

C949 - Issues with PreAssessment

Table 3.2.1: Basic data structures.

Data structure	Description
Record	A record is the data structure that stores subitems, with a name associated with each subitem.
Array	An array is a data structure that stores an ordered list of items , with each item is directly accessible by a positional index.
Linked list	A linked list is a data structure that stores ordered list of items in nodes, where each node stores data and has a pointer to the next node.
Binary tree	A binary tree is a data structure in which each node stores data and has up to two children, known as a left child and a right child.
Hash table	A hash table is a data structure that stores unordered items by mapping (or hashing) each item to a location in an array.
Heap	A max-heap is a tree that maintains the simple property that a node's key is greater than or equal to the node's children's keys. A min-heap is a tree that maintains the simple property that a node's key is less than or equal to the node's children's keys.
Graph	A graph is a data structure for representing connections among items, and consists of vertices connected by edges. A vertex represents an item in a graph. An edge represents a connection between two vertices in a graph.

12. What is the most efficient data type to use for this data set of a fixed size in Java?

a = [0, 0, 1, 4, 7, 16, 31, 64, 127]

YOUR ANSWER: List
CORRECT ANSWER: Array

Handwritten notes: [0, 1, 2] and a red question mark.

main.py

```

1 mydictionary = {'a': [10, 20, 30], 'b': 2, 'c': 3}
2 print(mydictionary)
3 mydictionary.pop('c')
4 print(mydictionary)
5 mydictionary['a'] = 4
6 print(mydictionary)
7 del mydictionary['a']
8 print(mydictionary)
9 mydictionary['a'].pop()
10 print(mydictionary)
11 mydictionary['a'].pop()
12 print(mydictionary)
13

```

Handwritten notes: "No Remove in Python" and "Key" with arrows pointing to the dictionary keys.

24. Which method can be used to take a value out of a dictionary?

YOUR ANSWER: D1[key].pop(value)
CORRECT ANSWER: D1[key].pop(value)

Handwritten notes: "? Index" and "✓?"

25. Given this data dictionary in Python:

```
dict = {'white': 0x0000, 'black': 0x1111}
```

Which command/function generates the output ['white': 'black']?

zyBooks My library > C949: Data St... > 8.8: Dictionary methods

Below are a list of common dict methods:

Table 8.8.1: dict methods.

Dict method	Description	Code example	Output
my_dict.clear()	Removes all items from the dictionary	my_dict = {'Bob': 1, 'Jane': 42} my_dict.clear() print(my_dict)	{}
my_dict.get(key, default)	Reads the value of the key entry from the dict. If the key does not exist in the dict, then returns default.	my_dict = {'Bob': 1, 'Jane': 42} print(my_dict.get('Jane', 'N/A')) print(my_dict.get('chad', 'N/A'))	42 N/A
my_dict.update(my_dict2)	Merges dictionary my_dict with another dictionary my_dict2. Existing entries in my_dict1 are overwritten if the same keys exist in my_dict2.	my_dict = {'Bob': 1, 'Jane': 42} my_dict.update({'John': 50}) print(my_dict)	{'Bob': 1, 'Jane': 42, 'John': 50}
my_dict.pop(key, default)	Removes and returns the key value from the dictionary. If key does not exist, then default is returned.	my_dict = {'Bob': 1, 'Jane': 42} val = my_dict.pop('Bob') print(my_dict)	{'Jane': 42}

28. Which **data structure** may only store homogeneous data elements?

YOUR ANSWER: **Arrays** ✓
 CORRECT ANSWER: **Arrays** ✓

Classes
 Dictionaries
 Linked lists

Overview of Data Structures | Set 1 (Linear Data Structures)
 Difficulty Level: Easy • Last Updated: 07 Sep, 2018

A data structure is a particular way of organizing data in a computer so that it can be used effectively. The idea is to reduce the space and time complexities of different tasks. Below is an overview of some popular linear data structures.

1. Array
2. Linked List
3. Stack
4. Queue

Array
 Arrays is a data structure used to store **homogeneous elements at contiguous locations**. Size of an array

A **data structure** is a way of organizing, storing, and performing operations on data. Operations performed on a data structure include accessing or updating stored data, searching for specific data, inserting new data, and removing data. The following provides a list of basic data structures.

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38. This stack reads left to right with the top to the right: ?

TOP →

'green'
 'yellow'
 'blue'
 'red'

What could be the stack after a push operation?

YOUR ANSWER: **['red','blue','yellow']**
 CORRECT ANSWER: **['red','blue','yellow','green','purple']** ✓

['blue','yellow','green']
 ['red','blue','yellow','green','purple'] ✓
 ['purple','red','blue','yellow','green']

Stack: LIFO

The image shows a composite of three browser windows with red arrows indicating relationships between them.

Top Left Window (Quiz): A quiz question asks, "Which **Java** method is used to read bytes from a standard file?". The options are: `Java.io.in` (marked with a red 'X'), `Java.io.StdArrayIO`, `Java.io.BinaryStdIn`, and `Java.io.FileInputStream` (highlighted in yellow). A red arrow points from the yellow highlight to the top right window.

Top Right Window (StdArrayIO): The JavaDocs for `Class StdArrayIO` from `org.bogjava.nio.survival.co.malte`. It shows the package `org.bogjava.nio.survival.co.malte` and the class `StdArrayIO` extending `Object`. A red arrow points from the `StdArrayIO` class name to the bottom right window.

Bottom Left Window (BinaryStdIn): The JavaDocs for `Class BinaryStdIn` from `org.bogjava.nio.survival.co.malte`. It shows the package `org.bogjava.nio.survival.co.malte` and the class `BinaryStdIn` extending `InputStream`. A red arrow points from the `BinaryStdIn` class name to the bottom right window.

Bottom Right Window (FileInputStream): The JavaDocs for `Class FileInputStream` from `java.io`. It shows the package `java.io` and the class `FileInputStream` extending `InputStream`. A red arrow points from the `FileInputStream` class name to the bottom left window.