**Abstract Data Types**

**Array**

DEFINITION:

The most basic structure for storing and accessing a collection of data is the array. Arrays can be used to solve a wide range of problems in computer science. Most programming languages provide this structured data type as a primitive and allow for the creation of arrays with multiple dimensions. In this chapter, we implement an array structure for a one-dimensional array and then use it to implement a two-dimensional array and the related matrix structure.

The array structure is commonly found in most programming languages as a primitive type, but Python only provides the list structure for creating mutable sequences. We can define the Array ADT to represent a one-dimensional array for use in Python that works similarly to arrays found in other languages. It will be used throughout the text when an array structure is required.

1-DIMENSIONAL ARRAY:

* Data: any type.
* Operations:

\_\_len\_\_ - Return the size of array.

\_\_getitem\_\_ - value of the element on the given index.

\_\_setitem\_\_ - setting value to the array`s element on the given index.

\_\_clear\_\_ - Clears the array by setting each item to given value.

\_\_iter\_\_ - Return the array`s iterator for traversing the item.

\_\_str\_\_ - Converts the ADT structure of array to string.

2-DIMENSIONAL ARRAY:

* Data: any type.
* Operations:

num\_rows – the number of rows in 2d array.

num\_cols – the number of columns in 2d array

clear – clears the array by setting elements to the given value

\_\_getitem\_\_ - gets the contents of the element at position [i, j]

\_\_setitem\_\_ - sets the contents of an element at position [i, j] to value.

\_\_str\_\_ - Converts the ADT structure of 2d array to string.

USAGE:

In this project I`ll be using ADT type array to represent the research of the Google Music account of the user you have access to.

EXAMPLE:

