



CENTRE FOR MATHEMATICAL SCIENCES

BSD2213
DATA SCIENCE PROGRAMMING I

SEMESTER II SESSION 2022/23
GROUP PROJECT

GRAPHICAL USER INTERFACE (GUI) USING PYTHON

GROUP MEMBERS

NAME	STUDENT ID
TAN CHEK CHENG	SD21031
BANU SHREE A/P SHANMUGAM	SD21029
NORAMERA BINTI AZMAN	SD21046
NUR SYAZREEN BINTI ISMAIL	SD21050

LECTURER : DR NORAZIAH BINTI ADZHAR
SUBMISSION DATE : 26 JANUARY 2023

TABLE OF CONTENTS

1.0 INTRODUCTION

2.0 WHY THIS PROJECT?

3.0 HOW CAN THIS PROJECT BE EXTENDED?

4.0 SOURCE CODE

5.0 GUI SCREENSHOT

1.0 INTRODUCTION

Juice is a liquid drink that get from extraction a fruit using a tools or bare hand without the application of heat or any solvents. Juice could be more demanded during summer season cause this drink could bring reliefs to the person who drink it. Juice rich with vitamin C is important now since many diseases have an outbreak after covid 19. Since vitamin c could help boosting our immunity, it could also help us to prevent from any diseases such as lowering blood pressure, gout attacks and improving iron absorption.

Different fruit it has different values of Vitamin C. Our system is complete with the vitamin c information in each fruit by display it to the user vitamin c contain in an average size of the fruit. Our system uses Recommendation Dietary Allowances (RDA) to tell the user suitable dietary intake level vitamin C according to gender and age of the user. User also could try their own recipe with their favorites fruits by inputs amount each fruit the want for each fruit and then the system will calculate the vitamin c measure user could get with that amount. So, from that user could know if the vitamin C intake is suitable with their RDA calculation or not.

Recommendation Dietary Allowances (RDA) for MALE

AGE	VITAMIN C INTAKE
1 to 3 years old	15 mg/day
4 to 8 years old	25 mg/day
9 to 13 years old	45 mg/day
14 to 18 years old	75 mg/day
19 years old and older	90 mg/day

Recommendation Dietary Allowances (RDA) for FEMALE

AGE	VITAMIN C INTAKE
1 to 3 years old	15 mg/day
4 to 8 years old	25 mg/day
9 to 13 years old	45 mg/day
14 to 18 years old	65 mg/day
19 years old and older	70 mg/day

Vitamin C Intake Calculator

FRUIT	VITAMIN C
Apple	4.1 mg
Orange	30.6 mg
Kiwi	69 mg
Lemon	58 mg
Tomato	12.8 mg
Grapefruit	41.3 mg
Papaya	57.4 mg

2.0 WHY THIS PROJECT

The reason why we choose this project is that as healthy people, we want to know what is best for us. This system aims to provide a guide for a daily balance vitamin C juicing recipe to different according to their calculated Recommended Daily Allowance (RDA). Based on RDA, we could know how much vitamin C we have to take for our daily life.

The ongoing COVID-19 pandemic has highlighted the importance of maintaining a strong immune system, and vitamin C known to support immune function. The current fast-paced lifestyle and busy schedule, many people are facing difficulties in maintaining a balanced diet, a juicing recipe system can be a useful tool for ensuring that they are getting the recommended daily intake of vitamin C. With more people working from home and cooking at home, a juicing recipe system can provide an easy and convenient way to incorporate more fruits into their diet, which can improve overall health.

With the increased awareness of the importance of healthy eating and the potential health benefits of consuming a diet high in fruits and vegetables, a balanced vitamin C juicing recipe system can be a useful tool for promoting healthier eating habits. Additionally, many people are looking for ways to boost their immune system and protect themselves from the virus in this pandemic situation, a balanced vitamin C juicing recipe system can be a valuable resource for those looking to improve their health and wellness

The main menu has 4 buttons. The first button is “User’s Guide”. Users can understand deeply how to use our system correctly. Furthermore, the second button is “Nutrient info” which is user could know the vitamin C contain in recommended fruit based on average size. Next, the button “Calculate RDA” where user can calculate their RDA of vitamin C based on their age and gender. The last button is

“Try your recipe” which is user can make the recipe by mixing different fruits and calculating the total vitamin C of the user’s juicing recipe.

For this system, we have 7 different fruits available which are apple, orange, kiwi, lemon, tomato, grapefruit and papaya. Before proceeding to make your own juice, we will show you how much vitamin C contains in those fruits based on the average size in milligrams (mg) so that the user can decide what are the best fruits for them.

After you have decided what fruits you want, you may now try your juice recipe. Before you enter how many fruits you want, we will give you advice for balanced vitamin C intake. Let’s say your RDA is more than your juicing recipe vitamin C you have to add more fruit for higher your vitamin C intake. If your recipe vitamin C is $\pm 5.0\text{mg}$ of your RDA, then your juicing recipe is well-balanced. But if your RDA is less than your juicing recipe vitamin C, you have to add less fruit for lower your vitamin C intake. You may now proceed to enter how many fruits you want as it will calculate the total vitamin C contained in the fruits you chose just now.

3.0 HOW CAN THIS PROJECT BE EXTENDED?

Based on the system we developed, we feel there is still potential for development in order to make our project more beneficial. To improve the system, we need to include other nutritional information other than vitamin C, such as vitamin a, vitamin b, vitamin c, vitamin d, and mineral and fibre information. This might improve the accuracy of our system calculator in producing an actual balanced nutrient juicing recipe for users. Users may learn about their daily nutritional consumption and arrange their recipe appropriately. This approach might incorporate more fruits options such as grape, blueberry ,pineapple, starfruit and so on. Users will have additional options to organise their recipe and improve the variety of nutrient intake this way.

