**LAB CYCLE 5**

**Experiment No :1**

**Date: 09/12/2024**

**Aim:**

Write a program to determine whether a given year is leap year(use calendar module).

**Pseudocode:**

1. Import calendar module.

2. Read the year.

3. If calendar.isleap(year) then

Print year is leap year

Else

Print year is not leap year

End if

**Method**

| **Function** | **Description** | **Syntax** |
| --- | --- | --- |
| isleap() | Checks the given year is leap year or not | calendar.isleap(year) |

**Source code:**

import calendar

yr=int(input("Enter the year:"))

if calendar.isleap(yr):

print("Year ",yr,"is a leap year")

else:

print("Year ",yr,"is not a leap year")

**Output:**

Enter the year : 2024

Year 2024 is a leap year

Enter the year : 1900

Year 2024 is not a leap year

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :2**

**Date: 09/12/2024**

**Aim:**

Write a python script to display

a) current date and time

b) current year

c) month of the year

d) week no:of the year

e) weekday of the week

f) day of year

g) day of month

h) day of week

**Pseudocode:**

1. Import datetime from datetime module

2. Set current date and time as cur=datetime.now()

3. Print current date and time,cur

4. Print Month of the year =cur.strftime("%B")

5. Print Week no: of the year=cur.strftime("%U")

6. Print Weekday of the week=cur.strftime("%A")

7. Print Day of the year:",cur.strftime("%j")

8. Print Day of the month:",cur.day

9. Print Day of the week:",cur.strftime("%A")

**Method**

| **Function** | **Description** | **Syntax** |
| --- | --- | --- |
| strftime() | Used to convert date and time objects to its string representations | datetime\_object.strftime(format) |
| now() | returns the current local date and time | datetime.now() |

**Source code:**

from datetime import datetime

cur=datetime.now()

print("Current date and time:",cur)

print("Current year:",cur.year)

print("Month of the year:",cur.strftime("%B"))

print("Week no: of the year:",cur.strftime("%U"))

print("Weekday of the week:",cur.strftime("%A"))

print("Day of the year:",cur.strftime("%j"))

print("Day of the month:",cur.day)

print("Day of the week:",cur.strftime("%A"))

**Output:**

Current date and time: 2024-12-09 15:01:53.581771

Current year: 2024

Month of the year: December

Week no: of the year: 49

Weekday of the week: Monday

Day of the year: 344

Day of the month: 9

Day of the week: Monday

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :3**

**Date: 09/12/2024**

**Aim:**

Write a python program to print yesterday,today,tomorrow.

**Pseudocode:**

1. Import datetime and timedelta from datetime module

2. Set today=datetime.now()

3. Set yesterday=today-timedelta(days=1)

4. Set tomorrow=today+timedelta(days=1)

5. Print yesterday

6. Print today

7. Print tomorrow

**Source code:**

from datetime import datetime,timedelta

today=datetime.now()

yesterday=today-timedelta(days=1)

tomorrow=today+timedelta(days=1)

print("Yesterday:",yesterday.strftime('%Y-%m-%d')) print("Today:",today.strftime('%Y-%m-%d')) print("Tomorrow:",tomorrow.strftime('%Y-%m-%d'))

**Output:**

Yesterday: 2024-12-08

Today: 2024-17-09

Tomorrow: 2024-17-10

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :4**

**Date: 09/12/2024**

**Aim:**

Write a function in file palindrome.py to check whether a string is Palindrome or not. Import the module to find the longest palindromic substring in a given string by checking every possible substring and verifying if it is a palindrome.

**Pseudocode:**

1. Define function palindrome(s) in palindrome.py file

Return s==s[::-1]

2. Import palindrome function from palindrome.py file

3. Define function long\_palindrome(s)

Initialize longest as an empty string

For each character index i from 0 to length of string s - 1

For each character index "j" from i+1 to length of string s

Extract the substring from index i to j (inclusive)

If the substring is a palindrome and its length is greater than the length of longest

Set longest to this substring

End if

End for

Return the longest palindrome substring

End for

4. Read the string

5. Call the function long\_palindrome with str1 as argument

6. Store the result in result variable

7. Print Longest palindrome substring, result

**Source code:**

from fpalindrome import palindrome

def long\_palindrome(s):

longest=""

for i in range(len(s)):

for j in range(i+1,len(s)+1):

substring=s[i:j]

if palindrome(substring) and len(substring)>len(longest):

longest=substring

return longest

str1=input("Enter string:")

result=long\_palindrome(str1)

print("Longest palindrome substring:",result)

**Output:**

Enter string: helloooworldd

Longest palindrome substring: ooo

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :5**

**Date: 09/12/2024**

**Aim:**

Create a package graphics with modules rectangle, circle and sub-package 3D-graphics with modules cuboid and sphere. Include methods to find area and perimeter of respective figures in each module. Write programs that find the area and perimeter of figures by different importing statements. (Include selective import of modules and import \* statements).

