Object Oriented programming

Computer Systems Lab I

September 8, 2023

1 Write a program in Python to show the following Object Oriented programming concepts:

- Inheritance
- Polymorphism

Python Syntax:

- **Class:**

```python
class Dog:

    # class attribute
    attr1 = "mammal"

    # Instance attribute
    def __init__(self, name):
    self.name = name

    def speak(self):
        print("My name is {}".format(self.name))

    # Driver code
    # Object instantiation
    Rodger = Dog("Rodger")
    Tommy = Dog("Tommy")

    # Accessing class methods
    Rodger.speak()
    Tommy.speak()
```

- **Inheritance:**

```python
class Person(object):

# __init__ is known as the constructor
def __init__(self, name, idnumber):
    self.name = name
    self.idnumber = idnumber

def display(self):
    print(self.name)
    print(self.idnumber)
```

```python
# child class
class Employee(Person):
    def __init__(self, name, idnumber, salary, post):
        self.salary = salary
        self.post = post

        # invoking the __init__ of the parent class
        Person.__init__(self, name, idnumber)

    def details(self):
        print("My name is {}".format(self.name))
        print("IdNumber: {}".format(self.idnumber))
        print("Post: {}".format(self.post))

# creation of an object variable or an instance
a = Employee('Rahul', 886012, 200000, "Intern")

# calling a function of the class Person using its instance
a.display()
a.details()
```

- Polymorphysm/Overriding

```python
class Bird:
    def intro(self):
        print("There are many types of birds.")
    def flight(self):
        print("Most of the birds can fly but some cannot.")

class sparrow(Bird):
    def flight(self):
        print("Sparrows can fly.")

class ostrich(Bird):
    def flight(self):
        print("Ostriches cannot fly.")
```

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