Aside from that, we would want to add certain features that record the health state of users so that we can learn about their illnesses. The system would then provide advice on juicing recipes so that users may avoid consuming harmful fruits in worsening their health condition. This function needs the assistance of an experienced specialist so that the system does not mislead the users.

Additionally, this system can connect to a few live-updated juicing recipe websites. so that people from all groups may interact and exchange great juicing recipes and nutritional information. Users are therefore free to experiment with different fruit combinations rather than being limited to just one or two recipes. It is also worth mentioning that users may share the best juicing recipe with one another so that they can all try it.

4.0 SOURCE CODE

```
from tkinter import *
from tkinter import PhotoImage
from tkinter import Frame
from tkinter import Label

mainWindow = Tk()

image1 =
PhotoImage(file="C:\\Users\\User\\Downloads\\FNIS(4).png")
background_label = Label(mainWindow, image=image1)
background_label.place(x=0, y=0, relwidth=1, relheight=1)

mainWindow.title("Balanced Vitamin C juicing recipe system")
mainWindow.geometry("800x600")

headingFrame1 = Frame(mainWindow,bg="#5ce1e6",bd=5)
headingFrame1.place(relx=0.05,rely=0.1,relwidth=0.9,relheight=0.16)
headingLabel = Label(headingFrame1, text="Welcome to \n Balanced
Vitamin C juicing recipe system", bg='black', fg='white',
font=('Courier',18))
headingLabel.place(relx=0,rely=0, relwidth=1, relheight=1)

def user_guide():
    root3 = Toplevel()
    root3.title("User Guide")
    root3.resizable(False, False)
    root3.geometry("900x800")
    root3.config(bg='light blue')

    m1 = Frame(root3, bg="lightyellow",
highlightbackground="black", highlightthickness=1, width=850,
height=250)
    m1.place(x=20, y=50)

    title = Label(m1, text="Function of each menu", font=("aria",
10, "bold"), fg="darkblue", bg="lightyellow")
    title.place(x=350, y=10)

    Label(m1, font=("aria", 10, "bold"), text="1.User's Guide-
User can understand deeply in our system.", fg="skyblue2",
bg="lightyellow").place(x=40, y=40)
```



```

Label(m1, font=("aria", 10, "bold"),
      text="2.Nutrient info-User can know the vitamin c
content in recommended fruit based on avergae size.",
      fg="skyblue2", bg="lightyellow").place(x=40, y=80)
Label(m1, font=("aria", 10, "bold"),
      text="3.Calculate RDA- User can calculate thier vitamin
c RDA based on their age and gender.", fg="skyblue2",
      bg="lightyellow").place(x=40, y=120)
Label(m1, font=("aria", 10, "bold"),
      text="4.Try your recipe- User can make recipe by mixing
different fruits and calculate the total vitamin c of user's
juicing recipe.",
      fg="skyblue2", bg="lightyellow").place(x=40, y=160)

m2 = Frame(root3, bg="lightyellow",
highlightbackground="black", highlightthickness=1, width=850,
height=200)
m2.place(x=20, y=320)

title1 = Label(m2, text="Purpose of this system",
font=("aria", 10, "bold"), fg="darkblue", bg="lightyellow")
title1.place(x=350, y=10)

Label(m2, font=("aria", 10, "bold"),
      text=" This system aims to provide a guide for a daily
balanced vitamin c juicing recipe to different users ",
      fg="skyblue2", bg="lightyellow").place(x=85, y=60)
Label(m2, font=("aria", 10, "bold"), text=" according to
their calculated Recommendation Daily Allowance(RDA). ",
      fg="skyblue2", bg="lightyellow").place(x=170, y=90)

m3 = Frame(root3, bg="lightyellow",
highlightbackground="black", highlightthickness=1, width=850,
height=200)
m3.place(x=20, y=550)

title2 = Label(m3, text="Why vitamin c is so important?",
font=("aria", 10, "bold"), fg="darkblue",
      bg="lightyellow")
title2.place(x=350, y=10)

Label(m3, font=("aria", 10, "bold"),
      text=" Vitamin C has been linked to many impressive
health benefits, such as boosting antioxidant levels, ",
      fg="skyblue2", bg="lightyellow").place(x=85, y=50)
Label(m3, font=("aria", 10, "bold"),
      text=" lowering blood pressure, protecting against gout
attacks, improving iron absorption, ", fg="skyblue2",
      bg="lightyellow").place(x=135, y=75)

```

```

        Label(m3, font=("aria", 10, "bold"), text=" boosting
immunity, and reducing heart disease and dementia risk.",
              fg="skyblue2", bg="lightyellow").place(x=165, y=100)

        back_button = Button(root3, text="Back to Main Menu",
command=root3.destroy)
        back_button.config(bg='black', fg='white')
        back_button.place(x=10, y=20)

image2 =
PhotoImage(file="C:\\Users\\User\\Downloads\\FNIS (3) .png")
def nutrient_info():
    root2 = Toplevel(mainWindow)
    root2.title("Fruit Nutrients Info")
    root2.geometry("800x600")
    root2.resizable(False, False)
    background_label2 = Label(root2, image=image2,bg='#3a7067')
    background_label2.place(x=0, y=0, relwidth=1, relheight=1)

    headingFrame1 = Frame(root2, bg="#5ce1e6", bd=5)
    headingFrame1.place(relx=0.2, rely=0.1, relwidth=0.6,
relheight=0.16)
    headingLabel = Label(headingFrame1, text="VITAMIN C CONTAIN
IN YOUR\\n FAVOURITE FRUITS", bg='#182e2a',
fg='white',font=('Courier', 18,'bold'))
    headingLabel.place(relx=0, rely=0, relwidth=1, relheight=1)

    apple = Label(root2,
        text="APPLE"
            "\\n"
            "\\n Size:"
            "\\n Average - 4.1mg",
        fg='purple',
        bg='pink',
        width=18,
        height=8,
        font=('Times', 14))
    apple.place(relx=0.2,rely=0.3, relwidth=0.2,relheight=0.2)

    orange = Label(root2,
        text="ORANGE"
            "\\n"
            "\\n Size:"
            "\\n Average - 30.6mg",
        fg='orange red4',
        bg='tan1',
        width=18,

