ABESEC Ghaziabad

Department of Computer Science & Engineering

Mini Project REPORT- KCS-354

(2019-20)

Project Title:

UNIT CONVERTER

Project Type	Application			
	Name	Roll Number	Section	Signature
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Project Guide	Mr.Priyansh Singh Mr.Rohit Rastogi	Remarks:		
Signature				
Date of submission				

Contents

PROBLEM INTRODUCTION

MOTIVATION

The main motivation to develop this program is the summer training that was undertaken under the guidance of college management.

PROJECT OBJECTIVE

Conversion of units is the conversion between different units of measurement for the same quantity through mulitiplicative conversion factors and this program serves the purpose. It would require the user to input the unit he wishes to convert and would convert it into different standard units.

A conversion factor is used to change the units of measured quantity without changing its value.

SCOPE OF THE PROJECT

The program consists of eight different converters as follows:

- LENGTH CONVERTER
- WEIGHT CONVERTER
- VOLUME CONVERTER
- AREA CONVERTER
- CURRENCY CONVERTER
- TIME CONVERTER
- SPEED CONVERTER
- FORCE CONVERTER

Each one of them requires the user to input the magnitude and unit of the desired value he wants to convert and would produce the converted most commonly used standard units.

The input can be either entered through keyboard or through the SPEECH RECOGNITION SYSTEM. The speech recognition system facilitates the user to get the required output merely by using the speech to text feature.The user may also see the search history whenever he requires the previously searched values as it stores all the output along with the input provided by the user.

Related Previous work

- **UNIT CONVERTER:** (Smart tools co.)

Unit converter is the 6th set of Smart Tools collection. This app includes Currency (money, bitcoin) exchange rates.

There are a lot of unit conversion apps on the market. However, most are inconvenient and difficult to use because of poor and complicated UI.This app has intuitive and simple UI, that is designed for anybody to use.

There are 4 categories.

- Basic : length (distance), area, weight (mass), volume (capacity)

- Living : exchange rate, temperature, time, speed, shoes, clothing, hat, ring

- Science : pressure, force, work (energy), power, torque, flow, current, voltage, density, viscosity, concentration, astronomy

- Misc. : angle, data, fuel efficiency, cooking, illuminance, radiation, prefix, binary, time zone, blood sugar, hardness, AWG

- **UNIT CONVERTER:** (Digital Grove Tool)

Built-In real time Currency Converter with 150 world currencies and their latest exchange rates

Smart Tools - Bubble Level, Compass, Protractor, Resistor codes, Stop Watch, Ruler, World Time, Date Converter and much more.

New Tools - Battery Monitor, Notes, Expression Evaluation, Equation Solver, Induction Color codes, Scientific Calculator

Financial calculators - Loan calculator, Compound interest calculator, Retirement calculator, Service tax calculator, Stock calculator

Math calculators -Roman numeral converter, Number base converter, Number series generator, Ratio, Fraction, Proportion, etc.

It has most important conversion tools that are used in daily life including Fuel Calculations, Temperature, Volume, Speed, Weight, Computer Storage, Angle, Power, Viscosity, Force, Energy, Torque, Density.

It has conversion tools like radiation, electric resistance, electric capacitance, inductance, inertia, specific heat density, specific heat capacity, and illumination.

- **FULL UNIT CONVERTER:** (Haytham Ayyash Tools)

-It contain many unit conversions and includes the following conversions:

-Distance.

-Area.

-Volume.

-Weight.

-Time.

-Temperature.

-Power.

-Speed.

-Energy.

-Force.

-Pressure.

-Cooking.

-Fuel.

-Digital Storage.

-Number of decimal : you can control of number of decimal .

HARDWARE REQUIREMENT:

For this project nothing but a PC is required.

SOFTWARE REQUIREMENT:

To begin with this project, a system well versed with Python and Anaconda navigator is required. However any other IDE would also do.

Mine is installed with Python version 3.7.4 and anaconda navigator as it supports Jupyter notebook, it makes the code presentable and increases readability of the code.

It also supports Spyder which is an interactive IDE for python programs.

IDE USED:

In developing this project Anaconda(Jupyter Notebook) was used.

Anaconda is a free and open-source distribution of the Python and R programming languages for scientific computing (data science, machine learning applications, large-scale data processing, predictive analytics, etc.), that aims to simplify package management and deployment.

ANACONDA NAVIGATOR:

Anaconda Navigator is a desktop graphical user interface (GUI) included in Anaconda distribution that allows users to launch applications and manage conda packages, environments and channels without using command-line commands. Navigator can search for packages on Anaconda Cloud or in a local Anaconda Repository, install them in an environment, run the packages and update them. It is available for Windows, macOS and Linux.

The following applications are available by default in Navigator:

- JupyterLab
- Jupyter Notebook
- QtConsole
- Spyder
- Glueviz and others….

PROPOSED METHOD:

ALGORITHM / APPROACH

Step 1: User is given choices as to which converter he wants to use.

Step 2: The choice is input through keyboard and stored in a variable, say ch.

Step 3: if ch==1, direct him to the length converter

- Declare lists for different units with their conversion factors and units in them.
- Say meter, list1= [“1000000”,”micrometer”,”100”,”cm”,”0.001”,”km”…].
- Ask the user what magnitude which unit he wants to convert and store it in a variable, say a.
- Traverse through the list with a for loop and perform calculations with magnitude and conversion factors.
- Display the conversions along with the proper units.

Step 4: if ch==2, direct him to the weight converter

- Declare lists for different units with their conversion factors and units in them.
- Say gram, list1= [“1000”,”mg” ,”0.001”,”kg”…].
- Ask the user what magnitude which unit he wants to convert and store it in a variable, say a.
- Traverse through the list with a for loop and perform calculations with magnitude and conversion factors.
- Display the conversions along with the proper units.

Step 5: if ch==3, direct him to the volume converter

- Declare lists for different units with their conversion factors and units in them.
- Say m^3, list1= […].
- Ask the user what magnitude which unit he wants to convert and store it in a variable, say a.
- Traverse through the list with a for loop and perform calculations with magnitude and conversion factors.
- Display the conversions along with the proper units.

Step 6: if ch==4, direct him to the area converter

- Declare lists for different units with their conversion factors and units in them.
- Say m^2, list1= [].
- Ask the user what magnitude which unit he wants to convert and store it in a variable, say a.
- Traverse through the list with a for loop and perform calculations with magnitude and conversion factors.

- Display the conversions along with the proper units.

Step 7: if ch==5, direct him to the currency converter

- Declare lists for different units with their conversion factors and units in them.
- Say INR, list1= […].
- Ask the user what magnitude which unit he wants to convert and store it in a variable, say a.
- Traverse through the list with a for loop and perform calculations with magnitude and conversion factors.
- Display the conversions along with the proper units.

Step 8: if ch==6, direct him to the time converter

- Declare lists for different units with their conversion factors and units in them.
- Say minute, list1= […].
- Ask the user what magnitude which unit he wants to convert and store it in a variable, say a.
- Traverse through the list with a for loop and perform calculations with magnitude and conversion factors.
- Display the conversions along with the proper units.