**Pseudocode:**

1. Create package graphics

2. Create rectangle module

Define function area(l,b)

Return l\*b

Define function perimeter(l,b)

Return 2\*(l+b)

3. Create circle module

Import math module

Define function area(r)

Return math.pi\*r\*r

Define function circumference(r)

Return 2\*math.pi\*r

4. Create sub-package 3D-graphics

5. Create cuboid module

Define function area(l,w,h)

Return 2\*(l\*w+w\*h+h\*l)

Define function perimeter(l,w,h)

Return 4\*(l+w+h)

6. Create sphere module

Import math module

Define function area(r)

Return 4\*math.pi\*r\*r

Define function volume(r)

Return (4/3)\*math.pi\*(r\*\*3)

7. Create main program file

8. Import modules and sub-package modules from graphics package

9. Read length and breadth of rectangle

10. Print area and perimeter rectangle

11. Read radius of circle

12. Print area and circumference of circle

13. Read length,breadth and height of cuboid

14. Print area and perimeter of cuboid

15. Read radius of sphere

16.Print area and volume of sphere

**Source code:**

//graphics package

//rectangle.py

def area(l,b):

return l\*b

def perimeter(l,b):

return 2\*(l+b)

//circle.py

import math

def area(r):

return math.pi\*r\*r

def circumference(r):

return 2\*math.pi\*r

//threegraphics

//cuboid.py

def area(l,w,h):

return 2\*(l\*w+w\*h+h\*l)

def perimeter(l,w,h):

return 4\*(l+w+h)

//circle.py

import math

def area(r):

return 4\*math.pi\*r\*r

def volume(r):

return (4/3)\*math.pi\*(r\*\*3)

//mainprg.py

import graphics.rectangle as r

import graphics.circle as c

import graphics.threegraphics.cuboid as cu

import graphics.threegraphics.sphere as s

len=int(input("Enter the length of the rectangle:"))

bre=int(input("Enter the breadth of the rectangle:"))

print("Area of rectangle=",r.area(len,bre))

print("Perimeter of rectangle=",r.perimeter(len,bre))

r1=int(input("\nEnter the radius of the circle:"))

print("Area of circle=",c.area(r1))

print("Circumference of the circle=",c.circumference(r1))

len1=int(input("\nEnter the length of the cuboid:"))

bre1=int(input("Enter the breadth of the cuboid:"))

hei1=int(input("Enter the height of the cuboid:"))

print("Area of cuboid=",cu.area(len1,bre1,hei1))

print("Perimeter of cuboid=",cu.perimeter(len1,bre1,hei1))

r2=int(input("\nEnter the radius of the sphere:"))

print("Area of sphere=",s.area(r2))

print("Volume of sphere=",s.volume(r2))

**Output:**

Enter the length of the rectangle:2

Enter the breadth of the rectangle:3

Area of rectangle=6

Perimeter of rectangle=10

Enter the radius of the circle:4

Area of circle=50.26548245743669

Circumference of the circle=25.1327412287718345

Enter the length of the cuboid:2

Enter the breadth of the cuboid:3

Enter the height of the cuboid:4

Area of cuboid=52

Perimeter of cuboid=36

Enter the radius of the sphere:6

Area of sphere=452.3893421169302

Volume of sphere=904.7786842338603

**Result:**

The program is successfully executed and the output is verified.

**LAB CYCLE 6**

**Experiment No :1**

**Date: 19/12/2024**

**Aim:**

Define a class to represent a bank account. Include the following details like name of the depositor, account number, type of account, balance amount in the account. Write methods to assign initial values, to deposit an amount, withdraw an amount after checking the balance, to display details such as name, account number, account type and balance.