```

```

        height=8,
        font=('Times', 14))
orange.place(relx=0.4,relly=0.3, relwidth=0.2,relheight=0.2)

kiwi = Label(root2,
    text="KIWI"
        "\n"
        "\n Size:"
        "\n Average - 69mg",
    fg='dark green',
    bg='pale green',
    width=18,
    height=8,
    font=('Times', 14))
kiwi.place(relx=0.6,relly=0.3, relwidth=0.2,relheight=0.2)

lemon = Label(root2,
    text="LEMON"
        "\n"
        "\n Size:"
        "\n Average - 58mg",
    fg='blue',
    bg='yellow',
    width=18,
    height=8,
    font=('Times', 14))
lemon.place(relx=0.2,relly=0.5, relwidth=0.2,relheight=0.2)

tomato = Label(root2,
    text="TOMATO"
        "\n"
        "\n Size:"
        "\n Average - 12.8mg",
    fg='red4',
    bg='light pink1',
    width=18,
    height=8,
    font=('Times', 14))
tomato.place(relx=0.4,relly=0.5, relwidth=0.2,relheight=0.2)

Grapefruit = Label(root2,
    text="GRAPEFRUIT"
        "\n"
        "\n Size:"
        "\n Average - 41.3mg",
    fg='blue4',
    bg='light sky blue2',
    width=18,

```

```

        height=8,
        font=('Times', 14))
    Grapefruit.place(relx=0.6, rely=0.5, relwidth=0.2,
relheight=0.2)

    papaya = Label(root2,
        text="PAPAYA"
        "\n"
        "\n Size:"
        "\n Average - 57.4mg",
        fg='saddle brown',
        bg='navajo white',
        width=18,
        height=8,
        font=('Times', 14))
    papaya.place(relx=0.4, rely=0.7, relwidth=0.2, relheight=0.2)

    back_button = Button(root2, text="Back to Main Menu",
command=root2.destroy)
    back_button.config(bg='black', fg='white')
    back_button.place(x=335, y=550)

image3 =
PhotoImage(file="C:\\Users\\User\\Downloads\\Nutrient(2).png")
def calcRDA():
    root1 = Toplevel()
    root1.geometry("800x600")
    root1.configure(bg="#3a7067")
    root1.resizable(False, False)
    root1.title("Vitamin C RDA calculator")

    background_label2 = Label(root1, image=image3, bg='#3a7067')
    background_label2.place(x=0, y=0, relwidth=1, relheight=1)

    frame = Frame(root1, padx=10, pady=10)
    frame.place(x=200, y=330)
    ageValue = StringVar()
    ageEntry = Entry(root1, textvariable=ageValue, width=30,
bd=3, font=20)
    ageEntry.place(x=310, y=300)

    nameValue = StringVar()
    nameEntry = Entry(root1, textvariable=nameValue, width=30,
bd=3, font=20)
    nameEntry.place(x=310, y=250)

    gender_button = IntVar()
    male = Radiobutton(frame, text="Male", bg='yellow',

```

```

font=('bold', 12), variable=gender_button, value=0)
    female = Radiobutton(frame, text="Female",bg='pink'
,font=('bold', 12), variable=gender_button, value=1)
    male.grid(row=3, column=1, pady=3)
    female.grid(row=3, column=2, pady=3)
    gender_label = Label(frame, text='Enter your gender
',bg='light blue', font=('bold', 12))
    gender_label.grid(row=3, column=0, sticky=W)

    Label(root1,text="Name",bg='light blue' ,
font=23).place(x=210, y=250)
    Label(root1,text="Age",bg='light blue' ,font=23).place(x=210,
y=300)

def calculateRDA():
    if gender_button.get() == 0:
        if int(ageEntry.get()) <= 3:
            Label(root1,text=f"Hi {nameValue.get()} ^^",
font=30).place(x=350, y=460)
            Label(root1,text=f"The Recommended Dietary
Allowance (RDA) of vitamin C for children 1-3 years old:15
mg/day.",font=30).place(x=70, y=490)
        elif int(ageEntry.get()) <= 8:
            Label(root1,text=f"Hi {nameValue.get()} ^^",
font=30).place(x=350, y=460)
            Label(root1,text=f"The Recommended Dietary
Allowance (RDA) of vitamin C for children 4-8 years old:25
mg/day.",font=30).place(x=70, y=490)
        elif int(ageEntry.get()) <= 13:
            Label(root1,text=f"Hi {nameValue.get()} ^^",
font=30).place(x=350, y=460)
            Label(root1,text=f"The Recommended Dietary
Allowance (RDA) of vitamin C for adolescents 9-13 years old:45
mg/day.",font=30).place(x=70, y=490)
        elif int(ageEntry.get()) <= 18:
            Label(root1,text=f"Hi {nameValue.get()} ^^",
font=30).place(x=350, y=460)
            Label(root1,text=f"The Recommended Dietary
Allowance (RDA) of vitamin C for males 14-18 years old:75
mg/day.",font=30).place(x=70, y=490)
        else:
            Label(root1,text=f"Hi {nameValue.get()} ^^",
font=30).place(x=350, y=460)
            Label(root1,text=f"The Recommended Dietary
Allowance (RDA) of vitamin C for males 19 years old and older:90
mg/day.",font=30).place(x=65, y=490)
        else:

```

```

        if int(ageEntry.get()) <= 3:
            Label(root1,text=f"Hi {nameValue.get()} ^^",
font=30).place(x=350, y=460)
            Label(root1,text=f"The Recommended Dietary
Allowance (RDA) of vitamin C for children 1-3 years old:15
mg/day.",font=30).place(x=70, y=490)
        elif int(ageEntry.get()) <= 8:
            Label(root1,text=f"Hi {nameValue.get()} ^^",
font=30).place(x=350, y=460)
            Label(root1,text=f"The Recommended Dietary
Allowance (RDA) of vitamin C for children 4-8 years old:25
mg/day.",font=30).place(x=70, y=490)
        elif int(ageEntry.get()) <= 13:
            Label(root1,text=f"Hi {nameValue.get()} ^^",
font=30).place(x=350, y=460)
            Label(root1,text=f"The Recommended Dietary
Allowance (RDA) of vitamin C for adolescents 9-13 years old:45
mg/day.",font=30).place(x=70, y=490)
        elif int(ageEntry.get()) <= 18:
            Label(root1,text=f"Hi {nameValue.get()} ^^",
font=30).place(x=350, y=460)
            Label(root1,text=f"The Recommended Dietary
Allowance (RDA) of vitamin C for females 14-18 years old:65
mg/day.",font=30).place(x=70, y=490)
        else:
            Label(root1,text=f"Hi {nameValue.get()} ^^",
font=30).place(x=350, y=460)
            Label(root1,text=f"The Recommended Dietary
Allowance (RDA) of vitamin C for females 19 years old and
older:75 mg/day.",font=30).place(x=65, y=490)
            Label(root1,text=f"*Note* 1.👶 Pregnancy:85
mg/day", font=30).place(x=320, y=520)
            Label(root1,text=f"*Note* 2.👶 Lactation:120
mg/day", font=30).place(x=320, y=550)

        Button(root1,text="Calculate RDA", font=20, bg="black",
fg="white", width=11, height=2,
command=calculateRDA).place(x=340,y=390)
        back_button = Button(root1, text="Back to Main Menu",
command=root1.destroy)
        back_button.place(x=650, y=550)

def try_recipe():
    root = Toplevel()
    root.geometry("1280x720+150+80")
    root.resizable(False, False)
    root.title("Balanced Vitamin C Juicing Recipe Calculator")

```

```

def Reset():
    entry_apple.delete(0, END)
    entry_orange.delete(0, END)
    entry_kiwi.delete(0, END)
    entry_lemon.delete(0, END)
    entry_tomato.delete(0, END)
    entry_grapefruit.delete(0, END)
    entry_papaya.delete(0, END)

def VitaminC():
    try:
        a = int(apple.get())
    except:
        a = 0

    try:
        o = int(orange.get())
    except:
        o = 0

    try:
        k = int(kiwi.get())
    except:
        k = 0

    try:
        l = int(lemon.get())
    except:
        l = 0

    try:
        t = int(tomato.get())
    except:
        t = 0

    try:
        g1 = int(grapefruit.get())
    except:
        g1 = 0

    try:
        p = int(papaya.get())
    except:
        p = 0

    n1 = 4.1 * a
    n2 = 30.6 * o
    n3 = 69 * k
    n4 = 58 * l

```

```

n5 = 12.8 * t
n6 = 41.3 * g1
n7 = 57.4 * p

display_Vc = Label(f2, font=('aria', 20, 'bold'),
text="Total Vitamin C", width=22, fg="lightyellow",
bg="black")
display_Vc.place(x=0, y=50)
entry_Vc = Entry(f2, font=('aria', 20, 'bold'),
textvariable=Total_vc, bd=6, width=14, bg="lightgreen")
entry_Vc.place(x=80, y=100)

totalVcvalue = n1 + n2 + n3 + n4 + n5 + n6 + n7
string_Vc = str('%.2f' % totalVcvalue), "mg"
Total_vc.set(string_Vc)

Label(root, text="Vitamin C Juicing Recipe Calculator",
bg="black", fg="white", font=("calibri", 33), width="300",
height="4").pack()

f = Frame(root, bg="lightgreen", highlightbackground="black",
highlightthickness=1, width=370, height=400)
f.place(x=30, y=250)

f = Frame(root, bg="lightgreen", highlightbackground="black",
highlightthickness=1, width=400, height=400)
f.place(x=30, y=250)

Label(f, text="Start Trying Different", font=("Gabriola", 19,
"bold"), fg="black", bg="lightgreen").place(x=100,
y=0)
Label(f, text="Combination of juice!", font=("Gabriola", 19,
"bold"), fg="black", bg="lightgreen").place(x=100,
y=40)

Label(f, font=("Lucida Calligraphy", 13, "bold"),
text="Advise for balanced vitamin c intake", fg="blue4",
bg="lightgreen").place(x=5, y=100)
Label(f, font=("Lucida Calligraphy", 10, "bold"),
text="1.Your RDA>Your Juicing Recipe Vitamin C", fg="black",
bg="lightgreen").place(x=0, y=130)
Label(f, font=("Lucida Calligraphy", 10, "bold"), text="Add
More fruit for higher your vitamin c intake",
fg="darkgreen", bg="lightgreen").place(x=5, y=150)
Label(f, font=("Lucida Calligraphy", 10, "bold"),
text="2.Your Recipe Vitamin C= ±5.0mg of Your RDA", fg="black",
bg="lightgreen").place(x=0, y=180)

