Lab Week 1

Session: 2022 – 2026

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Submitted To:

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Problem 1:

```
#PART A
def cube(n):
    return n**3

num = 3

cube = cube(num);

print(f"Cube is {cube}")


#PART B
def factorial(n):
    if n<0:
        return 'Number must be positive'
    if n==0:
        return 1

    return n * factorial(n-1)


print(factorial(3))



#PART C
def findAlphabeticallyLastWord(n):
    a  =  n.split(' ')
    a.sort()
    return a[-1]


print(findAlphabeticallyLastWord("What is the last word in this sentence"))



#PART D
def count_pattern(pattern , list):

    length = len(pattern)
    count = 0
    idx =0
    for i in list:

        if pattern == list[idx:length+idx]:
            count = count+1


        idx = idx+1



    return count
```

Output:

```
Cube is 27
6
word
Pattern Count: 2
```

Problem2:

```
def depth(tup):
    if not isinstance(tup, tuple):
        return 0

    depths = [depth(item) for item in tup if isinstance(item, tuple)]

    return 1 + max(depths, default=0)


result = depth(('/', ('expt', 'x', 5), ('expt', ('-', ('expt', 'x', 2), 1), ('/', 5, 2))))
print(result)
```

Output:

```
4
```

Problem 3:

```
def tree_ref(tree , tup):

    if not tup:
        return tree

    return tree_ref(tree[0] , tup[1:])


tree = (((1, 2), 3), (4, (5, 6)), 7, (8, 9, 10))
print(tree_ref(tree , (3,1)))
```

Output:

```
(1, 2)
```