**Pseudocode:**

1. Create class Bankaccount

2. Define function \_\_init\_\_(name, account\_number, account\_type, balance=0)

Set self.name = name

Set self.account\_number = account\_number

Set self.account\_type = account\_type

Set self.balance = balance

3. Define function self.balance = balance

If amount>0 then

If amount<=self.balance

Set self.balance-=amount

Print Amount withdrawn successfully. New balance: + self.balance

Else

Print Insufficient balance.

End if

Else

Print Withdraw amount must be positive.

End if

4. Define function deposit(amount)

If amount > 0:

self.balance += amount

Print Amount deposited successfully. New balance: " + self.balance

Else

Print Deposited amount must be positive.

End if

5. Define function display()

Print Account details

6. While True

Print operations

Read user choice

If choice=1 then

Get name,account number,account type,initial balance from user

Create new bank account object with given details

Print account created successfully

Else If choice=2 then

If account exists (account != None)

Get deposit\_amount from user

Call account.deposit(deposit\_amount)

Else

Print Create an account first.

Else If choice =3 then

If account exists (account != None)

Get withdraw\_amount from user

Call account.withdraw(withdraw\_amount)

Else

Print Create an account first

Else If choice = 4 then

If account exists (account != None)

Call account.display()

Else

Print Create an account first.

Else If choice == 5:

Print Exiting

Break

Else

Print Invalid choice

End if

**Source code:**

class Bankaccount:

def \_\_init\_\_(self,name,account\_number,account\_type,balance=0):

self.name=name

self.account\_number=account\_number

self.account\_type=account\_type

self.balance=balance

def withdraw(self,account):

if amount>0:

if amount<=self.balance:

self.balance-=amount

print(f"{amount} withdraw successfully. new balance:{self.balance}")

else:

print("Insufficient balance")

else:

print("Withdraw amount musy be positive")

def deposit(self,account):

if amount>0:

self.balance+=amount

print(f"{amount} deposited succesfully. new balance:{self.balance}")

else:

print("Deposited amount must be positive")

def display(self):

print("\nAccount details..")

print(f"Name:{self.name}")

print(f"Account\_number:{self.account\_number}")

print(f"Account\_type:{self.account\_type}")

print(f"Aalance:{self.balance}")

account=None

while True:

print("\n1.Create a new account")

print("2.Deposit money")

print("3.Withdraw money")

print("4.Display")

print("5.Exit")

choice=int(input("\nEnter your choice:"))

if choice==1:

name=input("\nEnter the account holder:")

account\_number=int(input("Enter the account number:"))

account\_type=input("Enter the account type(savings/current):")

initial\_balance=float(input("Enter the initial balance:"))

account=Bankaccount(name,account\_number,account\_type,initial\_balance)

print("Account created successfully")

elif choice==2:

if account:

amount=float(input("\nEnter the amount to depoist:"))

account.deposit(amount)

else:

print("Create an account first")

elif choice==3:

if account:

amount=float(input("\nEnter the amount to withdraw:"))

account.withdraw(amount)

else:

print("Create an account first")

elif choice==4:

if account:

account.display()

else:

print("Please create a account")

elif choice==5:

print("Exiting")

break

Else:

print("Invalid choice")

**Output:**

1.Create a new account

2.Deposit money

3.Withdraw money

4.Display

5.Exit

Enter your choice:1

Enter the account holder:Swarnna

Enter the account number:4567899976

Enter the account type(savings/current):savings

Enter the initial balance:3000

Account created successfully

1.Create a new account

2.Deposit money

3.Withdraw money

4.Display

5.Exit

Enter your choice:4

Account details..

Name:Swarnna

Account\_number:4567899976

Account\_type:savings

Aalance:3000.0

1.Create a new account

2.Deposit money

3.Withdraw money

4.Display

5.Exit

Enter your choice:2

Enter the amount to depoist:5000

5000.0 deposited succesfully. New balance:8000.0

1.Create a new account

2.Deposit money

3.Withdraw money

4.Display

5.Exit

Enter your choice:3

Enter the amount to withdraw:2000

2000.0 withdraw successfully. New balance:6000.0

1.Create a new account

2.Deposit money

3.Withdraw money

4.Display

5.Exit

Enter your choice:5

Exiting

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :2**

**Date: 19/12/2024**

**Aim:**

Create a class Publisher with attributes publisher id and publisher name. Derive class Book from Publisher with attributes title and author.Derive class Python from Book with attributes price and no\_of\_pages. Write a program that displays information about a Python book. Use base class constructor invocation and method overriding.