```



```

    Label(f, font=("Lucida Calligraphy", 10, "bold"), text="NICE!
Your Juicing Recipe is well balanced", fg="darkgreen",
        bg="lightgreen").place(x=5, y=200)
    Label(f, font=("Lucida Calligraphy", 10, "bold"),
text="3.Your RDA<Your Juicing Recipe Vitamin C", fg="black",
        bg="lightgreen").place(x=0, y=230)
    Label(f, font=("Lucida Calligraphy", 10, "bold"), text="Add
Less fruit for lower your vitamin c intake",
        fg="darkgreen", bg="lightgreen").place(x=5, y=250)

    f2 = Frame(root, bg="lightyellow",
highlightbackground="black", highlightthickness=1, width=370,
height=400)
    f2.place(x=880, y=250)

    Recipe = Label(f2, text="Your Juicing Recipe",
font=("calibri,20"), bg="lightyellow")
    Recipe.place(x=110, y=10)

    f1 = Frame(root, bd=5, height=400, width=450, relief=RAISED)
    f1.pack(pady=30)
    apple = StringVar()
    orange = StringVar()
    kiwi = StringVar()
    lemon = StringVar()
    tomato = StringVar()
    grapefruit = StringVar()
    papaya = StringVar()
    Total_vc = StringVar()

    display_apple = Label(f1, font=("aria", 20, "bold"),
text="Apple", width=12, fg="blue4")
    display_orange = Label(f1, font=("aria", 20, "bold"),
text="Orange", width=12, fg="blue4")
    display_kiwi = Label(f1, font=("aria", 20, "bold"),
text="kiwi", width=12, fg="blue4")
    display_lemon = Label(f1, font=("aria", 20, "bold"),
text="Lemon", width=12, fg="blue4")
    display_tomato = Label(f1, font=("aria", 20, "bold"),
text="Tomato", width=12, fg="blue4")
    display_grapefruit = Label(f1, font=("aria", 20, "bold"),
text="Grapefruit", width=12, fg="blue4")
    display_papaya = Label(f1, font=("aria", 20, "bold"),
text="Papaya", width=12, fg="blue4")

    display_apple.grid(row=1, column=0)
    display_orange.grid(row=2, column=0)
    display_kiwi.grid(row=3, column=0)
    display_lemon.grid(row=4, column=0)

```

```

display_tomato.grid(row=5, column=0)
display_grapefruit.grid(row=6, column=0)
display_papaya.grid(row=7, column=0)

entry_apple = Entry(f1, font=("aria", 20, "bold"),
textvariable=apple, bd=6, width=8, bg="lightpink")
entry_orange = Entry(f1, font=("aria", 20, "bold"),
textvariable=orange, bd=6, width=8, bg="lightpink")
entry_kiwi = Entry(f1, font=("aria", 20, "bold"),
textvariable=kiwi, bd=6, width=8, bg="lightpink")
entry_lemon = Entry(f1, font=("aria", 20, "bold"),
textvariable=lemon, bd=6, width=8, bg="lightpink")
entry_tomato = Entry(f1, font=("aria", 20, "bold"),
textvariable=tomato, bd=6, width=8, bg="lightpink")
entry_grapefruit = Entry(f1, font=("aria", 20, "bold"),
textvariable=grapefruit, bd=6, width=8, bg="lightpink")
entry_papaya = Entry(f1, font=("aria", 20, "bold"),
textvariable=papaya, bd=6, width=8, bg="lightpink")

entry_apple.grid(row=1, column=1)
entry_orange.grid(row=2, column=1)
entry_kiwi.grid(row=3, column=1)
entry_lemon.grid(row=4, column=1)
entry_tomato.grid(row=5, column=1)
entry_grapefruit.grid(row=6, column=1)
entry_papaya.grid(row=7, column=1)

b_reset = Button(f1, bd=5, fg="black", bg="lightblue",
font=("ariel", 16, "bold"), width=10, text="Reset",
command=Reset)
b_reset.grid(row=8, column=0)

b_Total = Button(f1, bd=5, fg="black", bg="lightblue",
font=("ariel", 16, "bold"), width=10, text="Total",
command=VitaminC)

b_Total.grid(row=8, column=1)

back_button = Button(root, text="Back to Main Menu",
command=root.destroy)
back_button.config(bg='black', fg='white')
back_button.place(x=635, y=650)

userGuide_frame = Frame(mainWindow, bg='#a9d696', bd=5)
userGuide_frame.place(relx=0.3, rely=0.35, relwidth=0.4,
relheight=0.14)
userGuideButton = Button(userGuide_frame, text="User Guide",
bg='#39382e', fg='white', font=('Courier', 15, 'bold'),

