Python Practicals

Q1. Write a program related to functions and modules.

```
import math

def calculate_rectangle_area(length, width):
  area = length * width
  return area

rectangle_area = calculate_rectangle_area(5, 3)
print("The area of the rectangle is:", rectangle_area)

square_root = math.sqrt(16)
print("The square root of 16 is:", square_root)
```

Output:-

```
The area of the rectangle is: 15
The square root of 16 is: 4.0
```

Q2. Program to demonstrate the use of dictionary and related functions.

```
dict = {1:"Prem", 2 : "Vaishnavi", 3 : "Om"}
print("The length of dict is :", len(dict))
dict_copy = dict.copy()
print("This is a copy of dict :", dict_copy)
print("The keys in the dict are: ",dict.keys())
print("The values in the dict are:", dict.values())
print("The items of the dict are :", dict.items())
```

Output:

```
The length of dict is : 3
This is a copy of dict : {1: 'Prem', 2: Vaishnavi, 3: 'Om'}
The keys in the dict are:  dict_keys([1, 2, 3])
The values in the dict are: dict_values(['Prem', Vaishnavi, 'Om'])
The items of the dict are : dict_items([(1, 'Prem'), (2, Vaishnavi), (3, 'Om')])
```

Q3. Program to demonstrate the working of classes and objects.

```
class calculate:
    def square_area(x):
        return x*x

area = print("The area of square", calculate.square_area(4))
```

Output:

The area of square 16

Q4. Write a program to demonstrate working of inheritance.

Single:

```
class Vehicle:
   def Vehicle_info(self):
      print("Inside the parent class")
class Car(Vehicle):
   def car_info(self):
      print("Inside the derived class")

car= Car()
car.Vehicle_info()
```

Output:

Inside the parent class

Multiple Inheritance:

```
class Person:
   def person_info(self, name, age):
     print("Inside person class")
     print("Name : ",name," Age :", age)

class Company:
   def company_info(self,company_name,location):
      print("Inside Company Class")
      print("Name: ",company_name, ' location : ',location)


class Employee(Person, Company):
   def Employe_info(self, salary, skill):
      print("Inside employee class")
```

```
        print("Salary : ", salary , ' Skill : ',skill)

emp = Employee()
emp.person_info('Prem', 21)
emp.Employe_info('IBM', 'Pune')
```

Output:

```
Inside person class
Name :  Prem  Age : 21
Inside employee class
Salary :  IBM  Skill :  Pune
```

Multi-Level

```
class Animal:
    def speak(self):
        print("Animal Speaking")
class Dog(Animal):
    def bark(self):
        print("dog barking")
class DogChild(Dog):
    def eat(self):
        print("Eating bread...")
d = DogChild()
d.bark()
d.speak()
d.eat()
```

Output:

dog barking

Animal Speaking

Eating bread...

Hierarchical

```
class Vehicle:
 def info(self):
     print("This is Vehicle")
class Car(Vehicle):
    def car_info(self, name):
        print("Car name is:", name)
class Truck(Vehicle):
    def truck_info(self, name):
        print("Truck name is:", name)
obj1 = Car()
obj1.info()
obj1.car_info('BMW')
obj2 = Truck()
obj2.info()
obj2.truck_info('Ford')
```

Output:

This is Vehicle

Car name is: BMW

This is Vehicle

Truck name is: Ford

Hybrid

```
class Vehicle:
    def vehicle_info(self):
        print("Inside Vehicle class")
class Car(Vehicle):
    def car_info(self):
        print("Inside Car class")
class Truck(Vehicle):
    def truck_info(self):
        print("Inside Truck class")
class SportsCar(Car, Vehicle):
    def sports_car_info(self):
        print("Inside SportsCar class")
s_car = SportsCar()
s_car.vehicle_info()
s_car.car_info()
s_car.sports_car_info()
```

Output:

```
Inside Vehicle class
Inside Car class
Inside SportsCar class
```

Q5. Demonstrate the working of Overloading methods and operator.

```
class Add:
    def __init__(self,a):
        self.a = a

    def __add__(self,o):
        return self.a + o.a

ob1 = Add(1)
ob2 = Add(2)
obj1 = Add("Prem")
obj2 = Add(" is  a Student")

print(ob1 + ob2)
print(obj1 + obj2)
```

Output:

```
3
Prem is a Student
```

Q6. Program to demonstrate Exception handling mechanism.

```
x = 10
try:
    divide = x/0
    print("The output of the above division is:",divide)

except ZeroDivisionError as e:
    print("An error occurred:",e)
```

Output:

```
An error occurred: division by zero
```

Q7. Demonstrate Regular Expression in python.

```
import re
txt = "The rain in Spain"
x = re.search("^The.*Spain$", txt)
if x:
    print("YES! We have a match!")
else:
    print("No match")
```

