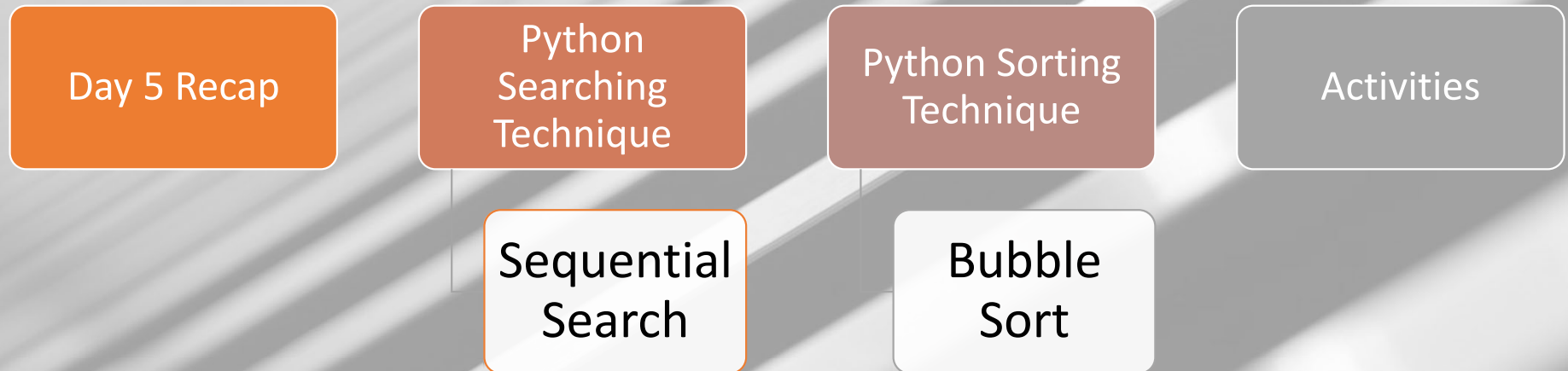ඇල්ගොරිදම සංවර්ධනය සහ පයිතන් ක්‍රමලේඛනය

Algorithm Development & Python Programming

Workshop Day - 10

DILAN HEWAGE

BIT – University of Colombo / CIDM – APIDM
Founder of WiTeds Solutions
Co-Founder of Print Arcade

Day 08 Content

Day 5 Recap

Python Searching Technique

Python Sorting Technique

Activities

Sequential Search

Bubble Sort

Day 9 Recap
9 දින සාරාංශය

DILAN HEWAGE

Python Data Searching Technique

පයිතන් දත්ත සෙවීමේ ක්‍රම

DILAN HEWAGE

Python Searching Technique

- Searching for data stored in different data structures is a crucial part of pretty much every single application.

- There are many different algorithms available to utilize when searching, and each have different implementations and rely on different data structures to get the job done.

- Being able to choose a specific algorithm for a given task is a key skill for developers and can mean the difference between a fast, reliable and stable application and an application that crumbles from a simple request.

- Membership Operators
- Linear Search
- Binary Search
- Jump Search
- Fibonacci Search
- Exponential Search
- Interpolation Search

Dilan Hewage

Linear Search

- Linear search is one of the simplest searching algorithms, and the easiest to understand.

- We can think of it as a ramped-up version of our own implementation of Python's in operator.

- The algorithm consists of iterating over an array and returning the index of the first occurrence of an item once it is found:

```python
def LinearSearch(lys, element):
    for i in range (len(lys)):
        if lys[i] == element:
            return i
    return -1
```

So if we use the function to compute:

```python
>>> print(LinearSearch([1,2,3,4,5,2,1], 2))
```

Upon executing the code, we're greeted with:

```
1
```

Dilan Hewage

Python Sorting Algorithms

පයිතන් දත්ත පෙළගැස්වීමේ ක්‍රම

DILAN HEWAGE

Python Sorting Technique

- Sorting refers to arranging data in a particular format.

- Sorting algorithm specifies the way to arrange data in a particular order.

- The importance of sorting lies in the fact that data searching can be optimized to a very high level, if data is stored in a sorted manner.

- Sorting is also used to represent data in more readable formats. Below we see five such implementations of sorting in python.

- Bubble Sort
- Merge Sort
- Insertion Sort
- Shell Sort
- Selection Sort

Dilan Hewage

Bubble Sort Algorithm in Python

- Bubble Sort is one of the most straightforward sorting algorithms.

- Its name comes from the way the algorithm works: With every new pass, the largest element in the list "bubbles up" toward its correct position.

- Bubble sort consists of making multiple passes through a list, comparing elements one by one, and swapping adjacent items that are out of order.

Dilan Hewage
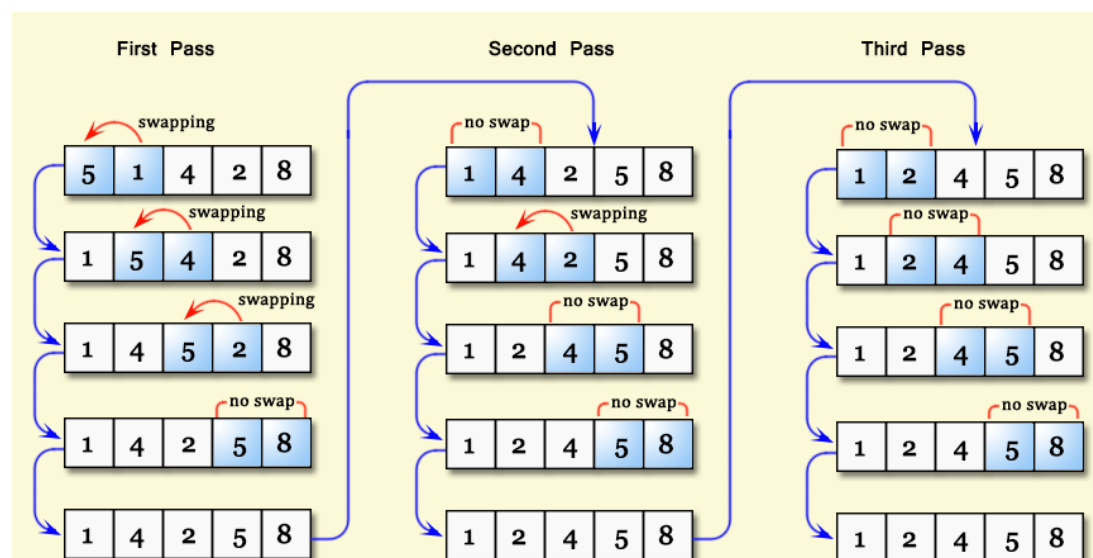
Thank You

End of the Workshop

Thank you for your participation and please provide your feedback to improve our future workshops

---

Have you learned something?

See you all Soon!