```

```

command=user_guide)
userGuideButton.place(relx=0.0, rely=0, relwidth=1, relheight=1)

nutrientInfo_frame = Frame(mainWindow, bg='#a9d696', bd=5)
nutrientInfo_frame.place(relx=0.3, rely=0.5, relwidth=0.4,
relheight=0.14)
nutrientInfoButton = Button(nutrientInfo_frame, text="Nutrient
Info", bg='#39382e', fg='white',font=('Courier', 15,'bold'),
command=nutrient_info)
nutrientInfoButton.place(relx=0.0, rely=0, relwidth=1,
relheight=1)

calcRDA_frame = Frame(mainWindow, bg='#a9d696', bd=5)
calcRDA_frame.place(relx=0.3, rely=0.65, relwidth=0.4,
relheight=0.14)
calcRDAButton = Button(calcRDA_frame, text="Calculate RDA(Vitamin
C)", bg='#39382e', fg='white',font=('Courier', 15,'bold'),
command=calcRDA)
calcRDAButton.place(relx=0.0, rely=0, relwidth=1, relheight=1)

tryRecipe_frame = Frame(mainWindow, bg='#a9d696', bd=5)
tryRecipe_frame.place(relx=0.3, rely=0.8, relwidth=0.4,
relheight=0.14)
tryRecipeButton = Button(tryRecipe_frame, text="Try Your Recipe",
bg='#39382e', fg='white',font=('Courier', 15,'bold'),
command=try_recipe)
tryRecipeButton.place(relx=0.0, rely=0, relwidth=1, relheight=1)

mainWindow.mainloop()

```

***Note : Download all contents in this file before run the codes as it contains the images for this GUI and make sure it is in the file directory of ‘C:\’. After download the image in drive then need to change the file location accordingly in source coding**

<https://drive.google.com/drive/folders/1auDa1jP38umd7sg6af-ZI6cMsR2zpMtT>

5.0 GUI SCREENSHOT



Figure 1 show the main menu of our system. It consists of 4 menu options including user's guide, nutrient info, calculate RDA, Try your recipe.

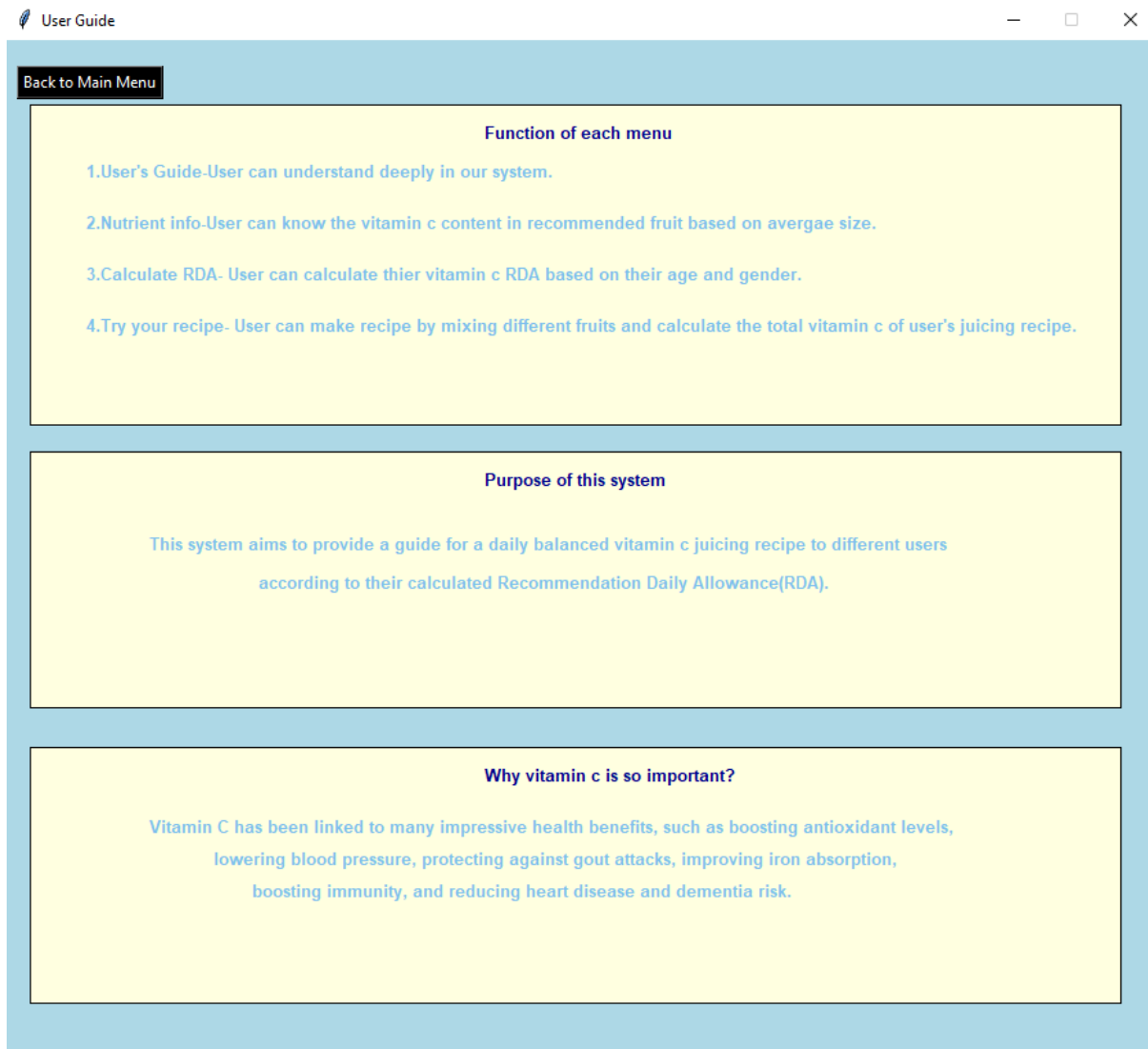


Figure 2 will appear when the users click the button “user’s guide”. There are three things to highlight in this window (Function of main menu, Purpose of this system, Why vitamin c is so important). The users can read only through and able return back to Main Menu window by click the button “back to main menu”.

