## Shubhangi Dhikale_35

## 1.What Is Object-Oriented Programming?

In [ ]:
```
Object-orinted programming(OOP) is a computer programming model that organizes so
functions and logic.An object can be defined as a data field that has unique attr
OOP focuses on the object that developers want to manipulate rather than the logi
This approach to programming is well-suited for programs that are large, complex
This includes programs for manufacturing and design,as well as mobile applicatior
for examples oop can be used for manufacturing system simulation software.
The structure,or building blocks of object-oriented programming includes the foll
1) classes:collection of variables and functions.A class is a blueprint.
2) Objects: Objects are instances of a class created with specifically defined da
3) Methods: Methods are functions that are defined inside a class that describe t
4) Attributes: Attributes are defined in the class template and represent the sta
```

## 2.Difference between Procedural programming and OOPs?

In [ ]:
```
Procedural programming:
1)In procedural programming,the program is divided into small parts called functi
2)Procedural programming follows a top-down approach.
3)There is no access specifier in procedural programming.
4)Adding new data and functions is not easy.
5)procedural programming does not have any proper way of hiding data so it is les
6)In procedural programming, overloading is not possible.
7)procedural programming, there is no concept of data hiding and inheritance.
8)procedural programming,the function is more important than the data.
9)procedural programming is based on the unreal world.
10)procedural programming is used for designing medium-sized programs.
11)procedural programming uses the concept of procedure abstraction.
12)Code reusability absent in procedural programming,example: C,FORTRAN,Pascal,Ba


Object-Oriented Peogramming programming:
1)In Object-Oriented programming,the program is divided into small parts called c
2)Object-Oriented programming follows a bottom-up approach.
3)There is access specifiers like private,public,protected,etc.
4)Adding new data and functions is easy.
5)Object-Oriented programming provides data hiding so it is more secure.
6)Object-Oriented programming, overloading possible.
7)Object-Oriented programming, there is concept of data hiding and inheritance.
8)Object-Oriented programming,the data is more important than the function.
9)Object-Oriented programming is based on the real world.
10)Object-Oriented programming is used for designing large and complex programs.
11)Object-Oriented programming uses the concept of procedure data abstraction.
12)Code reusability present inObject-Oriented programming ,example: C++,Java,Pyth
```

## 3.What are the fundamental principles/features of Object-Oriented

## Programming?

In [ ]:
```
The four principles of object-oriented programming are :
Inheritance
Encapsulation
Polymorphisam
Abstraction
```

## 4.What is an object?

In [ ]:
```
Object can correspond to real-world objects or an abstract entity.
Everything in python is called as an object.
Object is an instance of class created with specificically defined data.
When class is defined initially, the description is the only object that ia defir
```

## 5.What is a class?

In [ ]:
```
It is collection of variables(attributes) and functions(method).
classes are user-defined data types that act as the blueprint for individual obje
for one class,we can create multiple object.
objects are independent.
```

## 6.What is the difference between a class and an object?

In [ ]:
```
class:
1)class is used as a template for declaring and creating the objects.
2) when no class is created, no memory is allocated.
3)The class has to be declared first and only once.
4) A class can not be manipulated as they are not available in the memory.
5) class is a logical entity.
6) It is declared with the class keyword.

Object:
1) An object is an instance of a class.
2) Object are allocated memory space whenever they are created.
3) An object is created many times as per requirement.
4) Object can be manipulated.
5) An object is physical entity.
```

## 7.Can you call the base class method without creating an instance?

In [ ]:
```
Yes, it is possible,
1) If it is a static method.
2) By inheriting from that class.
3) From derived classes using base keyword.
```

## 8.What is inheritance?

In [ ]:
```
It allows a class to inherit the all the methods and properties from another clas
It help us to reuse the code.
Parent class is the class being inherited from,also called base class.
Child class is the class that inherits from another class,also called derived cla
```

## 9.What are the different types of inheritance?

In [ ]:
```
1) Single Inheritance
2) Multiple Inheritance
3) Multiple Inheritance
4) Hierarchical Inheritance
5) Hybrid Inheritance
```

## 10.What is the difference between multiple and multilevel inheritances?

In [ ]:
```
Multiple inheritance:
1) Multiple inheritance is an inheritance type where a class inherits from more t
2) Multiple inheritance is not widely used because it makes the system more compl
3) Multiple inheritance has two class levels namely,base class and derived class.

Multilevel class:
1) Multilevel inheritance is an inheritance type that inherits from derived class
2) Multilevel Inheritance is widely used.
3) Multilevel inheritance has three class levels namely,base class, intermediate
```