**Pseudocode:**

1. Create class Publisher

2. Define function \_\_init\_\_(publisher\_id, publisher\_name)

Set self.publisher\_id = publisher\_id

Set self.publisher\_name = publisher\_name

3. Define function display():

Print “Publisher ID: " + self.publisher\_id

Print "Publisher Name: " + self.publisher\_name

4. Create class Book (inherits from Publisher)

Define functions \_\_init\_\_(publisher\_id, publisher\_name, title, author)

Call Publisher.\_\_init\_\_(publisher\_id, publisher\_name)

Set self.title = title

Set self.author = author

5. Define function display():

Call Publisher.display()

Print "Book Title: " + self.title

Print "Author: " + self.author

6. Create class Python (inherits from Book):

7. Define function \_\_init\_\_(publisher\_id, publisher\_name, title, author, price, no\_of\_pages):

Call Book.\_\_init\_\_(publisher\_id, publisher\_name, title, author)

Set self.price = price

Set self.no\_of\_pages = no\_of\_pages

8. Define function display():

Call Book.display()

Print "Book Price: " + self.price

Print "Number of Pages: " + self.no\_of\_pages

9. Read details of the book from user

10. Create python\_book as an instance of Python class with the provided inputs

11. Print "Python Book Information:"

12. Call python\_book.display()

**Source code:**

class Publisher:

def \_\_init\_\_(self, publisher\_id, publisher\_name):

self.publisher\_id = publisher\_id

self.publisher\_name = publisher\_name

def display(self):

print(f"Publisher ID: {self.publisher\_id}")

print(f"Publisher Name: {self.publisher\_name}")

class Book(Publisher):

def \_\_init\_\_(self, publisher\_id, publisher\_name, title, author):

super().\_\_init\_\_(publisher\_id, publisher\_name)

self.title = title

self.author = author

def display(self):

super().display()

print(f"Book Title: {self.title}")

print(f"Author: {self.author}")

class Python(Book):

def \_\_init\_\_(self, publisher\_id, publisher\_name, title, author, price, no\_of\_pages):

super().\_\_init\_\_(publisher\_id, publisher\_name, title, author)

self.price = price

self.no\_of\_pages = no\_of\_pages

def display(self):

super().display()

print(f"Book Price: {self.price}")

print(f"Number of Pages: {self.no\_of\_pages}")

# Input details for the Python book

print("Enter the details of book:")

publisher\_id = int(input("Enter publisher ID: "))

publisher\_name = input("Enter publisher name: ")

title = input("Enter the title of the book: ")

author = input("Enter the author name: ")

price = int(input("Enter the price: "))

no\_of\_pages = int(input("Enter the number of pages: "))

# Create an instance of the Python class

python\_book = Python(

publisher\_id=publisher\_id,

publisher\_name=publisher\_name,

title=title,

author=author,

price=price,

no\_of\_pages=no\_of\_pages

)

# Display book information

print("\nPython Book Information:")

python\_book.display()

**Output:**

Enter the details of book:

Enter publisher ID: 101

Enter publisher name: Bloomsbury

Enter the title of the book: Harry Potter

Enter the author name: J K Rowling

Enter the price: 700

Enter the number of pages: 2000

Python Book Information:

Publisher ID: 101

Publisher Name: Bloomsbury

Book Title: Harry Potter

Author: J K Rowling

Book Price: 700

Number of Pages: 2000

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :3**

**Date: 19/12/2024**

**Aim:**

Write a program that has an abstract class Polygon. Derive two classes Rectangle and Triangle from Polygon and write methods to get the details of their dimensions and hence calculate the area.

**Pseudocode:**

1. Create abstract class Polygon

2. Define function get\_dimensions(self):

# Method to input polygon's dimensions

pass

3. Define function calculate\_area():

# Method to calculate the area of the polygon

pass

4. Create class Rectangle inherits from class Polygon

5. Create function \_\_init\_\_():

Set length = 0

Set breadth = 0

6. Define function get\_dimensions():

Read breadth and length from user

7. Define function calculate\_area():

Return length \* breadth

8. Create class Triangle inherits from class Polygon:

9. Define function \_\_init\_\_():

Set base = 0

Set height = 0

10. Define function get\_dimensions():

Read height and base from user

11. Define function calculate\_area():

Return 0.5 \* base \* height

12. Define main function

Print the options to choose polygon

Read the choice

If choice = 1 then

Create Rectangle object

Else If choice = 2 then

Create Triangle object

Else

Print invalid choice

Exit the program

End if

13. Call get\_dimensions() on the chosen polygon

14. Call calculate\_area() on the chosen polygon

15. Print area of the selected polygon

**Source code:**

from abc import ABC, abstractmethod

class Polygon(ABC):

