**ADITYA AMIN ASSIGN :19**

1. Make a class called Thing with no contents and print it. Then, create an object called example from this class and print it. Are the printed values the same or different?

class Thing:

pass

print(Thing())

example = Thing()

print(example)

1. Create a new class called Thing2 and add the value 'abc' to the letters class attribute. Letters should be printed.

class Thing2:

letters = 'abc'

print(Thing2.letters)

1. Make yet another class called, of course, Thing3. This time, assign the value 'xyz' to an instance (object) attribute called letters. Print letters. Do you need to make an object from the class to do this?

class Thing3:

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

self.letters = 'xyz'

example = Thing3() # Create an object (instance) of Thing3

print(example.letters) # Print the value of the instance attribute 'letters'

1. Create an Element class with the instance attributes name, symbol, and number. Create a class object with the values 'Hydrogen,' 'H,' and 1.

class Element:

def \_\_init\_\_(self, name, symbol, number):

self.name = name

self.symbol = symbol

self.number = number

# Create an object of Element class with the given values

hydrogen = Element('Hydrogen', 'H', 1)

# Access and print the instance attributes

print("Name:", hydrogen.name)

print("Symbol:", hydrogen.symbol)

print("Number:", hydrogen.number)

1. Make a dictionary with these keys and values: 'name': 'Hydrogen', 'symbol': 'H', 'number': 1. Then, create an object called hydrogen from class Element using this dictionary.

class Element:

def \_\_init\_\_(self, name, symbol, number):

self.name = name

self.symbol = symbol

self.number = number

# Create a dictionary with keys and values for an Element object

element\_dict = {'name': 'Hydrogen', 'symbol': 'H', 'number': 1}

# Create an Element object from the dictionary

hydrogen = Element(\*\*element\_dict)

# Access and print the instance attributes

print("Name:", hydrogen.name)

print("Symbol:", hydrogen.symbol)

print("Number:", hydrogen.number)

1. For the Element class, define a method called dump() that prints the values of the object’s attributes (name, symbol, and number). Create the hydrogen object from this new definition and use dump() to print its attributes.

class Element:

def \_\_init\_\_(self, name, symbol, number):

self.name = name

self.symbol = symbol

self.number = number

def dump(self):

print("Name:", self.name)

print("Symbol:", self.symbol)

print("Number:", self.number)

# Create an Element object called hydrogen

hydrogen = Element('Hydrogen', 'H', 1)

# Use the dump() method to print the attributes of the hydrogen object

hydrogen.dump()

1. Call print(hydrogen). In the definition of Element, change the name of method dump to \_\_str\_\_, create a new hydrogen object, and call print(hydrogen) again.

class Element:

def \_\_init\_\_(self, name, symbol, number):

self.name = name

self.symbol = symbol

self.number = number

def \_\_str\_\_(self):

return f"Name: {self.name}\nSymbol: {self.symbol}\nNumber: {self.number}"

# Create an Element object called hydrogen

hydrogen = Element('Hydrogen', 'H', 1)

# Call print(hydrogen) to see the string representation of the object

print(hydrogen)

1. Modify Element to make the attributes name, symbol, and number private. Define a getter property for each to return its value.

class Element:

def \_\_init\_\_(self, name, symbol, number):

self.\_\_name = name

self.\_\_symbol = symbol

self.\_\_number = number

@property

def name(self):

return self.\_\_name

@property

def symbol(self):

return self.\_\_symbol

@property

def number(self):

return self.\_\_number

def \_\_str\_\_(self):

return f"Name: {self.\_\_name}\nSymbol: {self.\_\_symbol}\nNumber: {self.\_\_number}"

1. Define three classes: Bear, Rabbit, and Octothorpe. For each, define only one method: eats(). This should return 'berries' (Bear), 'clover' (Rabbit), or 'campers' (Octothorpe). Create one object from each and print what it eats.

class Bear:

def eats(self):

return 'berries'

class Rabbit:

def eats(self):

return 'clover'

class Octothorpe:

def eats(self):

return 'campers'

# Create objects from each class

bear = Bear()

rabbit = Rabbit()

octothorpe = Octothorpe()

# Print what each object eats

print("Bear eats:", bear.eats())

print("Rabbit eats:", rabbit.eats())

print("Octothorpe eats:", octothorpe.eats())

1. Define these classes: Laser, Claw, and SmartPhone. Each has only one method: does(). This returns 'disintegrate' (Laser), 'crush' (Claw), or 'ring' (SmartPhone). Then, define the class Robot that has one instance (object) of each of these. Define a does() method for the Robot that prints what its component objects do.

class Laser:

def does(self):

return 'disintegrate'

class Claw:

def does(self):

return 'crush'

class SmartPhone:

def does(self):

return 'ring'

class Robot:

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

self.laser = Laser()

self.claw = Claw()

self.smartphone = SmartPhone()

def does(self):

print(f"Laser does: {self.laser.does()}")

print(f"Claw does: {self.claw.does()}")

print(f"SmartPhone does: {self.smartphone.does()}")