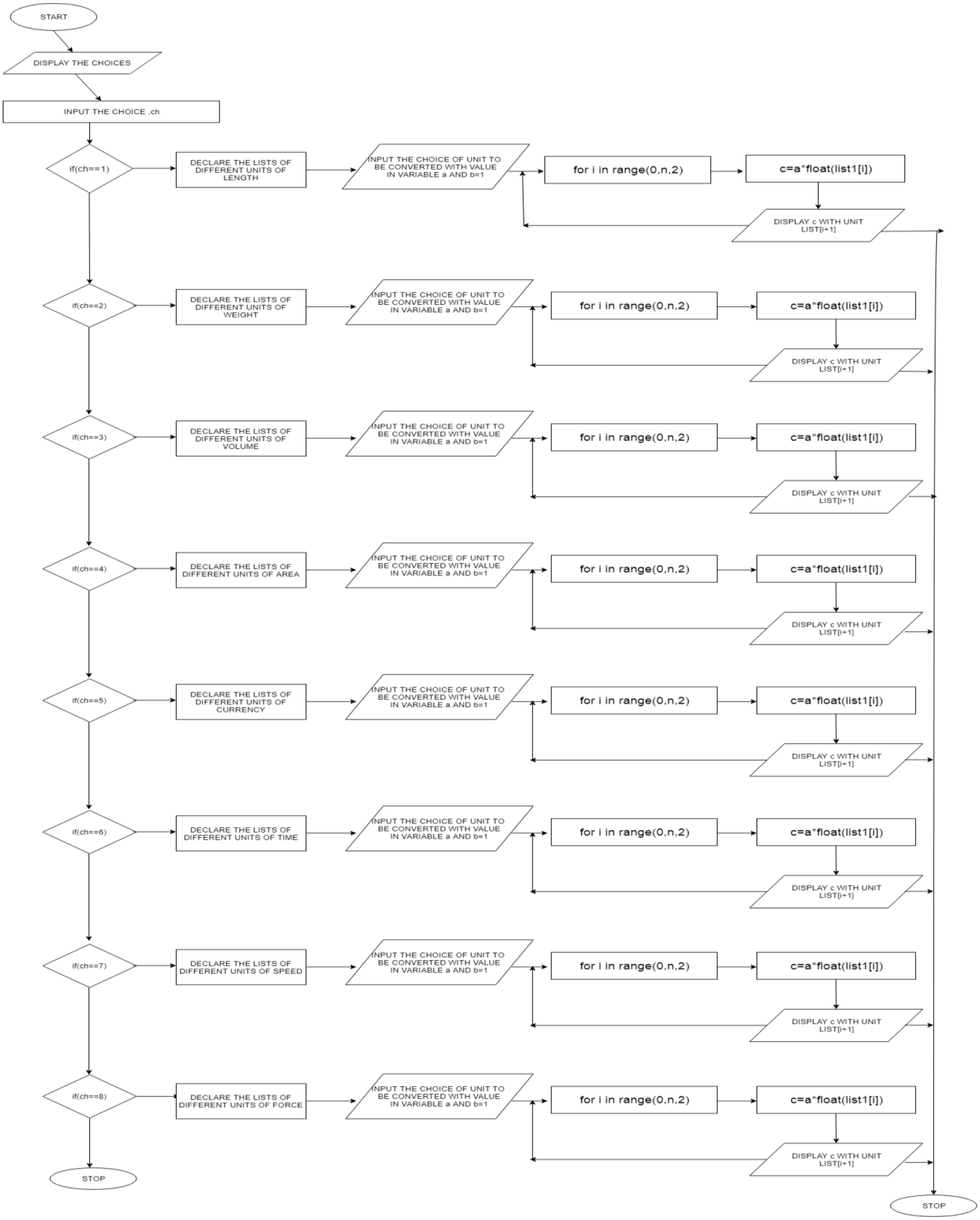
Step 9: if ch==7, direct him to the speed converter

- Declare lists for different units with their conversion factors and units in them.
- Say m/s, list1= […].
- Ask the user what magnitude which unit he wants to convert and store it in a variable, say a.
- Traverse through the list with a for loop and perform calculations with magnitude and conversion factors.
- Display the conversions along with the proper units.

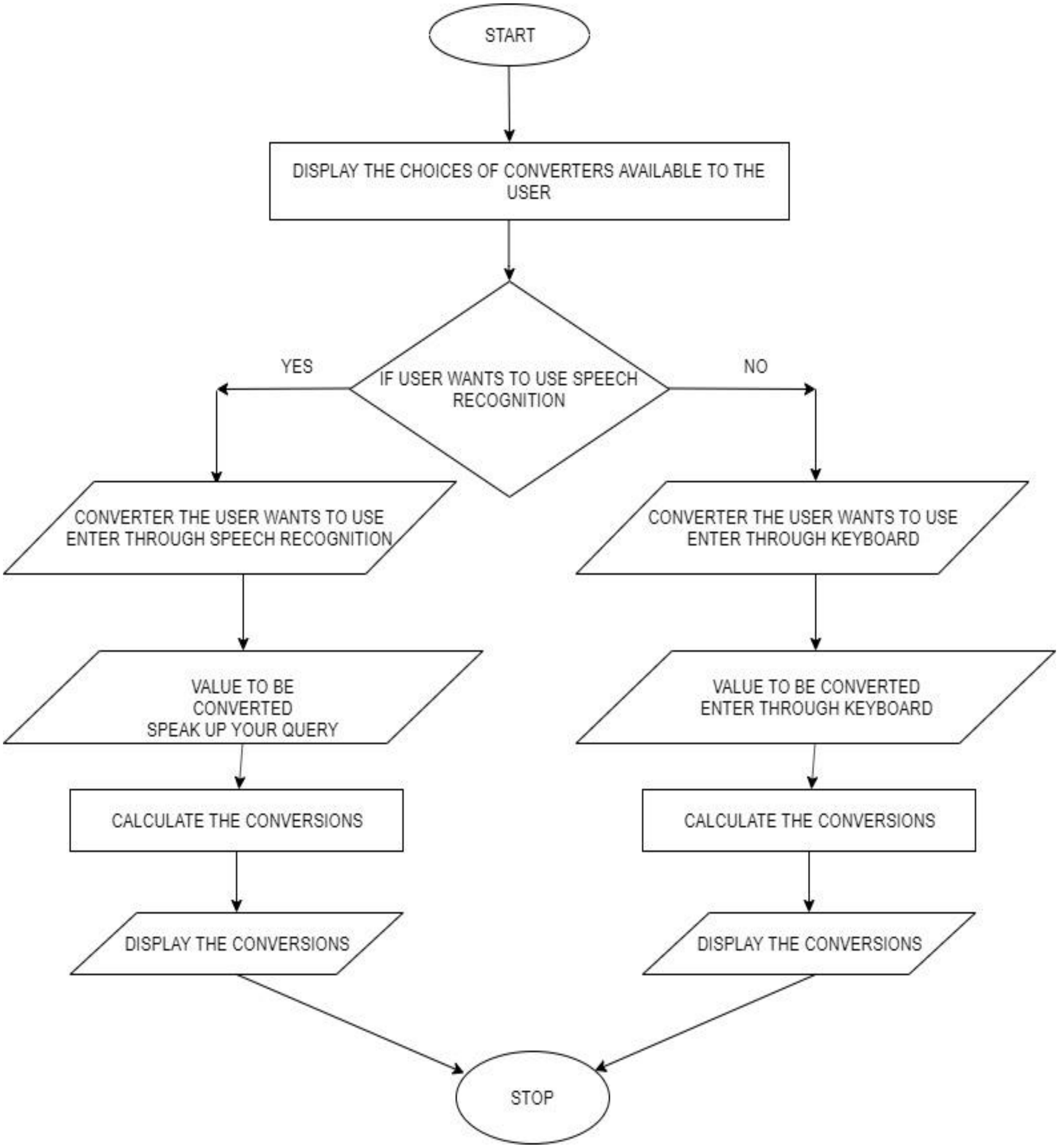
Step 10: if ch==8, direct him to the force converter

- Declare lists for different units with their conversion factors and units in them.
- Say N, list1= […].
- Ask the user what magnitude which unit he wants to convert and store it in a variable, say a.
- Traverse through the list with a for loop and perform calculations with magnitude and conversion factors.
- Display the conversions along with the proper units.