@abstractmethod

def get\_dimensions(self):

Pass

@abstractmethod

def calculate\_area(self):

pass

class Rectangle(Polygon):

def \_\_init\_\_(self):

self.length = 0

self.breadth = 0

def get\_dimensions(self):

self.length = float(input("Enter the length of the rectangle: "))

self.breadth = float(input("Enter the breadth of the rectangle: "))

def calculate\_area(self):

return self.length \* self.breadth

class Triangle(Polygon):

def \_\_init\_\_(self):

self.base = 0

self.height = 0

def get\_dimensions(self):

self.base = float(input("Enter the base of the triangle: "))

self.height = float(input("Enter the height of the triangle: "))

def calculate\_area(self):

return 0.5 \* self.base \* self.height

def main():

print("Choose a polygon:")

print("1. Rectangle")

print("2. Triangle")

choice = int(input("Enter your choice (1 or 2): "))

if choice == 1:

polygon = Rectangle()

elif choice == 2:

polygon = Triangle()

else:

print("Invalid choice!")

return

polygon.get\_dimensions()

area = polygon.calculate\_area()

print(f"The area of the selected polygon is: {area}")

if \_\_name\_\_ == "\_\_main\_\_":

main()

**Output:**

Choose a polygon:

1. Rectangle

2. Triangle

Enter your choice (1 or 2): 1

Enter the length of the rectangle: 9

Enter the breadth of the rectangle: 3

The area of the selected polygon is: 27.0

Choose a polygon:

1. Rectangle

2. Triangle

Enter your choice (1 or 2): 2

Enter the base of the triangle: 4

Enter the height of the triangle: 6

The area of the selected polygon is: 12.0

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :4**

**Date: 19/12/2024**

**Aim:**

Create a Rectangle class with attributes length and breadth and methods to find area and perimeter. Compare two Rectangle objects by their area.

**Pseudocode:**

1. Create class Rectangle

2. Define function \_\_init\_\_(self,length, breadth):

Set self.length = length

Set self.breadth = breadth

3. Define function area(self)

Return self.length \* self.breadth

4. Define function perimeter(self):

Return 2 \* (self.length + self.breadth)

5. Define function \_\_lt\_\_(self,other):

Return self.area() < other.area()

6. Define function \_\_eq\_\_(other):

Return self.area() == other.area()

7. Define function \_\_gt\_\_(other):

Return self.area() > other.area()

8. Define function main()

Read lenghth and breadth of first rectangle as length1, breadth1

Create rect1 as an instance of Rectangle with length1, breadth1

Read lenghth and breadth of second rectangle as length2, breadth2

Create rect1 as an instance of Rectangle with length2, breadth2

Print "Rectangle 1 - Area: ", rect1.area(), " Perimeter: ", rect1.perimeter()

Print "Rectangle 2 - Area: ", rect2.area(), " Perimeter: ", rect2.perimeter()

If rect1 > rect2:

Print The first rectangle has a larger area

Else If rect1 < rect2:

Print The second rectangle has a larger area

Else

Print Both rectangles have the same area

End if

**Source code:**

class Rectangle:

def \_\_init\_\_(self, length, breadth):

self.length = length

self.breadth = breadth

def area(self):

return self.length \* self.breadth

def perimeter(self):

return 2 \* (self.length + self.breadth)

def \_\_lt\_\_(self, other):

"""Compare if this rectangle's area is less than another rectangle's area."""

return self.area() < other.area()

def \_\_eq\_\_(self, other):

"""Check if this rectangle's area is equal to another rectangle's area."""

return self.area() == other.area()

def \_\_gt\_\_(self, other):

"""Compare if this rectangle's area is greater than another rectangle's area."""

return self.area() > other.area()

def main():

length1 = float(input("Enter the length of the first rectangle: "))

breadth1 = float(input("Enter the breadth of the first rectangle: "))

rect1 = Rectangle(length1, breadth1)

length2 = float(input("Enter the length of the second rectangle: "))

breadth2 = float(input("Enter the breadth of the second rectangle: "))

rect2 = Rectangle(length2, breadth2)

print(f"Rectangle 1 - Area: {rect1.area()}, Perimeter: {rect1.perimeter()}")

print(f"Rectangle 2 - Area: {rect2.area()}, Perimeter: {rect2.perimeter()}")

if rect1 > rect2:

print("The first rectangle has a larger area.")

