Assignment-Unit-I

1. Explain computational thinking with a real-life example (not related to programming). Break it into decomposition, pattern recognition, abstraction, and algorithm design.
2. Differentiate between hardware and software with at least three examples for each.
3. Write an algorithm and draw a flowchart to find the largest of three numbers.
4. Write a Python program to swap two numbers using a temporary variable.
5. How does Python manage memory for immutable and mutable objects with respect to id()?

6. Provide answers to all these snippets

I.
```
fruits = ["apple", "banana", "cherry"]
fruits[1] = "grape"
print(fruits)
```

II.
```
t = (1, 2, 3)
t = t + (4, 5)
print(t)
```

III.
```
data = {"a": 1, "b": 2}
print(data.keys())
print(data.values())
```

IV.
```
a = {"x": 1, "y": 2}
b = a
b["z"] = 3
print(a)
```

V.
```
x = 10
y = 10
print(id(x) == id(y))
```

VI.
```
a = 5
print("Before:", id(a))
a = a + 1
print("After:", id(a))
```

VII.
```
num1 = 256
num2 = 256
print(num1 is num2)
```

VIII.
```
a = [1, 2, 3]
b = (1, 2, 3)
c = {1, 2, 3}
print(type(a), type(b), type(c))
```

IX.
```
word = "hello"
word = word + " world"
print(word)
```

X.
```
s = {1, 2, 3, 2, 1}
print(s)
```

XI.
```
data = {1, 2, 3, "apple", (4, 5)}
print(data)
```

XII.
```
a = "hello"
b = a
print(id(a), id(b))
b = b + " world"
print(id(a), id(b))
```