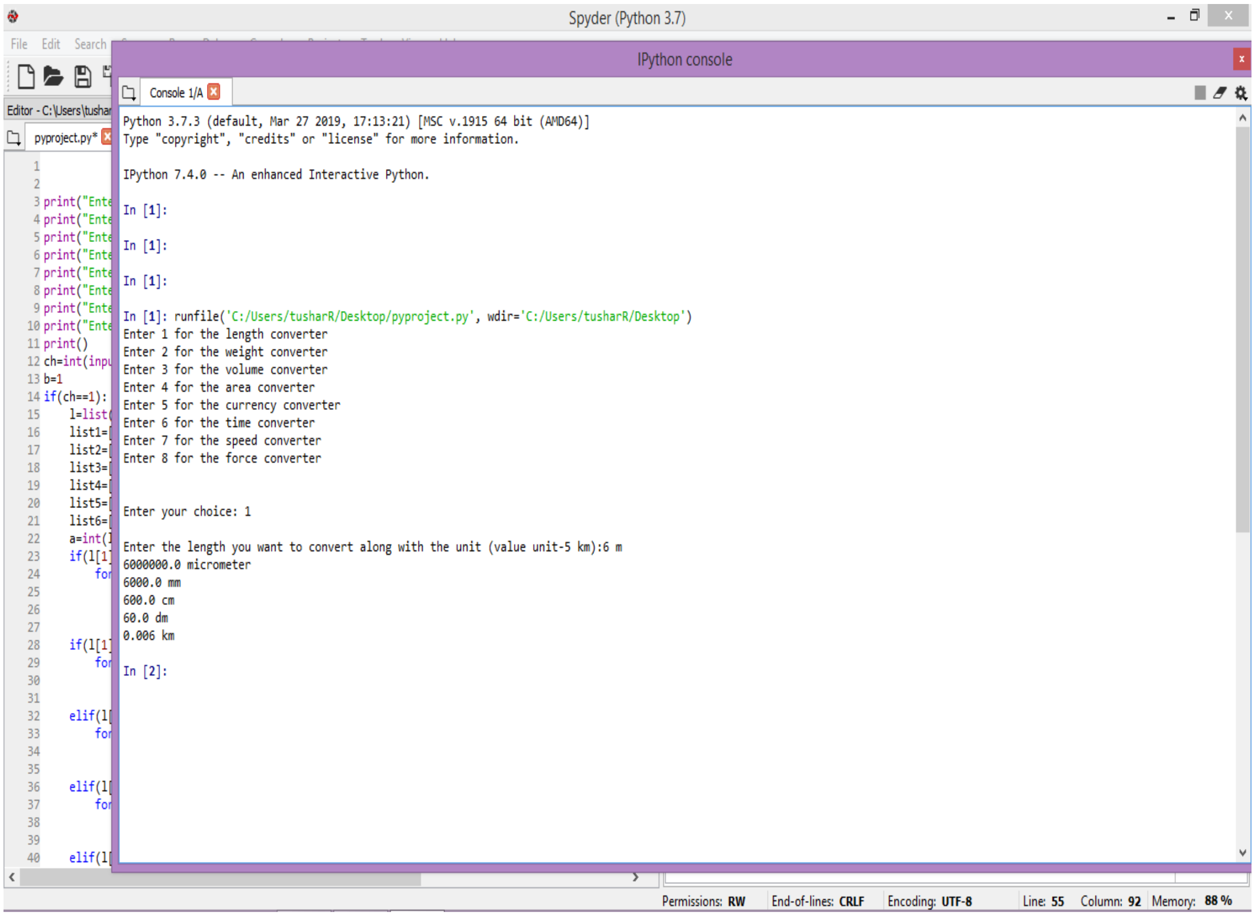
FLOW CHART


START
DISPLAY THE CHOICES
INPUT THE CHOICE ,ch
if(ch==1)
DECLARE THE LISTS OF DIFFERENT UNITS OF LENGTH
INPUT THE CHOICE OF UNIT TO BE CONVERTED WITH VALUE IN VARIABLE a AND b=1
for i in range(0,n,2)
c=a*float(list1[i])
DISPLAY c WITH UNIT LIST[i+1]
if(ch==2)
DECLARE THE LISTS OF DIFFERENT UNITS OF WEIGHT
INPUT THE CHOICE OF UNIT TO BE CONVERTED WITH VALUE IN VARIABLE a AND b=1
for i in range(0,n,2)
c=a*float(list1[i])
DISPLAY c WITH UNIT LIST[i+1]
if(ch==3)
DECLARE THE LISTS OF DIFFERENT UNITS OF VOLUME
INPUT THE CHOICE OF UNIT TO BE CONVERTED WITH VALUE IN VARIABLE a AND b=1
for i in range(0,n,2)
c=a*float(list1[i])
DISPLAY c WITH UNIT LIST[i+1]
if(ch==4)
DECLARE THE LISTS OF DIFFERENT UNITS OF AREA
INPUT THE CHOICE OF UNIT TO BE CONVERTED WITH VALUE IN VARIABLE a AND b=1
for i in range(0,n,2)
c=a*float(list1[i])
DISPLAY c WITH UNIT LIST[i+1]
if(ch==5)
DECLARE THE LISTS OF DIFFERENT UNITS OF CURRENCY
INPUT THE CHOICE OF UNIT TO BE CONVERTED WITH VALUE IN VARIABLE a AND b=1
for i in range(0,n,2)
c=a*float(list1[i])
DISPLAY c WITH UNIT LIST[i+1]
if(ch==6)
DECLARE THE LISTS OF DIFFERENT UNITS OF TIME
INPUT THE CHOICE OF UNIT TO BE CONVERTED WITH VALUE IN VARIABLE a AND b=1
for i in range(0,n,2)
c=a*float(list1[i])
DISPLAY c WITH UNIT LIST[i+1]
if(ch==7)
DECLARE THE LISTS OF DIFFERENT UNITS OF SPEED
INPUT THE CHOICE OF UNIT TO BE CONVERTED WITH VALUE IN VARIABLE a AND b=1
for i in range(0,n,2)
c=a*float(list1[i])
DISPLAY c WITH UNIT LIST[i+1]
if(ch==8)
DECLARE THE LISTS OF DIFFERENT UNITS OF FORCE
INPUT THE CHOICE OF UNIT TO BE CONVERTED WITH VALUE IN VARIABLE a AND b=1
for i in range(0,n,2)
c=a*float(list1[i])
DISPLAY c WITH UNIT LIST[i+1]
STOP
STOP

WORK FLOW DIAGRAM


START
DISPLAY THE CHOICES OF CONVERTERS AVAILABLE TO THE USER
IF USER WANTS TO USE SPEECH RECOGNITION
YES
NO
CONVERTER THE USER WANTS TO USE ENTER THROUGH SPEECH RECOGNITION
CONVERTER THE USER WANTS TO USE ENTER THROUGH KEYBOARD
VALUE TO BE CONVERTED SPEAK UP YOUR QUERY
VALUE TO BE CONVERTED ENTER THROUGH KEYBOARD
CALCULATE THE CONVERSIONS
CALCULATE THE CONVERSIONS
DISPLAY THE CONVERSIONS
DISPLAY THE CONVERSIONS
STOP