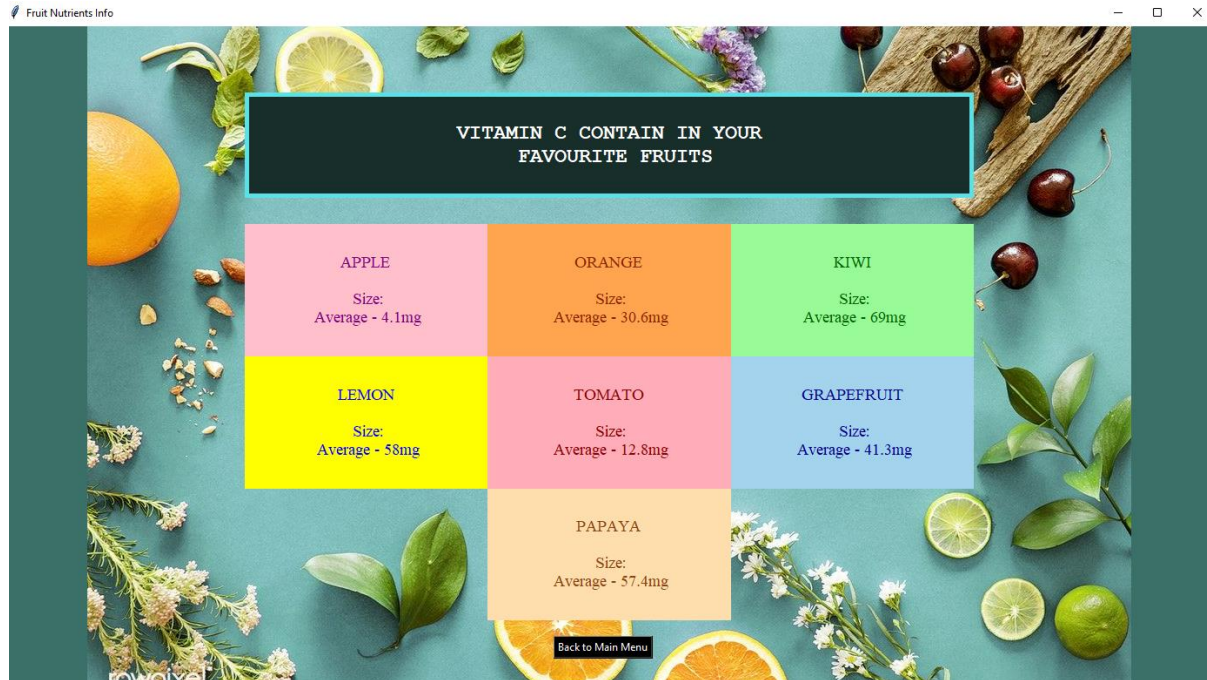


Figure 3 will appear when the users click the button “nutrient info”. The users can view the nutrient info of 7 fruits that recommend in our system. The nutrient includes vitamin C content based on average size as our system's main focus is vitamin C calculation. The users can read only through and are able to return back to the Main Menu window by clicking the button “back to main menu”.

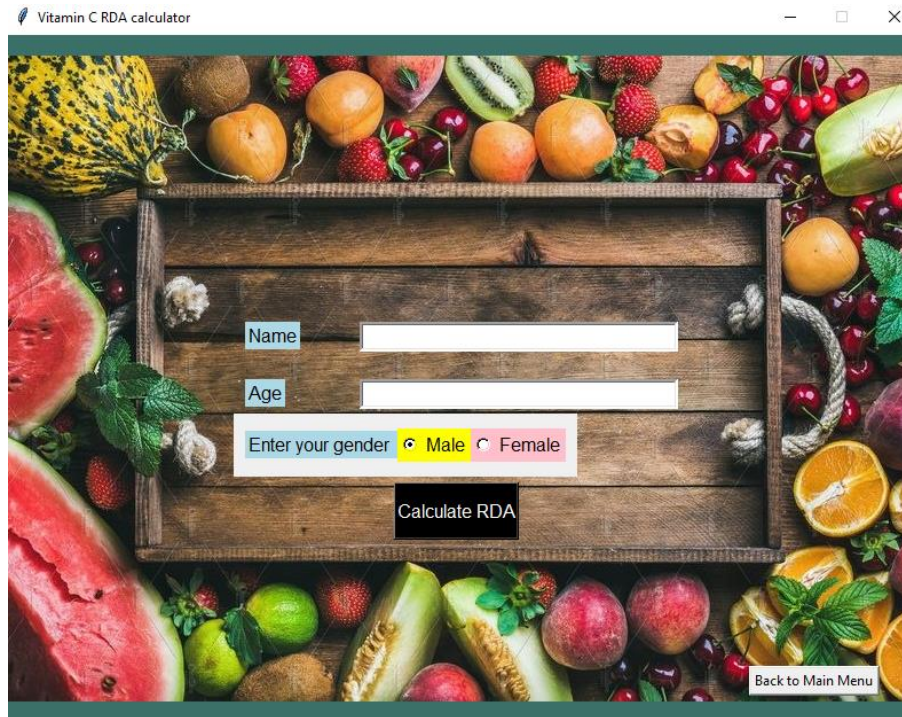


Figure 4

Figure 4 will appear when the users click the button “calculate RDA”. The users are able to return back to Main Menu window by click the button “back to main menu”.

