

Homework Assignment: Python and LaTeX

Practice

Your Name

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1 Introduction

This report covers the solutions to the Python tasks and the associated mathematical explanations.

2 Python Code

Below is the Python code for the assignment: **Problem 1:**

```
x = 5
y = 2.5
print(x+y)
print(y-x)
print(x*y)
print(x**2)
print(x//2) # take the integer part from division
```

Problem 2:

```
my_list = [1, 2, 3, 4, 5]
my_list[2] = 'hello'
my_list.append('world')
my_list.pop(0)
print(my_list)
```

Problem 3:

```
student_scores = {'Alice': 85, 'Bob': 90, 'Charlie': 78}
student_scores['David'] = 88
student_scores['Alice'] = 95
del student_scores['Charlie']
print(student_scores)
```

Problem 4:

```
def calculate_area(width, height, loud=True):
    area = width * height
    if loud:
        print(f'The area of the rectangle is: {area}')
    return area
calculate_area(5,10)
```

Problem 5:

```
class Animal:
    def __init__(self, name):
        self.name = name

    def speak(self):
        print('The animal speaks ')

class Dog(Animal):
    def speak(self):
        print("Woof! Woof!")

buddy = Dog('Buddy')
buddy.speak()
```

3 Mathematical Explanation

Problem 1: Given $x = 5, y = 2.5$

$$x + y = 5 + 2.5 = 7.5$$

$$y - x = 2.5 - 5 = -2.5$$

$$x * y = 5 * 2.5 = 12.5$$

$$x^2 = x * x = 5 * 5 = 25$$

$$\text{integer of } x/2 = 5/2 = 2$$

Problem 4: The formula for calculating the area of a rectangle is given by:

$$A = \text{width} \times \text{height}$$

where A is the area, and the width and height are the dimensions of the rectangle.

4 Conclusion

This assignment helped me practice basic Python and LaTeX concepts.