

① create a function that will take 2 inputs from keyboard and perform the following formula :

$$(a+b)^2 = a^2 + b^2 + 2ab$$

take input (a, b)

return $a^2 + b^2 + 2ab$

② use lambda function to perform the above formula

③ Define a recursion function that return the ~~fib~~ factorial of a number
ex \rightarrow $n \rightarrow$ take input
perform $n!$

④ create a function that will find the ~~prime~~ number is prime or not

LIST

task 01

a = [1, 3, 5, 7, 4]

- 1) access a[-2], a[2]
~~to~~ find length and type
- 2) change a[-3] = 50, a[2:4]
- 3) add 100 in last index
add 200 in index=2
- 4) Remove last element
remove element on index 1
- 5) Join a new list [2, 4, 6] with a
- 6) copy all values in a new list b
- 7) sort the elements of b
- 8) print all the elements using loop
and break if get 5
- 9) Find the largest number in a

Tuple

task 02

$a = (1, 3, 5, 7, 4)$

- Find the sum of all odd number in a
- Find " " " " " " index element in a .
- Count the number of odd and even number separately .
- Extend the tuple with $(2, 4, 6)$
- add a new item in index 2
(400)
- Remove the last element
- Perform slicing $[-4:-1]$
- print the tuple using loop and use continue if get 5

Set

$a = \{1, 3, 5, 8, 3, 7\}$

$b = \{0, \text{False}, 1, 5\}$

- ① Print a, b
- ② Print length and their type
- ③ add a new element 10 in set a
- ④ Remove 8 from the set a
- ⑤ Perform, union, intersection, difference, symmetric difference, issubset operation on set a and set b
- ⑥ join a new list [2, 3, 4] with set a

Dictionary

```
employee = { "name" : "A"  
             "age" : 40  
             "type" : { "developer" : ["ios", "android"] }  
             "permanent" : True  
             "salary" : 30000,  
             100 : (1, 2, 3)  
             4.5 : { 5, 6, True, 7, 1 }  
             }
```

- ① print length, type, employee
- ② access the key `employee["type"]` `["developer"]`
- ③ change the value of `"permanent"` to false
- ④ add new key `"gender"` having value `"male"`
- ⑤ remove `"age"` key from dictionary
- ⑥ use `keys()`, `values()`, `items()`
- ⑦ iterate the dictionary using loop.

String

a = "hello"

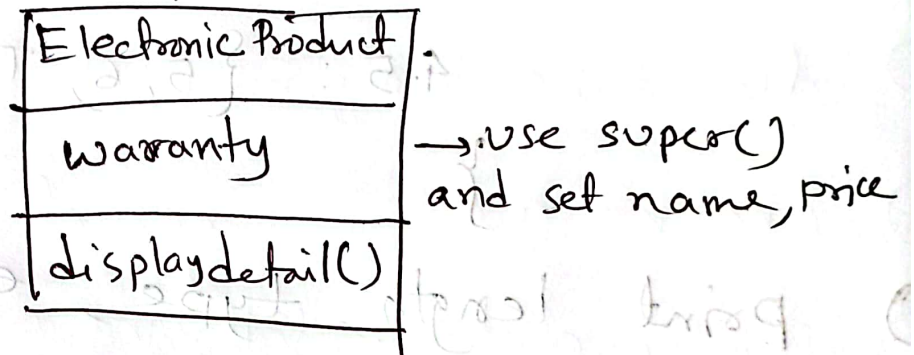
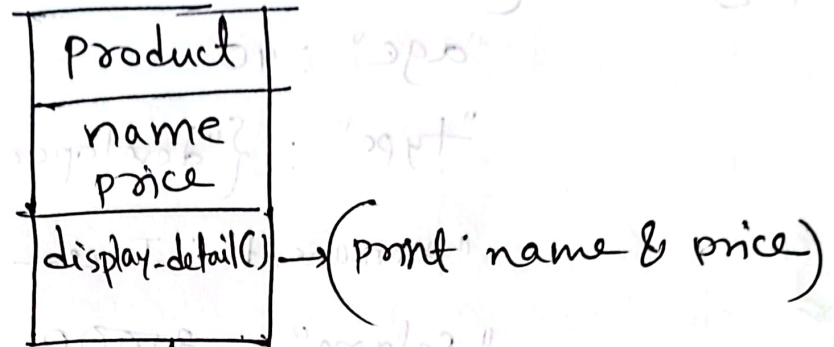
b = "b2b2b2"

c = "3g3g"