DELIVERABLES:



```


print("Ente
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print("Ente
print()
ch=int(inpu
b=1
if(ch==1):
    l=list(
    list1=[
    list2=[
    list3=[
    list4=[
    list5=[
    list6=[
    a=int(I
    if(l[1]
        for



    if(l[1]
        for



    elif(l[
        for


    elif(l[
        for


    elif(l[
```
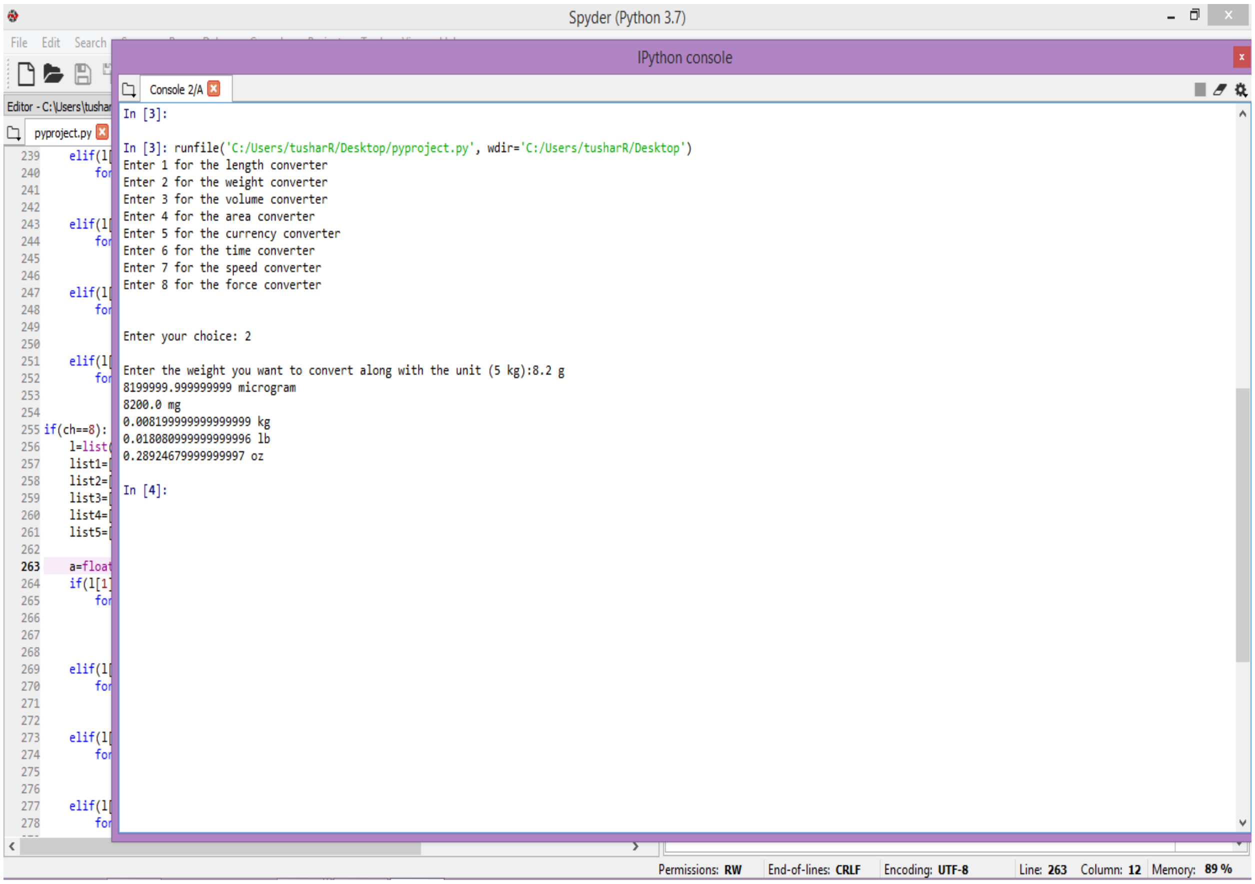

```
Python 3.7.3 (default, Mar 27 2019, 17:13:21) [MSC v.1915 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.

IPython 7.4.0 -- An enhanced Interactive Python.

In [1]:

In [1]:

In [1]:

In [1]: runfile('C:/Users/tusharR/Desktop/pyproject.py', wdir='C:/Users/tusharR/Desktop')
Enter 1 for the length converter
Enter 2 for the weight converter
Enter 3 for the volume converter
Enter 4 for the area converter
Enter 5 for the currency converter
Enter 6 for the time converter
Enter 7 for the speed converter
Enter 8 for the force converter


Enter your choice: 1

Enter the length you want to convert along with the unit (value unit-5 km):6 m
6000000.0 micrometer
6000.0 mm
600.0 cm
60.0 dm
0.006 km

In [2]:
```

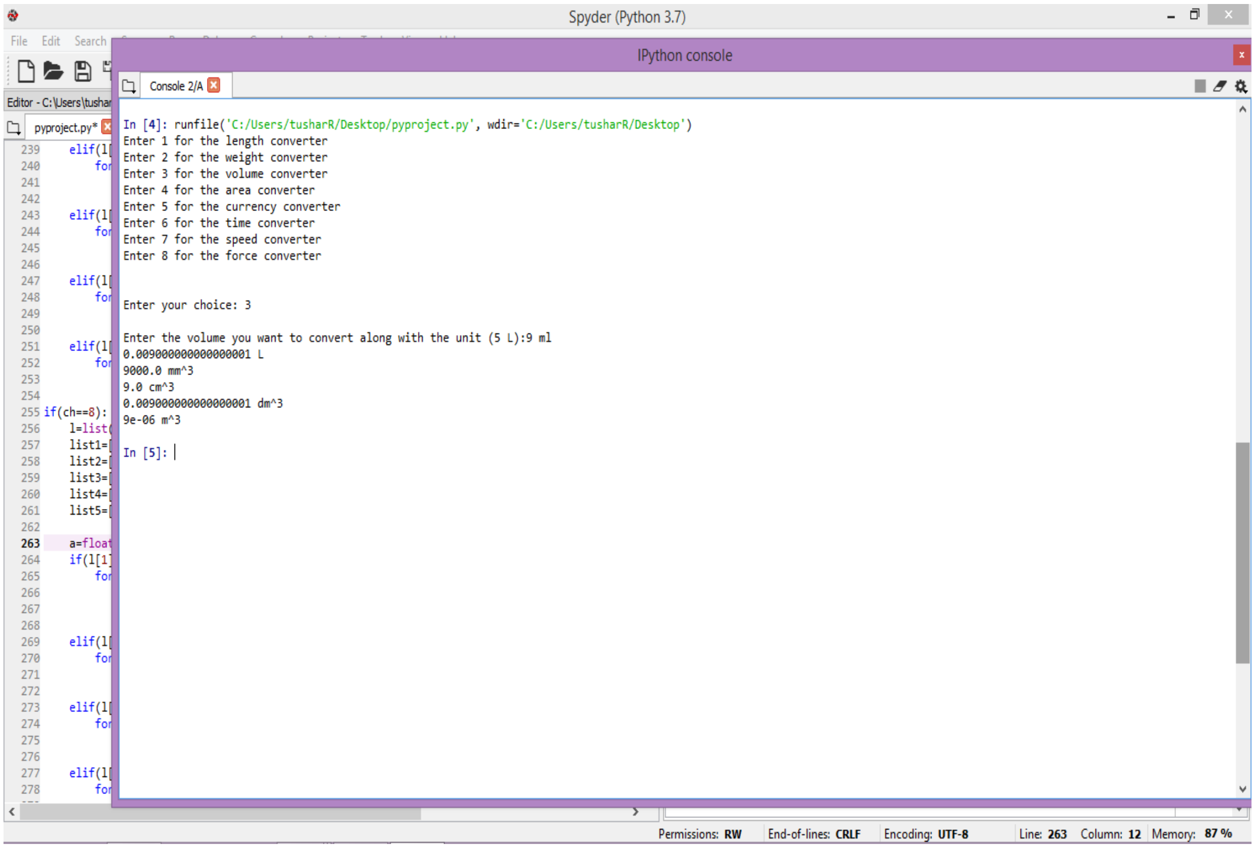
Permissions: RW   End-of-lines: CRLF   Encoding: UTF-8   Line: 55   Column: 92   Memory: 88 %

