FACULTY OF ENGINEERING & TECHNOLOGY

BCS-503: Object Oriented Techniques

Lecture-29

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OBJECTIVES

In this PPT, you will learn to:

❖**Explain the classes such as:**
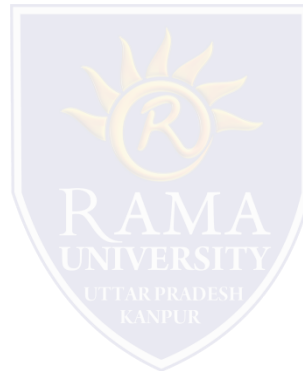
▪**Date**

▪**Calendar**

▪**Random**
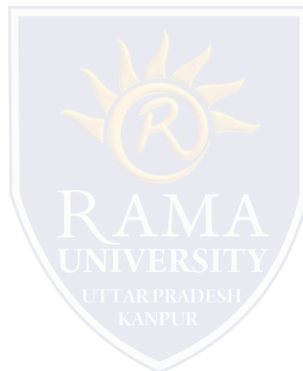
❖**Discuss about Collection classes and interfaces**

❖**List classes**

DATE CLASS

- Date class represents date and time.

- Provides methods for manipulating date and time components.

- One of the best applications of the Date class is in the creation of a real time clock.

CALENDAR CLASS

•Based on a given Date object, the Calendar class can retrieve information in the form of integers such as YEAR and MONTH.

•It is abstract and hence cannot be instantiated like the Date class.

•GregorianCalendar: is a subclass of Calendar that implements the Gregorian form of a calendar.

RANDOM CLASS

▪This class generates random numbers.

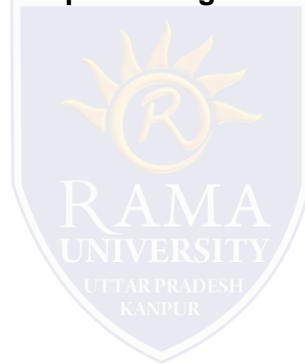▪Used when we need to generate numbers in an arbitrary or unsystematic fashion.

Constructors for the class
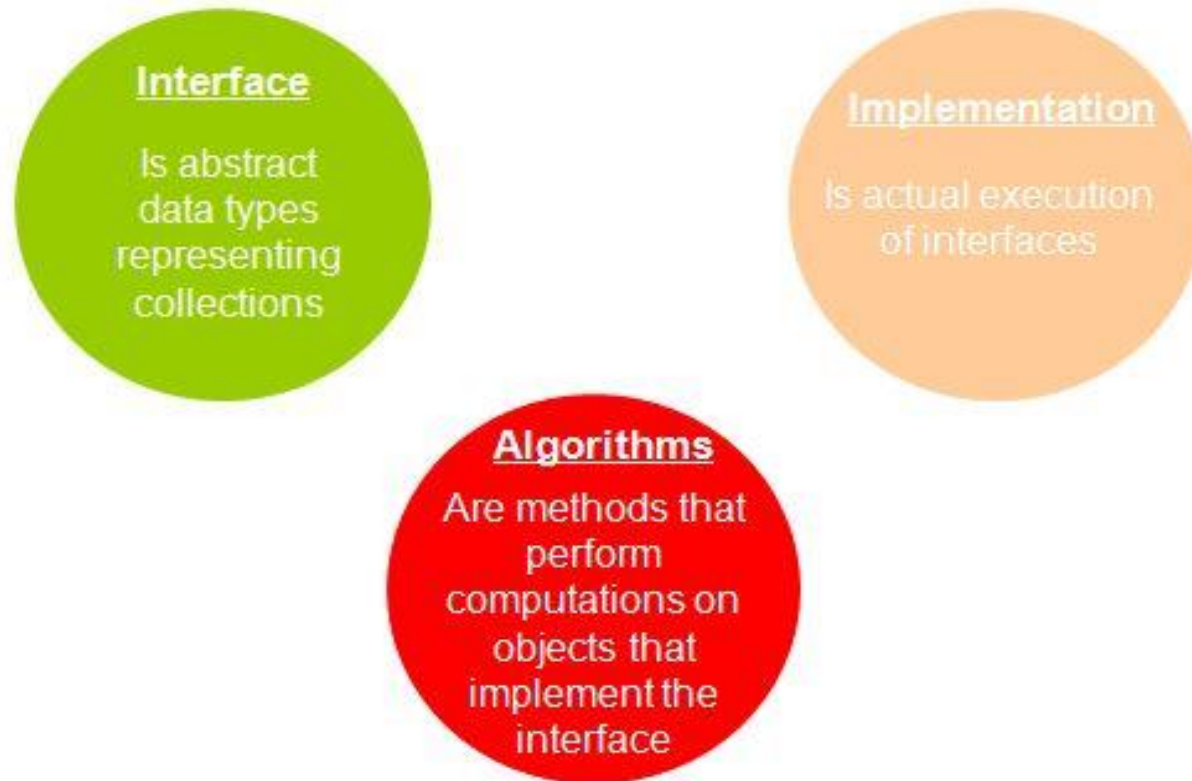
Taking seed value as parameter