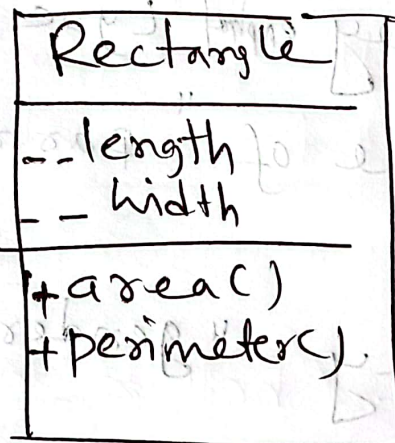
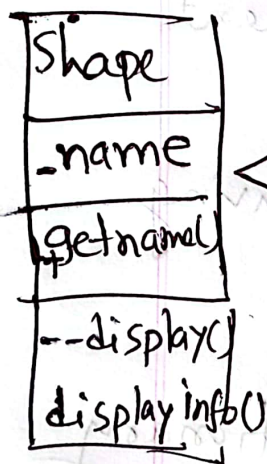
- ① declare a new variable d and concatenate (a, b, c)
- ② find the length of d and print d[:3]
- ③ check "a2" is present in d
- ④ Perform the following operation
upper, lower, title, strip, isdigit,
find("3g"), capitalize, isalnum(),
count("b2"), split(), swapcase,
rstrip(), replace("hello" with "python")