Fig 1. Length Converter



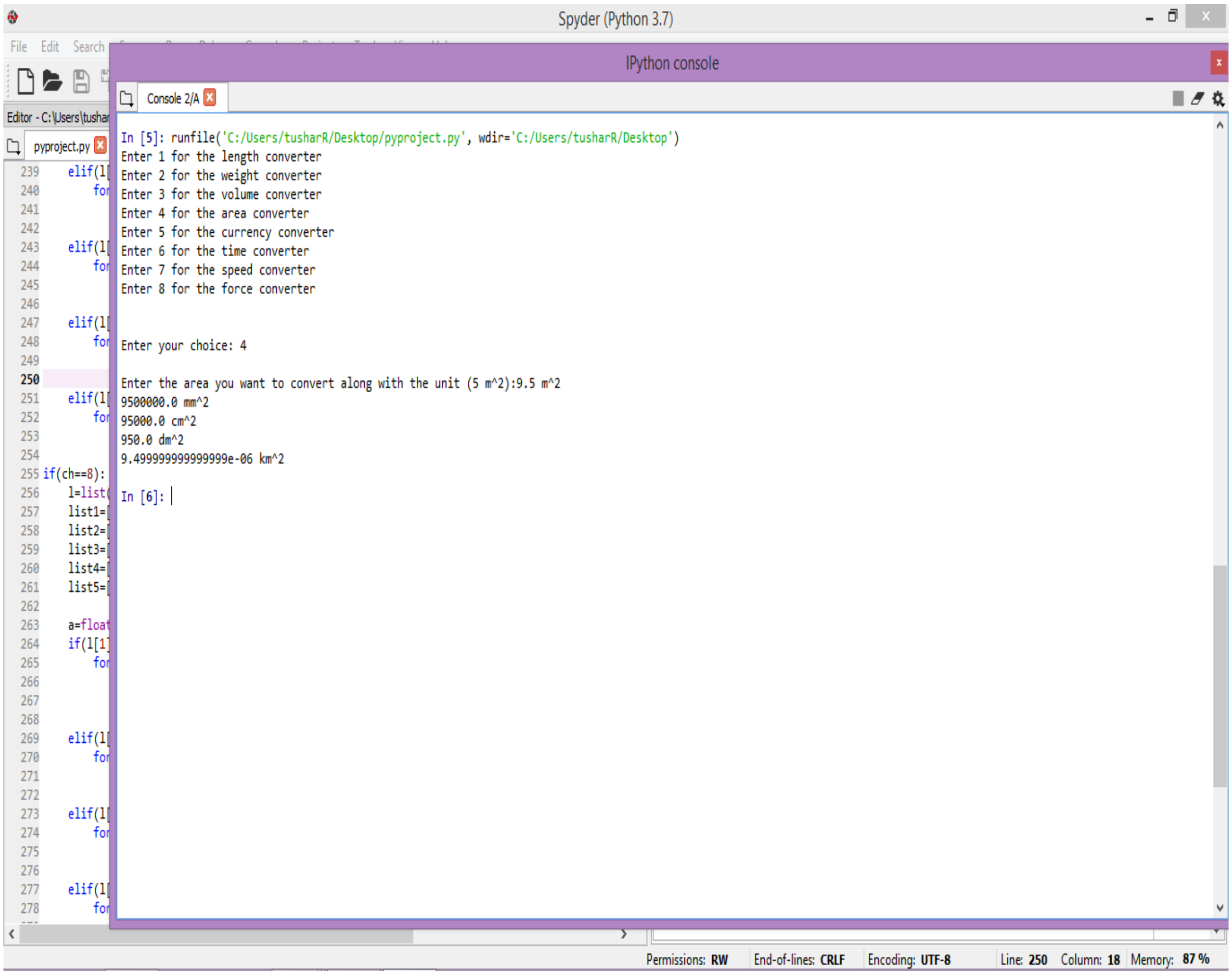
```
In [3]:

In [3]: runfile('C:/Users/tusharR/Desktop/pyproject.py', wdir='C:/Users/tusharR/Desktop')
Enter 1 for the length converter
Enter 2 for the weight converter
Enter 3 for the volume converter
Enter 4 for the area converter
Enter 5 for the currency converter
Enter 6 for the time converter
Enter 7 for the speed converter
Enter 8 for the force converter


Enter your choice: 2

Enter the weight you want to convert along with the unit (5 kg):8.2 g
8199999.999999999 microgram
8200.0 mg
0.008199999999999999 kg
0.018080999999999996 lb
0.28924679999999997 oz

In [4]:
```

Fig 2. Weight Converter



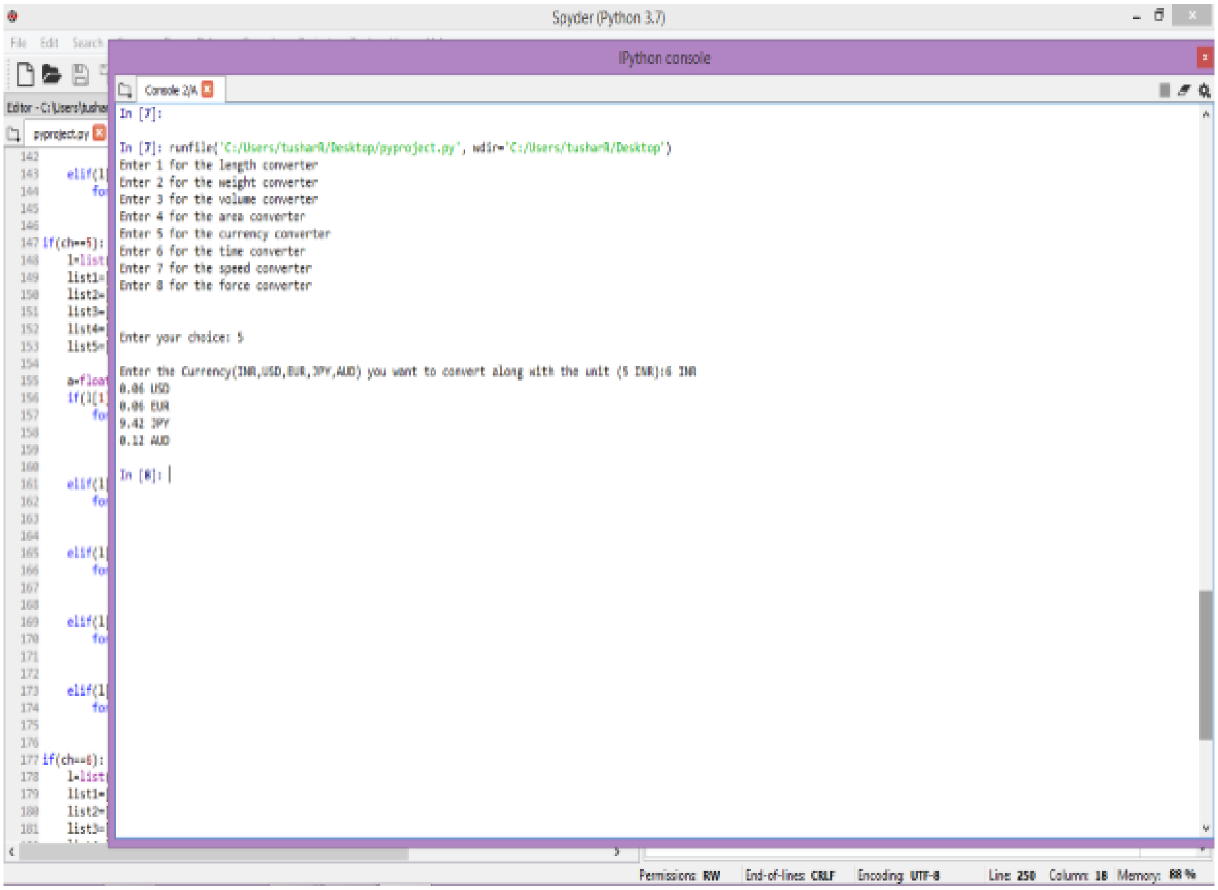
```
In [4]: runfile('C:/Users/tusharR/Desktop/pyproject.py', wdir='C:/Users/tusharR/Desktop')
Enter 1 for the length converter
Enter 2 for the weight converter
Enter 3 for the volume converter
Enter 4 for the area converter
Enter 5 for the currency converter
Enter 6 for the time converter
Enter 7 for the speed converter
Enter 8 for the force converter


Enter your choice: 3

Enter the volume you want to convert along with the unit (5 L):9 ml
0.009000000000000001 L
9000.0 mm^3
9.0 cm^3
0.009000000000000001 dm^3
9e-06 m^3

In [5]:
```