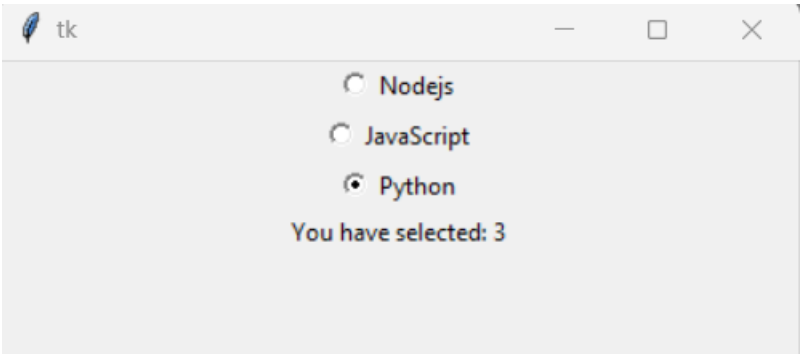
Output:

```
YES! We have a match!
```

Q8. Demonstrate RadioButton, checkbox, DialogBoxes using python tkinter.

```
from tkinter import *
top = Tk()
top.geometry("400x400")
def selection():
    selection = "You have selected: "+ str(radio.get())
    label.config(text=selection)
radio = IntVar()
option1 = Radiobutton(top, value = 1, text="Nodejs", variable = radio,
command = selection, textvariable = "Nodejs")
option1.pack()
option2 = Radiobutton(top, value = 2, text="JavaScript", variable = radio,
command = selection, textvariable = "JavaScript")
option2.pack()
option3 = Radiobutton(top, value = 3, text="Python",  variable = radio,
command = selection, textvariable = "Python")
option3.pack()
label = Label(top)
label.pack()
top.mainloop
```

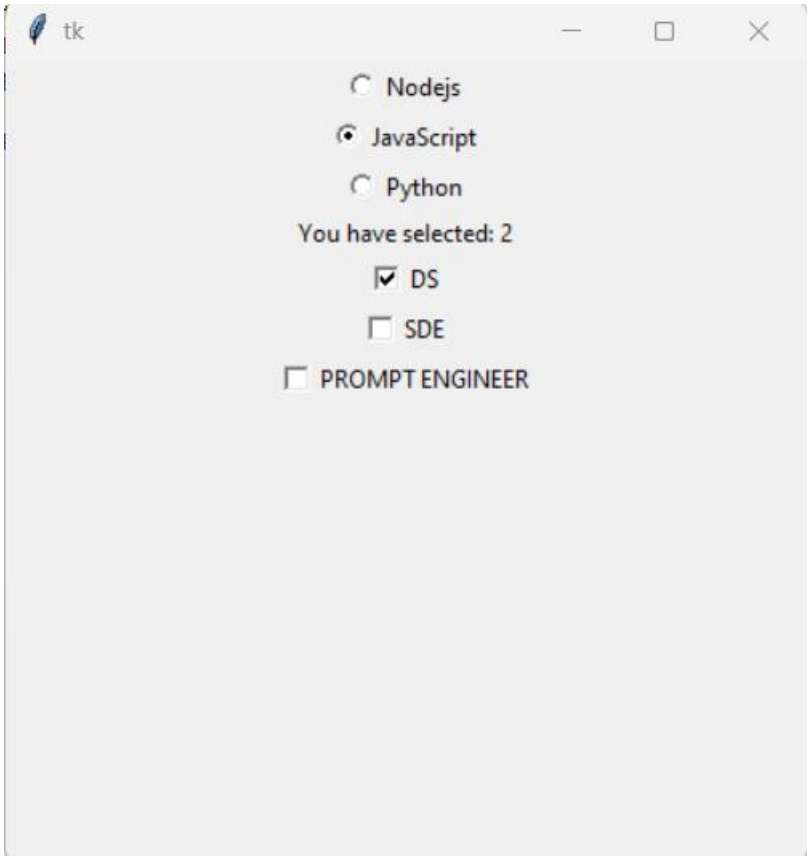
Output:



Q9. Learn GUI using Tkinter.

```
from tkinter import *
top = Tk()
top.geometry("400x400")
def selection():
    selection = "You have selected: "+ str(radio.get())
    label.config(text=selection)
radio = IntVar()
option1 = Radiobutton(top, value = 1, text="Nodejs", variable = radio,
command = selection, textvariable = "Nodejs")
option1.pack()
option2 = Radiobutton(top, value = 2, text="JavaScript", variable = radio,
command = selection, textvariable = "JavaScript")
option2.pack()
option3 = Radiobutton(top, value = 3, text="Python",  variable = radio,
command = selection, textvariable = "Python")
option3.pack()
label = Label(top)
label.pack()
check1 = Checkbutton(top, text = "DS")
check1.pack()
check2 = Checkbutton(top, text = "SDE")
check2.pack()
check2 = Checkbutton(top, text = "PROMPT ENGINEER")
check2.pack()
top.mainloop
```

Output:-


tk
Nodejs
JavaScript
Python
You have selected: 2
DS
SDE
PROMPT ENGINEER

Q10. Program to create a database for insert, update, and delete in SQL.

```
import mysql.connector

try:
    mydb = mysql.connector.connect(
        host="localhost",
        user="root",
        password="Prem@2715",
        auth_plugin = "mysql_native_password"
    )

    mycursor = mydb.cursor()
    mycursor.execute("CREATE DATABASE PREM")
    mycursor.execute("USE PREM")
    mycursor.execute("CREATE TABLE Employee (name VARCHAR(255),
profession VARCHAR(255))")
    sql = ("INSERT INTO Employee (name, profession) VALUES (%s,%s)")
    val = ("Prem Rathod","Data Scientist")
    mycursor.execute(sql, val)
    update = "UPDATE Employee SET name = 'Yug Rathod' WHERE name =
'Prem Rathod'"
    mydb.commit()
    delete = "DELETE FROM Employee WHERE name = 'Yug Rathod'"
    mydb.commit()
except Exception as e:
    print("An error occurred:", e)
```