class - object

①

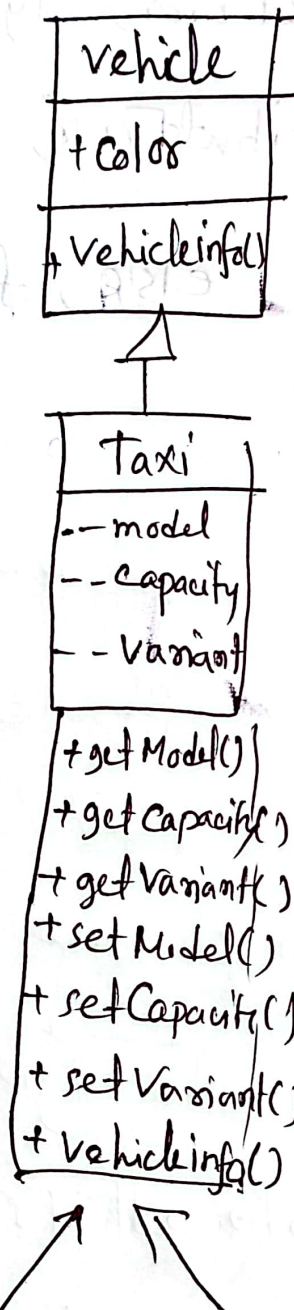


②



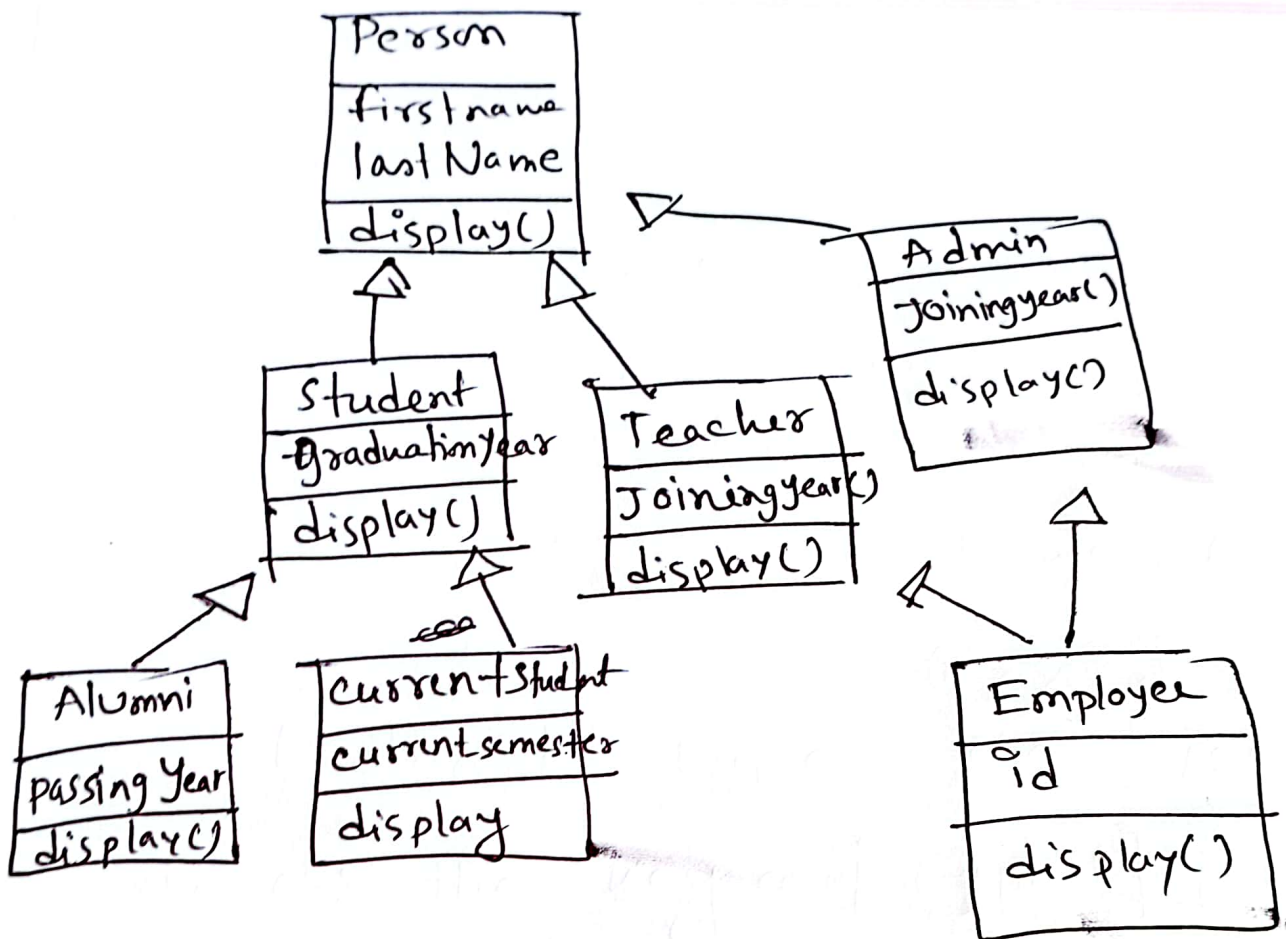
Encapsulation

① Design the following code

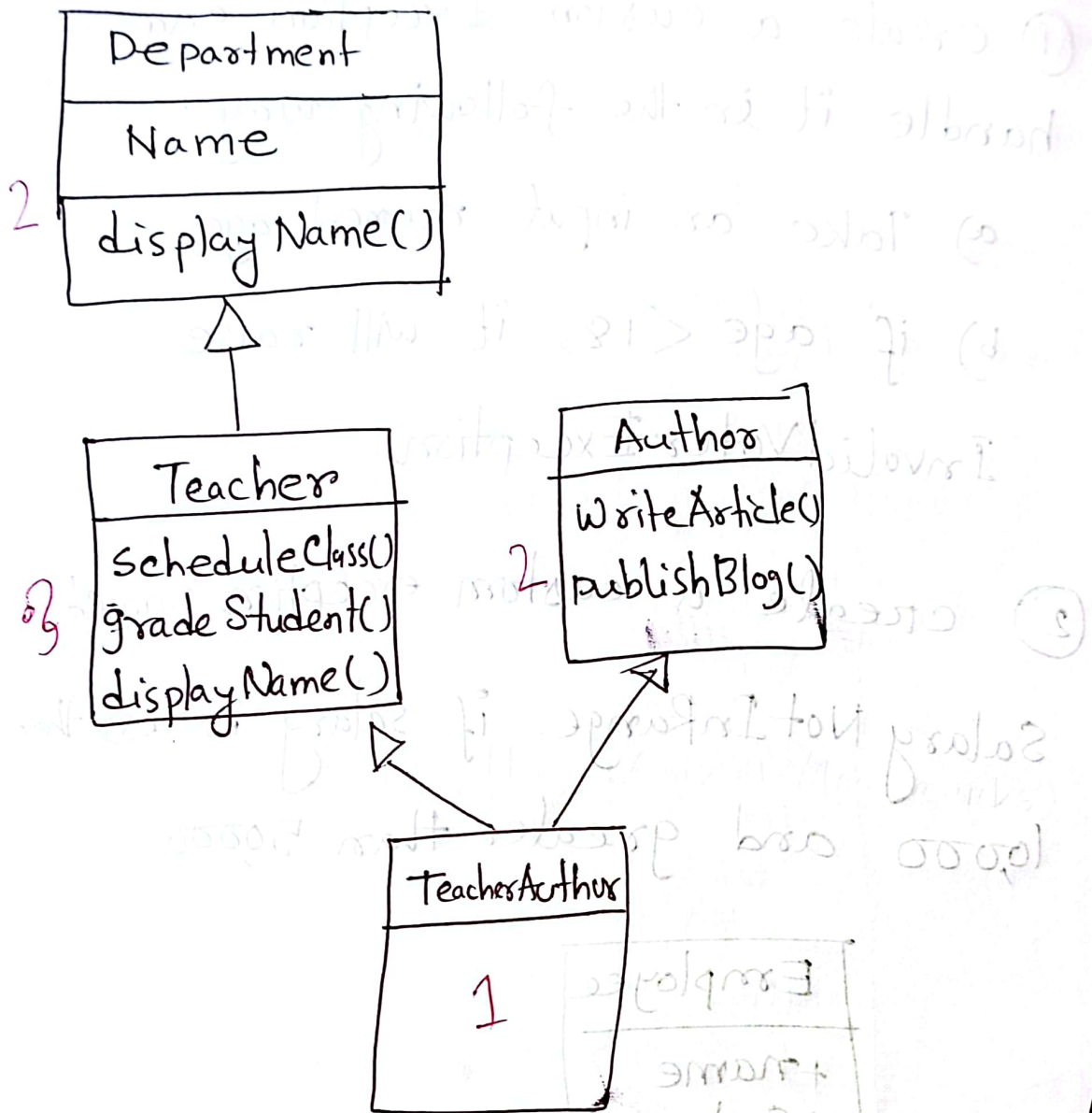


create two instances (t_1, t_2)

Inheritance



Polymorphism



- ① what is runtime polymorphism? give a code example. (4)
- ② Create an instance of Teacher Author class and access the mentioned methods (8)
- ③ What will happen if both class have same method profile() and you call it through Teacher object? (3)

Exception handling

① create a custom Exception and handle it in the following way:

a) Take an input named age

b) if $\text{age} < 18$, it will raise

Invalid Voter Exception

② create a custom exception named Salary Not In Range if salary is less than 10,000 and greater than 50,000

Employee
+name
+Salary
+displaySalary()

③ arr = [10, 5, 15, 20]

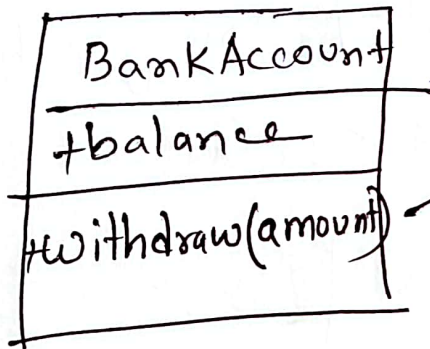
divisor \Rightarrow take input of int type

a) perform the division and

print ($\text{arr}[i] / \text{divisor}$)

- b) Handle exception "ZeroDivisionError",
"ValueError", "NameError", "TypeError",
"IndexError", "AttributeError", "FileNotFoundError"
- c) use try, except, else, finally keyword

③ create a custom exception "insufficientFund" if balance is ^{not} greater than withdraw-amount.



if amount > balance
then raise error
else print current amount

1st Numpy

① `Score = [85, 90, 78, 92, 88]`

a) convert the data type into float

b) create a copy of "score" named "a-score" and add 5 points on it. Note that original score will be unchanged