elif rect1 < rect2:

print("The second rectangle has a larger area.")

else:

print("Both rectangles have the same area.")

if \_\_name\_\_ == "\_\_main\_\_":

main()

**Output:**

Enter the length of the first rectangle: 4

Enter the breadth of the first rectangle: 6

Enter the length of the second rectangle: 2

Enter the breadth of the second rectangle: 7

Rectangle 1 - Area: 24.0, Perimeter: 20.0

Rectangle 2 - Area: 14.0, Perimeter: 18.0

The first rectangle has a larger area.

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :5**

**Date: 19/12/2024**

**Aim:**

Create a class Time with private attributes hour, minute and second. Overload ‘+’ operator to find sum of 2 times.

**Pseudocode:**

1. Create class Time:

2. Define function \_\_init\_\_(self, hour, minute, second)

Set self.\_\_hour = hour

Set self.\_\_minute = minute

Set self.\_\_second = second

3. Define function \_\_add\_\_(self,other)

Set total\_seconds = self.\_\_second + other.\_\_second

Set total\_minutes = self.\_\_minute + other.\_\_minute + (total\_seconds // 60)

Set total\_hours = self.\_\_hour + other.\_\_hour + (total\_minutes // 60)

Set seconds = total\_seconds % 60

Set minutes = total\_minutes % 60

Set hours = total\_hours % 24

Return a new Time object with hours, minutes, seconds

4. Define function display(self)

Print self.\_\_hour, self.\_\_minute, self.\_\_second in HH:MM:SS format

5. Define function main()

Read hour, minute, second from user for first time

Create time1 as an instance of Time with hour1, minute1, second1

Read hour, minute, second from user for second time

Create time2 as an instance of Time with hour2, minute2, second2

Calculate total\_time = time1 + time2

Print sum of time

Call total\_time.display()

**Source code:**

class Time:

def \_\_init\_\_(self, hour, minute, second):

self.\_\_hour = hour

self.\_\_minute = minute

self.\_\_second = second

def \_\_add\_\_(self, other):

total\_seconds = self.\_\_second + other.\_\_second

total\_minutes = self.\_\_minute + other.\_\_minute + (total\_seconds // 60)

total\_hours = self.\_\_hour + other.\_\_hour + (total\_minutes // 60)

seconds = total\_seconds % 60

minutes = total\_minutes % 60

hours = total\_hours % 24

return Time(hours, minutes, seconds)

def display(self):

print(f"{self.\_\_hour:02}:{self.\_\_minute:02}:{self.\_\_second:02}")

def main():

print("Enter the first time:")

hour1 = int(input("Hour: "))

minute1 = int(input("Minute: "))

second1 = int(input("Second: "))

time1 = Time(hour1, minute1, second1)

print("Enter the second time:")

hour2 = int(input("Hour: "))

minute2 = int(input("Minute: "))

second2 = int(input("Second: "))

time2 = Time(hour2, minute2, second2)

total\_time = time1 + time2

print("The sum of the two times is:")

total\_time.display()

if \_\_name\_\_ == "\_\_main\_\_":

main()

**Output:**

Enter the first time:

Hour: 3

Minute: 30

Second: 25

Enter the second time:

Hour: 3

Minute: 10

Second: 5

The sum of the two times is:

06:40:30

**Result:**

The program is successfully executed and the output is verified.

**LAB CYCLE 7**

**Experiment No :1**

**Date: 19/12/2024**

**Aim:**

Write a Python program to read a file line by line and store it into a list.

**Pseudocode:**

1. Define function read\_file\_to\_list(filename)

Open the file with the given filename in read mode

Initialize an empty list to store the lines

For each line in the file:

Remove leading and trailing whitespace from the line

Add the cleaned line to the list

Close the file

Return the list containing all the cleaned lines

2. Set filename to example.txt

3. Call read\_file\_to\_list with the filename and store the result in lines\_list

4. Print the lines\_list

**Method:**

| **Function** | **Description** | **Syntax** |
| --- | --- | --- |
| open() | used to open a file and returns it as a file object | open(file,mode) |
| **strip()** |  | **string.strip(characters)** |

**Source code:**

def read\_file\_to\_list(filename):

with open(filename, 'r') as file:

lines = [line.strip() for line in file]

return lines

filename = 'example.txt'

lines\_list = read\_file\_to\_list(filename)

print(lines\_list)

**Output:**

Contents of example.txt

Hello, world!

