 = 55.0;
		   double wash1= 25.0,wash2= 30.0,relaxing =80.0;
		   double colouring = 75.0,perming=80.0,rebonding = 90.0;
		   double scalp = 100.0, relax =115.0, keratin =150.0;
		   double studentprice1,studentprice2,total;
		   double total1,total2,total3,total4,total5,promo1,promo;
		   double fee=80.0,totalhome,servicefee=15.0;
		   double Dis1,Dis2,Dis3,bothcust,Allprice;


System.out.println("*****************************************");
		   System.out.print("\n");
		   System.out.println("\tWELCOME TO LE'TOUCH SALON ");
		   System.out.print("\n");

System.out.println("*****************************************");

		   System.out.println("\tWORKING HOUR");
		   System.out.println(" Sunday : closed");
		   System.out.println(" Monday - Thursday : 11 am - 9 pm");
		   System.out.println(" Friday - Saturday : 10 am - 10 pm");


		System.out.print("\n");
		   System.out.print("Please Enter Your Name: ");
		   name = obj.nextLine();
		   System.out.print("Please Enter Your IC: ");
		   IC = obj.nextLine();
		   System.out.print("Please Enter Your Address: ");
		   address = obj.nextLine();
		   System.out.print("Please Enter Your Phone Number: ");
		   phone = obj.nextInt();
		   System.out.print("Please Enter your gender: ");
		   gender = obj.next().charAt(0);


		  System.out.print("\n");
		   System.out.println("PERSONAL DETAILS ");
		   System.out.print("\n");
		   System.out.println("Name: " + name);
		   System.out.println("IC: " + IC);
```

```
                System.out.println("Address: " + address);
                System.out.println("Phone Number: " + phone);
                System.out.println("Gender : " + gender);
                System.out.println("");
System.out.print("Do you want to book an appointment at home(Y/N): ");
                proceed= obj.next().charAt(0);
                System.out.println("");


                //if Y

                System.out.print("Set your Time and Date : ");
        time = obj.nextLine();
                date = obj.nextLine();

                System.out.println("");
                System.out.println("SERVICES");
                System.out.println("");
                System.out.println(" 1 : Haircut ");
                System.out.println(" 2 : Wash & Blow ");
                System.out.println(" 3 : Chemical Work ");
                System.out.println(" 4 : Treatment");


            System.out.println("");
            System.out.print(" Please Enter the number of services : ");
            service = obj.nextInt();

            System.out.println(" \nTreatment: ");
            System.out.println("");
            System.out.print("1.Scalp Treatment :");
            System.out.println("\t\t\t\tRM 100");
            System.out.print("2.Relax Treatment :");
            System.out.println("\t\t\t\tRM 115");
            System.out.print("3.Keratin Treatment :");
            System.out.println("\t\t\t\tRM 150");

            System.out.println("");
            System.out.print("Please Enter your choice : ");
            service1 = obj.nextInt();


            bothcust = scalp;
         System.out.println("");
         System.out.println(" Scalp Treatment : RM"+ scalp);
         System.out.println("");
         System.out.print("Do you want to proceed? (Y/N) ");
         proceed = obj.next().charAt(0);

            totalhome=(bothcust+fee)*0.15;
            Allprice = (bothcust+fee)- totalhome;

            System.out.println("");
        System.out.println("**********RECEIPT**********");
        System.out.println("");
        System.out.println("Address: " + address);
        System.out.println("Time and Date For Appointment :" + time + date);
         System.out.println("");
         System.out.println("Scalp Treatment    : RM "+ bothcust);
```

```
                System.out.println("Transportation fee : RM "+ fee);
                 System.out.println("Total Discount     : RM-"+ totalhome);
                 System.out.println("\n");
                 System.out.println(" TOTAL price to be paid : RM" + Allprice);
                 System.out.println("");
                 System.out.println("Thank you for your booking !");
                System.out.println(" ps: cancel anytime");




        }

}
```

OUTPUT

```
*****************************************

       WELCOME TO LE'TOUCH SALON

*****************************************
       WORKING HOUR
 Sunday : closed
 Monday - Thursday : 11 am - 9 pm
 Friday - Saturday : 10 am - 10 pm

Please Enter Your Name: NURIN
Please Enter Your IC: 7654321
Please Enter Your Address: UUM,SINTOK
Please Enter Your Phone Number: 1234567
Please Enter your gender: F

PERSONAL DETAILS

Name: NURIN
IC: 7654321
Address: UUM,SINTOK
Phone Number: 1234567
Gender : F

Do you want to book an appointment at home(Y/N): Y

Set your Time and Date : 8 PM 28/12

SERVICES

 1 : Haircut
 2 : Wash & Blow
 3 : Chemical Work
 4 : Treatment
```

```
 Please Enter the number of services : 4

Treatment:

1.Scalp Treatment :                    RM 100
2.Relax Treatment :                    RM 115
3.Keratin Treatment :                  RM 150

Please Enter your choice : 1

 Scalp Treatment : RM100.0

Do you want to proceed? (Y/N) Y

**********RECEIPT**********

Address: UUM,SINTOK
Time and Date For Appointment :8 PM 28/12

Scalp Treatment    : RM 100.0
Transportation fee : RM 80.0
Total Discount     : RM-27.0


 TOTAL price to be paid : RM153.0

Thank you for your booking !
 ps: cancel anytime
```

Reference

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