Fig 3.Volume Converter



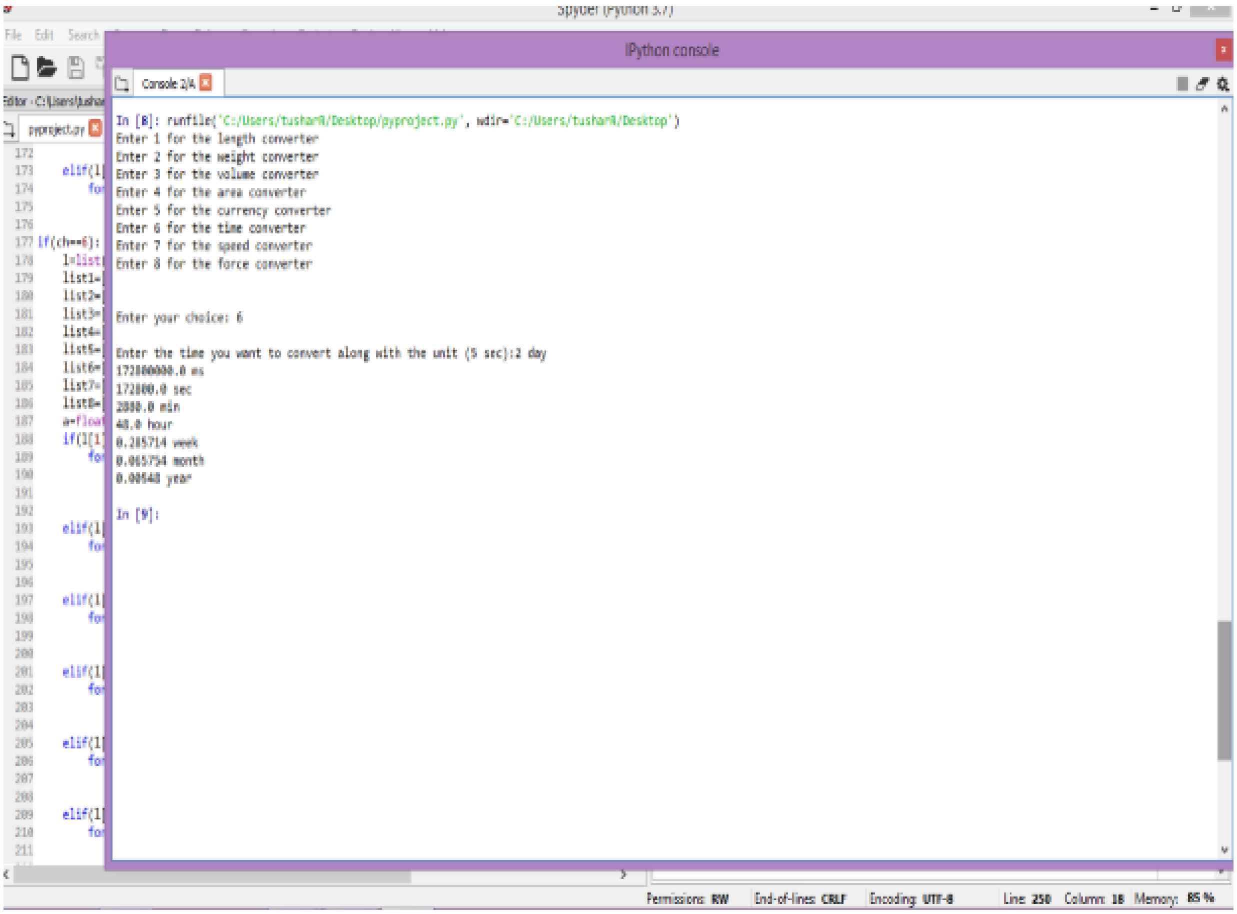
```
In [5]: runfile('C:/Users/tusharR/Desktop/pyproject.py', wdir='C:/Users/tusharR/Desktop')
Enter 1 for the length converter
Enter 2 for the weight converter
Enter 3 for the volume converter
Enter 4 for the area converter
Enter 5 for the currency converter
Enter 6 for the time converter
Enter 7 for the speed converter
Enter 8 for the force converter


Enter your choice: 4

Enter the area you want to convert along with the unit (5 m^2):9.5 m^2
9500000.0 mm^2
95000.0 cm^2
950.0 dm^2
9.499999999999999e-06 km^2

In [6]:
```

Fig 4. Area Converter



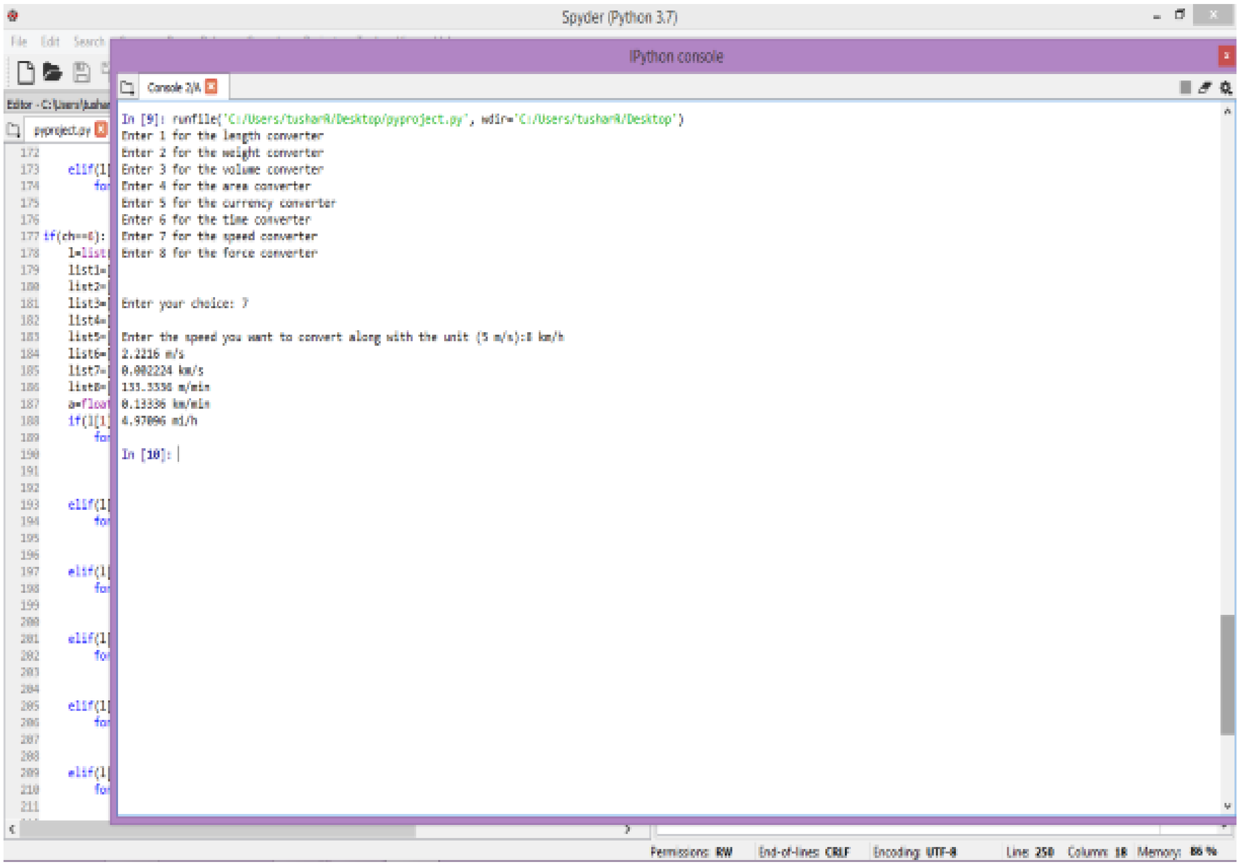
```
In [7]:

In [7]: runfile('C:/Users/tushar9/Desktop/pyproject.py', wdir='C:/Users/tushar9/Desktop')
Enter 1 for the length converter
Enter 2 for the weight converter
Enter 3 for the volume converter
Enter 4 for the area converter
Enter 5 for the currency converter
Enter 6 for the time converter
Enter 7 for the speed converter
Enter 8 for the force converter


Enter your choice: 5

Enter the Currency(INR,USD,EUR,JPY,AUD) you want to convert along with the unit (5 INR):6 INR
0.06 USD
0.06 EUR
9.42 JPY
0.12 AUD

In [8]:
```

