SFU SIMON FRASER UNIVERSITY
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CMPT 125 - Introduction to Computing Science and Programming II - Fall 2021

Lab 7. Arrays

October 27

Arrays

- Collection of items stored at contiguous memory locations
- Idea to store multiple items of the same type together
- Each element can be uniquely identified by its index in the array
- Advantages:
  - Allows random access to elements
  - Ability to represent multiple data items of the same type using a single name

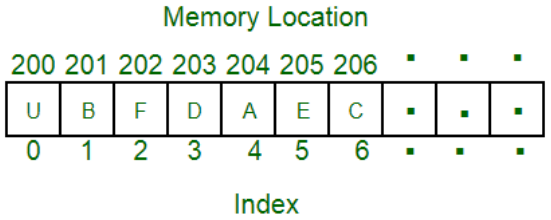

Fig1: Array Structure
Source: geeksforgeeks

Array Operations

- Get(int index): Get a value stored at a particular index
  - Time Complexity: O(1)
- Set(int index, int value): Set a value at a particular index
  - Time Complexity: O(1)
- Append(int value): Appends value to the end of the array.
  - Best Time Complexity: O(1)
  - Worst Time Complexity: O(N)
- Print(): Print all values of the array
  - Time Complexity: O(N)

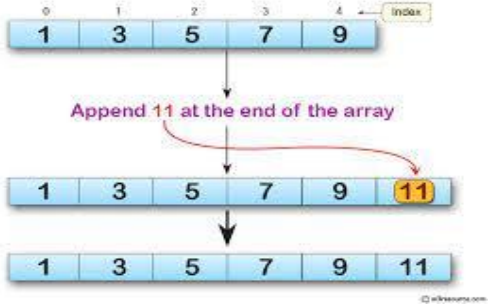

Fig2: Array Append

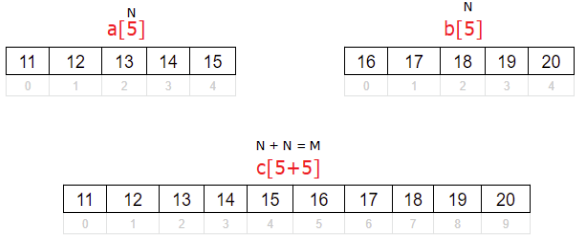

Fig3: Array Concatenation

Array Operations

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- 3 files in the zip folder:
  - my_array.c
  - my_array.h
  - test_my_array.c

- "my_array" implemented to help us array like in Python without worrying about resizing

- Functions implemented for operations to get, set, append and print values in an array

Exercise

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- Read and understand the functions defined in my_array.c
- Implement the function extend() in my_array.c, which concatenates the values of one array to another array
- Modify the append() function, to double the capacity of the array instead of increasing it by 1.