School of Science, Computing and Artificial Intelligence
The University of the West Indies, Five Islands

COMP0002 - Lab 4

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Exercise 1

1. Find the BigO of the following where T(n) represents the timesteps required to run a piece of code as a function of the size of its input (n): [4 marks]
   a. $T(n) = n + 4$
   b. $T(n) = n! - 5n^2 + 60$
   c. $T(n) = 500$
   d. $T(n) = 5n^2 + 2$

   a. O(n)
   b. O(n!)
   c. O(1)
   d. $O(n^2)$

2. What's the time complexity of the following piece of code: [3 marks]

```
def find_largest(arr):
    max_val = arr[0]
    for i in range(1, len(arr)):
        if arr[i] > max_val:
            max_val = arr[i]
    return max_val
```

Answer: O(n)

3. What's the time complexity of the following piece of code: [3 marks]

```
def find_intersection(lst1, lst2):
    for x in lst1:
        for y in lst1:
            if x == y:
                return x
    return -1
```

Answer: O(1)