Fig 5. Currency converter



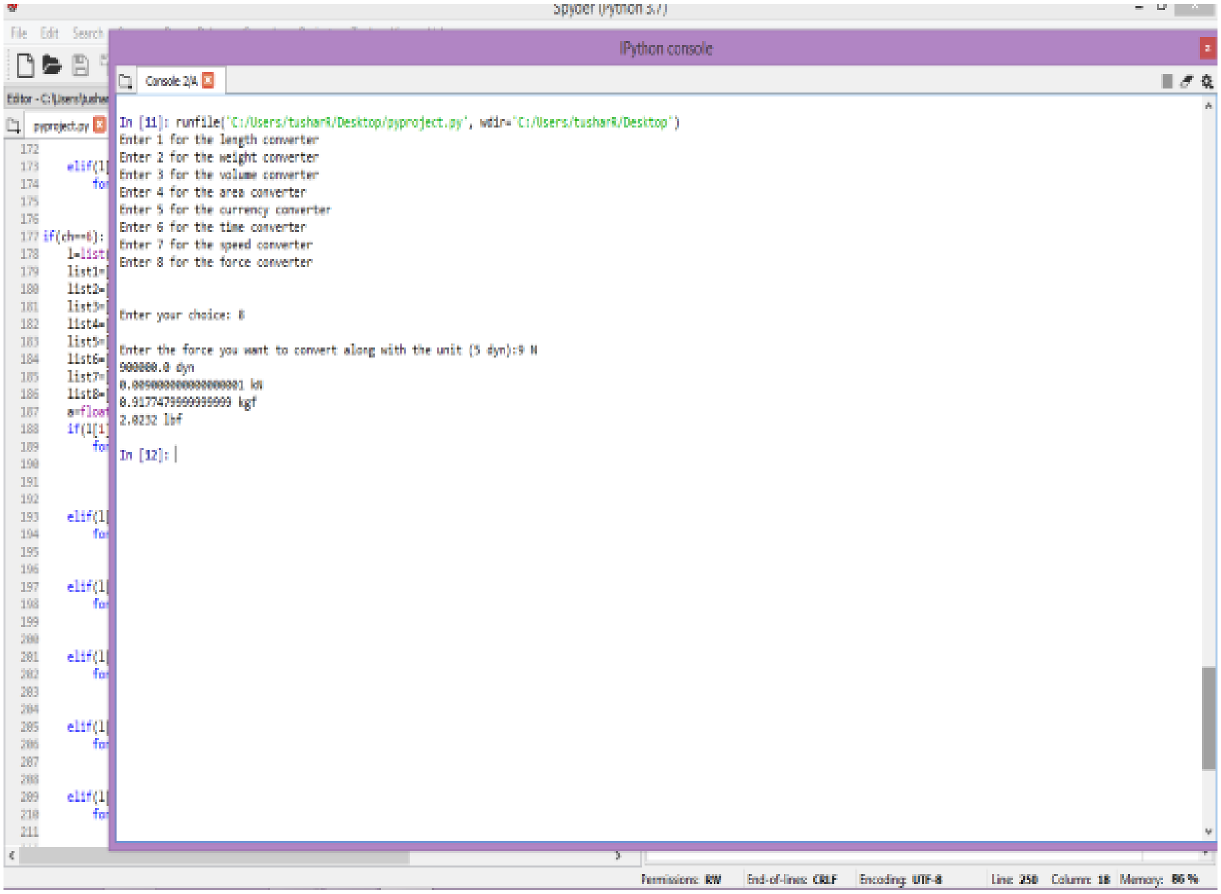
```
In [8]: runfile('C:/Users/tusharR/Desktop/pyproject.py', wdir='C:/Users/tusharR/Desktop')
Enter 1 for the length converter
Enter 2 for the weight converter
Enter 3 for the volume converter
Enter 4 for the area converter
Enter 5 for the currency converter
Enter 6 for the time converter
Enter 7 for the speed converter
Enter 8 for the force converter


Enter your choice: 6

Enter the time you want to convert along with the unit (5 sec):2 day
172800000.0 ms
172800.0 sec
2880.0 min
48.0 hour
0.285714 week
0.065754 month
0.00548 year

In [9]:
```

Fig 6.Time Converter



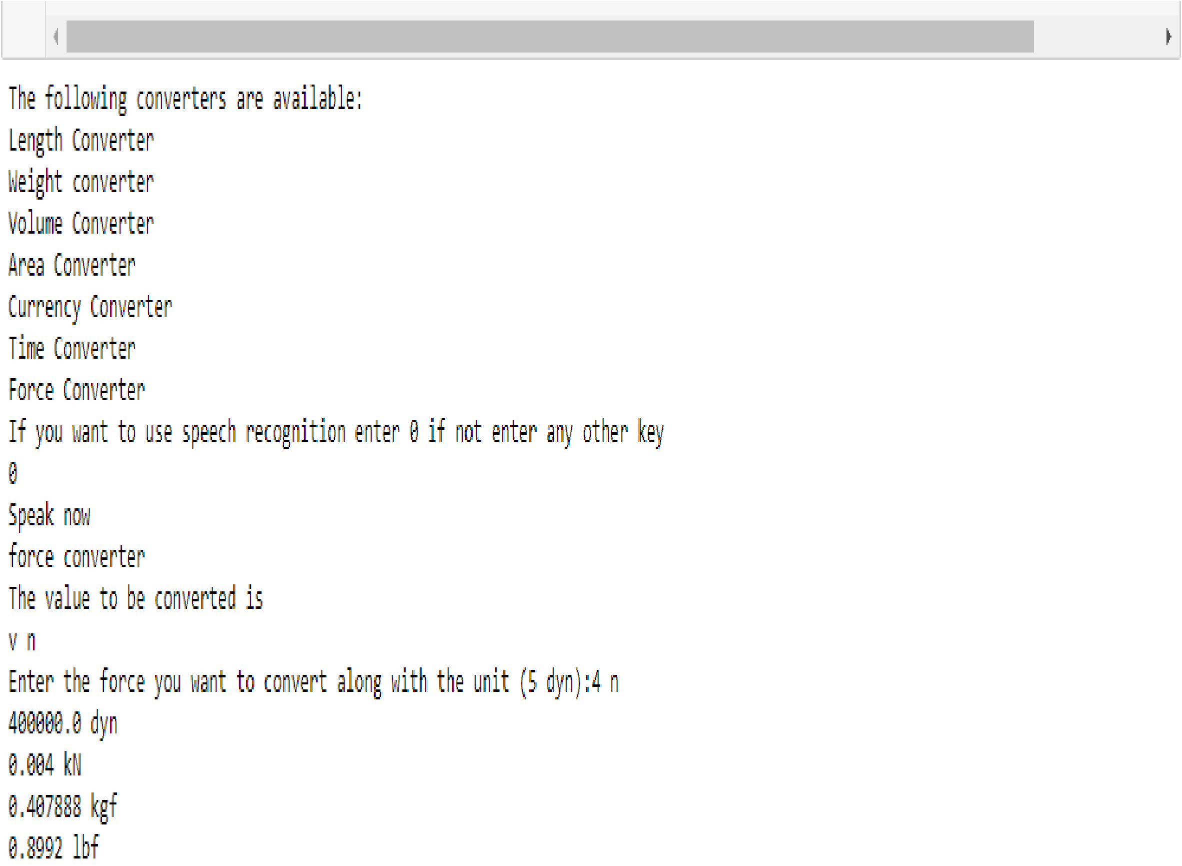
```
In [9]: runfile('C:/Users/tusharR/Desktop/pyproject.py', wdir='C:/Users/tusharR/Desktop')
Enter 1 for the length converter
Enter 2 for the weight converter
Enter 3 for the volume converter
Enter 4 for the area converter
Enter 5 for the currency converter
Enter 6 for the time converter
Enter 7 for the speed converter
Enter 8 for the force converter


Enter your choice: 7

Enter the speed you want to convert along with the unit (5 m/s):8 km/h
2.2216 m/s
0.002224 km/s
133.3336 m/min
0.13336 km/min
4.97096 mi/h

In [10]: 
```