Here we have some sample output example from figure 4.1 to figure 4.4 according to users input of different age and gender.

On calculation of RDA are following standard below:

Male/Female

- for children 1-3 years : 15 mg/day.
- for children 4-8 years: 25 mg/day.
- for adolescents 9-13 years: for adolescents 9-13 years.

For males 14-18 years old: 75 mg/day

For males 19 years old and older: 90 mg/day

For females 14-18 years old: 65 mg/day

For females 19 years old and older: 75 mg/day

1. 🤰 Pregnancy: 85 mg/day

2. 🍼 Lactation: 120 mg/day

Vitamin C RDA calculator

Name: Chek Cheng

Age: 23

Enter your gender: ☒ Male ☐ Female

Calculate RDA

Hi Chek Cheng ^^

The Recommended Dietary Allowance (RDA) of vitamin C for males 19 years old and older: 90 mg/day.

Back to Main Menu

Figure 4.1

Vitamin C RDA calculator

Name: Ali

Age: 13

Enter your gender: ☒ Male ☐ Female

Calculate RDA

Hi Ali ^^

The Recommended Dietary Allowance (RDA) of vitamin C for adolescents 9-13 years old: 45 mg/day.

Back to Main Menu

Figure 4.2

Vitamin C RDA calculator

Name

Age

Enter your gender ☒ Male ☐ Female

Calculate RDA

Hi Ling ^^

The Recommended Dietary Allowance (RDA) of vitamin C for children 4-8 years old: 25 mg/day.

Back to Main Menu

Figure 4.3

Vitamin C RDA calculator

Name

Age

Enter your gender ☐ Male ☒ Female

Calculate RDA

Hi Banu Shree ^^

The Recommended Dietary Allowance (RDA) of vitamin C for females 19 years old and older: 75 mg/day.

Note 1. 🤰 Pregnancy: 85 mg/day

Note 2. 🤱 Lactation: 120 mg/day

Back to Main Menu

Figure 4.4

Balanced Vitamin C Juicing Recipe Calculator

Vitamin C Juicing Recipe Calculator

Start Trying Different
Combination of juice!

Advise for balanced vitamin c intake

1. *Your RDA > Your Juicing Recipe Vitamin C*
Add More fruit for higher your vitamin c intake

2. *Your Recipe Vitamin C = $\pm 5.0\text{mg}$ of Your RDA*
NICE! Your Juicing Recipe is well balanced

3. *Your RDA < Your Juicing Recipe Vitamin C*
Add Less fruit for lower your vitamin c intake

Apple

Orange

kiwi

Lemon

Tomato

Grapefruit

Papaya

Reset

Total

Back to Main Menu

Your Juicing Recipe

Figure 5

Figure 5 will appear when user click the button “Try your recipe”. The users can enter quantities of different fruits in juicing and the total vitamin c in your juicing recipe will be calculated and displayed on right side. Some advises for balanced vitamin c intake also provided in this window. The users can play around with mix and match the fruits and know the vitamin c content at the same time. The users are able return back to Main Menu window by click the button “back to main menu”.

Here we have some sample output example from figure 5.1 to figure 5.3 according to users input of different quantities of fruits. Calculation of total vitamin c are summation of vitamin c value in nutrient info window.

Balanced Vitamin C Juicing Recipe Calculator

Vitamin C Juicing Recipe Calculator

Start Trying Different Combination of juice!

Advise for balanced vitamin c intake

1. Your RDA > Your Juicing Recipe Vitamin C
Add More fruit for higher your vitamin c intake

2. Your Recipe Vitamin C = ± 5.0 mg of Your RDA
NICE! Your Juicing Recipe is well balanced

3. Your RDA < Your Juicing Recipe Vitamin C
Add Less fruit for lower your vitamin c intake

Apple	2
Orange	1
kiwi	
Lemon	
Tomato	1
Grapefruit	
Papaya	

Reset
Total

Back to Main Menu

Your Juicing Recipe

Total Vitamin C

51.60 mg

Figure 5.1

Balanced Vitamin C Juicing Recipe Calculator

Vitamin C Juicing Recipe Calculator

Start Trying Different Combination of juice!

Advise for balanced vitamin c intake

1. *Your RDA > Your Juicing Recipe Vitamin C*
Add More fruit for higher your vitamin c intake
2. *Your Recipe Vitamin C = $\pm 5.0\text{mg}$ of Your RDA*
NICE! Your Juicing Recipe is well balanced
3. *Your RDA < Your Juicing Recipe Vitamin C*
Add Less fruit for lower your vitamin c intake

Apple	1
Orange	
kiwi	
Lemon	
Tomato	
Grapefruit	1
Papaya	1

Reset Total

Back to Main Menu

Your Juicing Recipe

Total Vitamin C

102.80 mg

Figure 5.2

Balanced Vitamin C Juicing Recipe Calculator

Vitamin C Juicing Recipe Calculator

Start Trying Different Combination of juice!

Advise for balanced vitamin c intake

1. *Your RDA > Your Juicing Recipe Vitamin C*
Add More fruit for higher your vitamin c intake
2. *Your Recipe Vitamin C = $\pm 5.0\text{mg}$ of Your RDA*
NICE! Your Juicing Recipe is well balanced
3. *Your RDA < Your Juicing Recipe Vitamin C*
Add Less fruit for lower your vitamin c intake

Apple	
Orange	
kiwi	
Lemon	
Tomato	3
Grapefruit	
Papaya	1

Reset Total

Back to Main Menu

Your Juicing Recipe

Total Vitamin C

95.80 mg

Figure 5.3