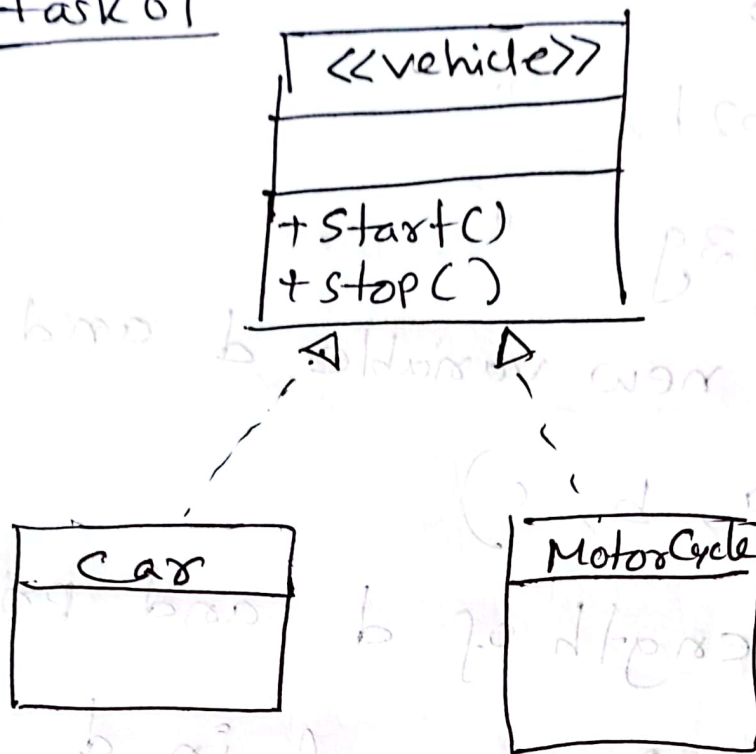
c) Find shape, ndim, size, itemsize, dtype, sort,

d) Find the index who got 80+

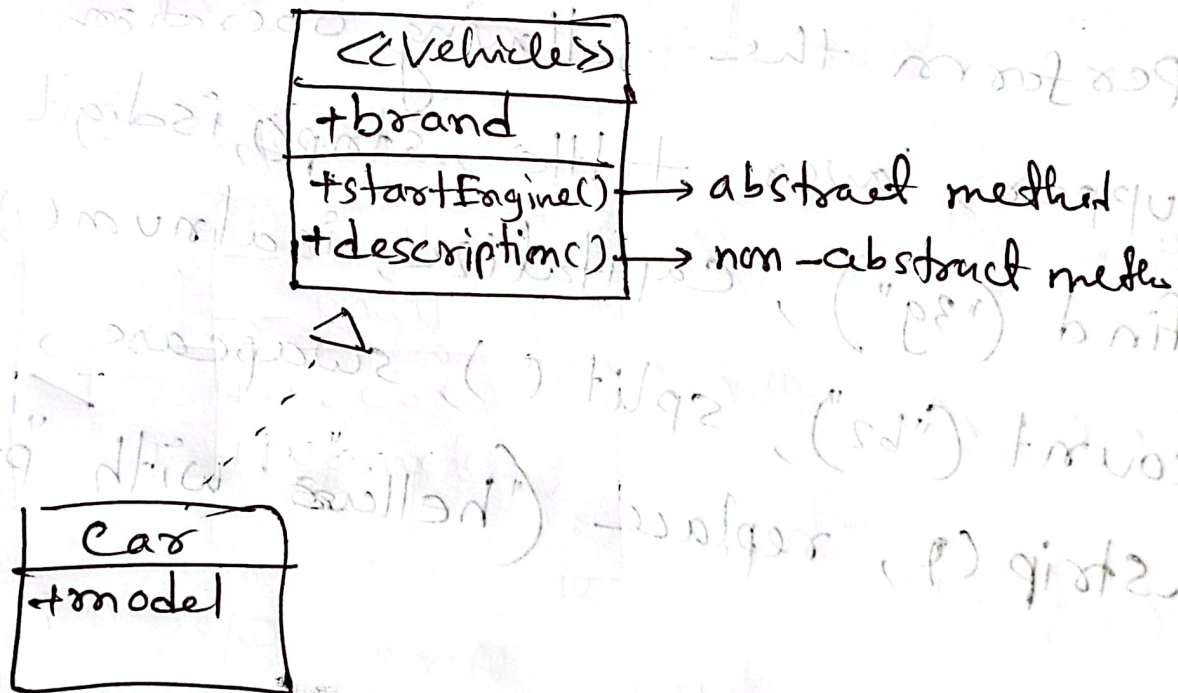
e) Find min, max, std, var, sum, mean, axiswise mean

f) print `score[::2]`, `score[-3:-1]`,
`score[1:4]`

task 01



task 02



create an object of car.
What will happen if we try to create
an object of Vehicle class?