Fig 7.Speed Converter



```
In [11]: runfile('C:/Users/tusharR/Desktop/pyproject.py', wdir='C:/Users/tusharR/Desktop')
Enter 1 for the length converter
Enter 2 for the weight converter
Enter 3 for the volume converter
Enter 4 for the area converter
Enter 5 for the currency converter
Enter 6 for the time converter
Enter 7 for the speed converter
Enter 8 for the force converter


Enter your choice: 8

Enter the force you want to convert along with the unit (5 dyn):9 N
900000.0 dyn
0.009000000000000001 kN
0.9177479999999999 kgf
2.0232 lbf

In [12]: 
```

Fig 8. Force Converter



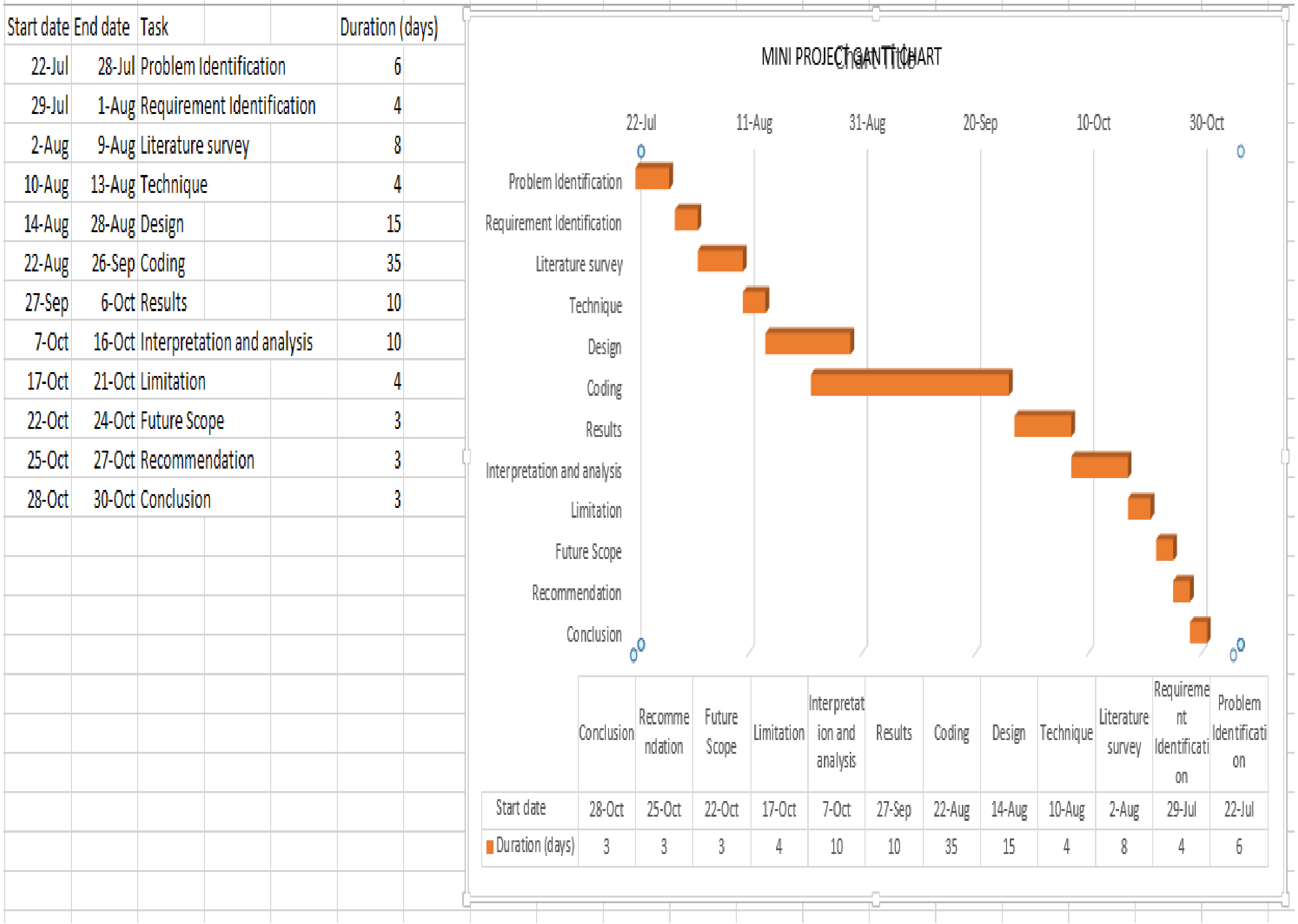
```
The following converters are available:
Length Converter
Weight converter
Volume Converter
Area Converter
Currency Converter
Time Converter
Force Converter
If you want to use speech recognition enter 0 if not enter any other key
0
Speak now
force converter
The value to be converted is
v n
Enter the force you want to convert along with the unit (5 dyn):4 n
400000.0 dyn
0.004 kN
0.407888 kgf
0.8992 lbf
```

Fig 9. Force Converter with Speech Recognition

STAKEHOLDERS:

- Students
- Scientists
- Mathematicians
- Shopkeeper
- Data Analysts
- Physicists
- Foreign currency Exchange
- Investors

GANTT CHART



Start date	End date	Task	Duration (days)
22-Jul	28-Jul	Problem Identification	6
29-Jul	1-Aug	Requirement Identification	4
2-Aug	9-Aug	Literature survey	8
10-Aug	13-Aug	Technique	4
14-Aug	28-Aug	Design	15
22-Aug	26-Sep	Coding	35
27-Sep	6-Oct	Results	10
7-Oct	16-Oct	Interpretation and analysis	10
17-Oct	21-Oct	Limitation	4
22-Oct	24-Oct	Future Scope	3
25-Oct	27-Oct	Recommendation	3
28-Oct	30-Oct	Conclusion	3

	Conclusion	Recommendation	Future Scope	Limitation	Interpretation and analysis	Results	Coding	Design	Technique	Literature survey	Requirement Identification	Problem Identification
Start date	28-Oct	25-Oct	22-Oct	17-Oct	7-Oct	27-Sep	22-Aug	14-Aug	10-Aug	2-Aug	29-Jul	22-Jul
🟧 Duration (days)	3	3	3	4	10	10	35	15	4	8	4	6

REFERENCES:

- https://www.w3schools.com/
- https://www.tutorialspoint.com/
- https://stackoverflow.com/
- https://www.quora.com/
- https://www.geeksforgeeks.org/