## 11.What are the limitations of inheritance?

In [ ]:
```
1) Decreasesthe Execution Speed:
    loding multiple classes because they are independent on each other
2) Tightly coupled classes:
    This means that even though parent classes can be executed independently,chil
    defining their parent classes.
```

## 12.What are the superclass and subclass?

In [ ]:
```
Superclass:
    The class from which a class inherits is called the parent or superclass.
Subclass:
    The class which inherits from a superclass is called a subclass,also called h
```

## 13.What is the super keyword?

In [ ]:
```
The super keyword refers to superclass (parent) objects.
It is used to call superclass methods,and to access the superclass constructor.
```

## 14.What is encapsulation?

In [ ]:
```
It is used to restrict the access of methods and variables.
Protecting data from the modification.
```

## 15.What is the name mangling and how does it work?

In [ ]:
```
With the help of name mangling we can access private method/variable from outside
Syntax:
    _ClassName__Identifier
```

In [9]:
```
class EmployeeDetails:
    name="shubham"
    __company_name="TCS"

    def __init__(self,salary,location):
        print("Employee Details")
        self.salary=salary
        self.location=location
    def employee_salary(self):
        print("Emplyee_salalry:",self.salary)
    def employee_location(self):
        print("Employee_loc:",self.location)
        print("Employee name:",self.__company_name)
emp=EmployeeDetails(40000,"pune")
emp.employee_salary()
emp.employee_location()
print(emp._EmployeeDetails__company_name)
```

```
Employee Details
Emplyee_salalry: 40000
Employee_loc: pune
Employee name: TCS
TCS
```

## 16.What is the difference between public and private access modifiers?

In [ ]:
```
Public Variables/Methods:
Can be accessed from outside the class

Private Variables/Methods:
Can not be accessed from outside the class
```

## 17.Is Python 100 percent object-oriented?

In [ ]:
```
Yes, it is. With the exception of control flow,everything in python is an object
```

## 18.What is data abstraction?

In [ ]:
```
The process by which data and function are defined in such a way that only essent
and unnecessary implementation are hidden is called Data abstraction.
```

## 19.How to achieve data abstraction?

In [ ]:
```
Abstraction can be achieved by using abstract classes and interfaces.
A class that consists of one or more abstract method is called the abstract class
Abstract methods do not contain their implementation.
```

## 20.What is an abstract class?

In [ ]:
```
A class that consists of one or more abstract method is called the abstract class
Abstract methods is a method that is declared,but contains no implementation.
We cannot create an object of an abstract class
By defualt python does not support the abstraction class(We need to import the ab
```

## 21.Can you create an object of an abstract class?

In [ ]:
```
No, we can not create an object of an abstract class because an abstract class is
(incomplete means it contains abstract methods without body and output )
```

## 22.Differentiate between data abstraction and encapsulation

In [ ]:
```
data abstraction:
1) Abstraction works on the design level.
2) Abstraction is implemented to hide unnecessary data and withdrawing relevent d
3) It highlights what the work of an object instead of how the object works is
4) Abstraction focuses on outside viewing, for example,shifting the car

encapsulation:
1)Encapsulation works on the application level.
2)Encapsulation is the mechanism of hiding the code and the data together from th
3)It focuses on the inner details of how the object works.modification can be don
4)Encapsulation focuses on internal working or inner viewing, for example, the pr
```

## 23.What is polymorphism?

In [ ]:
```
The word polymorphism means having many forms.
In programming,polymorphism means the same function name being used for different
```

## 24.What is the overloading method?

In [ ]:
```
overloading is a method or operator that can do different functionalities with th
```

## 25.What are the limitations of OOPs

In [ ]:
```
1) Object oriented programming language and the program in OOPS are complex to in
2) If we declare a class as private,then it cannot be accessed by any other class
3) It is a language which is made up of classes and objects so it is hard.
4) Designing a program in OOP concept is a little bit tricky.
5) The programmer should have a proper planning before designing a program using
6) Size of program created using OOP aproach are often larger than size of progra
7) Programs created using OOPS can sometimes consume large amount of memory.
8) Code written using OOP are difficult to understand if you do not have good exp
```