[‘Hello, world’]

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :2**

**Date: 19/12/2024**

**Aim:**

Python program to copy odd lines of one file to other.

**Pseudocode:**

1. Create function copy\_odd\_lines(source\_file, destination\_file)

Open source\_file in read mode

Read all lines from source\_file and store them in a list called 'lines'

Open destination\_file in write mode

For each line in 'lines', with an index starting from 0, every second line

Write the current line to destination\_file

Close both source\_file and destination\_file

2. Set source\_file to sample.txt

3. Set destination\_file to "odd\_lines.txt"

4. Call copy\_odd\_lines with source\_file and destination\_file

5. Print "Odd lines have been copied.”

**Source code:**

def copy\_odd\_lines(source\_file, destination\_file):

with open(source\_file, 'r') as src:

lines = src.readlines()

with open(destination\_file, 'w') as dest:

for i in range(0, len(lines), 2):

dest.write(lines[i])

source = "sample.txt"

destination = "odd\_lines.txt"

copy\_odd\_lines(source, destination)

print("Odd lines have been copied.")

**Output:**

Hello, this is the first line.

This is the second line.

Here comes the third line.

And finally, the fourth line.

Odd lines have been copied.

Hello, this is the first line.

Here comes the third line.

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :3**

**Date: 19/12/2024**

**Aim:**

Write a Python program to read each row from a given csv file and print a list of strings.

**Pseudocode:**

**Source code:**

import csv

def read\_csv\_file(filename):

with open(filename, mode='r', newline='') as file:

reader = csv.reader(file)

for row in reader:

print(row)

csv\_filename = "example.csv"

read\_csv\_file(csv\_filename)

**Output:**

Contents of example.csv

Hello, this is the first line.

This is the second line.

Here comes the third line.

And finally, the fourth line.

['Hello', ' this is the first line.']

['This is the second line.']

['Here comes the third line.']

['And finally', ' the fourth line.']

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :4**

**Date: 19/12/2024**

**Aim:**

Write a Python program to read specific columns of a given CSV file and print the content of the columns.

**Pseudocode:**

**Source code:**

import csv

def read\_specific\_columns(filename, columns):

with open(filename, mode='r', newline='') as file:

reader = csv.reader(file)

for row in reader:

selected\_columns = [row[i] for i in columns]

print(selected\_columns)

csv\_filename = "data.csv"

columns\_to\_read = [0, 2]

read\_specific\_columns(csv\_filename, columns\_to\_read)

**Output:**

Contents of data.csv

Name, Age, City

Swarnna, 22, Paris

Nafia, 22, London

Nandana, 22, Berlin

[‘Name’, ‘City’]

[‘Swarnna’, ‘Paris’]

[‘Nafia’, ‘London’]

[‘Nandana’, ‘Berlin’]

**Result:**

The program is successfully executed and the output is verified.

**Experiment No :5**

**Date: 19/12/2024**

**Aim:**

Write a Python program to write a Python dictionary to a csv file. After writing the CSV file, read the CSV file and display the content.

**Pseudocode:**

**Source code:**

import csv

def write\_dict\_to\_csv(filename, data):

with open(filename, mode='w', newline='') as file:

writer = csv.DictWriter(file, fieldnames=data[0].keys())

writer.writeheader()

writer.writerows(data)

def read\_csv\_file(filename):

with open(filename, mode='r', newline='') as file:

reader = csv.DictReader(file)

for row in reader:

print(row)

dict\_data = [ {'Name': 'Swarna', 'Age': 22, 'City': 'Paris'}, {'Name': 'Nafia', 'Age': 22, 'City': 'London'}, {'Name': 'Nandana', 'Age': 22, 'City': 'Berlin'} ]

csv\_filename = "output.csv"

write\_dict\_to\_csv(csv\_filename, dict\_data)

print("CSV file content:")

read\_csv\_file(csv\_filename)

**Output:**

CSV file content:

{'Name': 'Swarna', 'Age': 22, 'City': 'Paris'}

{'Name': 'Nafia', 'Age': 22, 'City': 'London'}

{'Name': 'Nandana', 'Age': 22, 'City': 'Berlin'}

**Result:**

The program is successfully executed and the output is verified.