Лабораторная работа №2

По дисциплине «Парадигмы и конструкции языков программирования»

ИБМ3-34Б

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#main.py  
from lab\_python\_oop.rectangle import Rectangle  
from lab\_python\_oop.circle import Circle  
from lab\_python\_oop.square import Square  
  
if \_\_name\_\_ == "\_\_main\_\_":  
 N = 17 # Замените на свой номер варианта  
  
 rectangle = Rectangle(N, N, "синий")  
 circle = Circle(N, "зеленый")  
 square = Square(N, "красный")  
  
 print(rectangle)  
 print(circle)  
 print(square)  
  
 # Пример вызова метода внешнего пакета (например, numpy)  
 import numpy as np  
 array = np.array([1, 2, 3])  
 print("Массив:", array)

#figures  
from abc import ABC, abstractmethod  
  
class GeometricShape(ABC):  
 @abstractmethod  
 def area(self):  
 pass

#color  
class Color:  
 def \_\_init\_\_(self, color\_name):  
 self.color\_name = color\_name  
  
 def \_\_repr\_\_(self):  
 return self.color\_name

#rectangle  
from lab\_python\_oop.figures import GeometricShape  
from lab\_python\_oop.color import Color  
  
class Rectangle(GeometricShape):  
 shape\_name = "Прямоугольник"  
  
 def \_\_init\_\_(self, width, height, color):  
 self.width = width  
 self.height = height  
 self.color = Color(color)  
  
 def area(self):  
 return self.width \* self.height  
  
 def \_\_repr\_\_(self):  
 return "{}: ширина={}, высота={}, цвет={}, площадь={}".format(  
 self.shape\_name, self.width, self.height, self.color, self.area()  
 )

#circle  
import math  
from lab\_python\_oop.figures import GeometricShape  
from lab\_python\_oop.color import Color  
  
class Circle(GeometricShape):  
 shape\_name = "Круг"  
  
 def \_\_init\_\_(self, radius, color):  
 self.radius = radius  
 self.color = Color(color)  
  
 def area(self):  
 return math.pi \* (self.radius \*\* 2)  
  
 def \_\_repr\_\_(self):  
 return "{}: радиус={}, цвет={}, площадь={}".format(  
 self.shape\_name, self.radius, self.color, self.area()  
 )

#square  
from lab\_python\_oop.rectangle import Rectangle  
  
class Square(Rectangle):  
 shape\_name = "Квадрат"  
  
 def \_\_init\_\_(self, side\_length, color):  
 super().\_\_init\_\_(side\_length, side\_length, color)  
  
 def \_\_repr\_\_(self):  
 return "{}: сторона={}, цвет={}, площадь={}".format(  
 self.shape\_name, self.width, self.color, self.area()  
 )