No parameters

COLLECTION CLASSES

▪An object of the Collection class groups multiple elements into a single unit.

▪Collections are used to store, retrieve and manipulate data and to transmit data from one method to another.

▪Collection Framework is an unified architecture for representing and manipulating collections.

Collection Framework is composed of three components.

Interface

Is abstract data types representing collections

Implementation

Is actual execution of interfaces

Algorithms

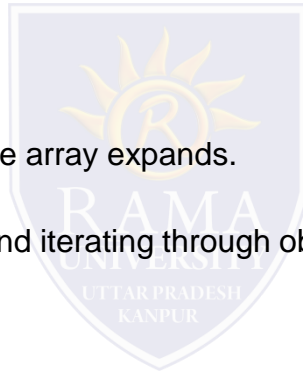Are methods that perform computations on objects that implement the interface

ADVANTAGES OF COLLECTION FRAMEWORK

▪Reduces programming effort by providing useful data structures and algorithms.

▪Increases program speed and quality since the implementation of each interface is interchangeable.

▪Allows interoperability among different APIs.

▪Extending or adapting a collection is easy.
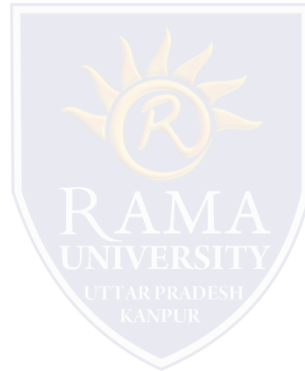
ARRAYLIST

- An ArrayList object is a variable length array of object references.

- It is used to create dynamic arrays.

- Extends AbstractList and implements List interface.

- ArrayLists are created with an initial size.

- As elements are added, size increases and the array expands.

- It gives better performance when accessing and iterating through objects.

- LinkedList class is used to create a linked-list data structure.

- Extends AbstractSequentialList and implements the List interface.

- Constructors of LinkedList class are:
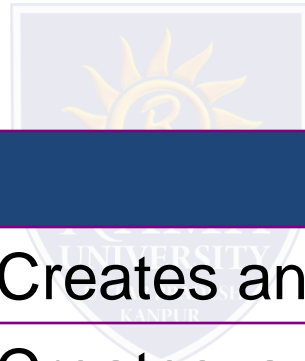
Constructor	Description
LinkedList()	Creates an empty linked list
LinkedList(Collection c)	Creates a linked list based on the elements of a given collection.

REFERENCES

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10. https://www.slideshare.net/niitstudentcare/
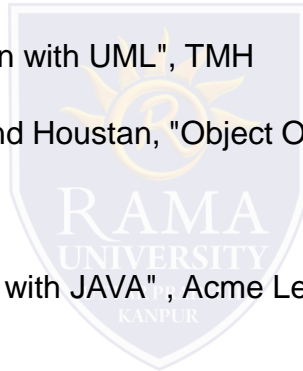
Multiple Choice Question:

Q1. Which of these standard collection classes implements a dynamic array?

      a) AbstractList

      b) LinkedList

      c) ArrayList

      d) AbstractSet

Multiple Choice Question:

Q2. Which of these class can generate an array which can increase and decrease in size automatically?

    a) ArrayList()

    b) DynamicList()

    c) LinkedList()

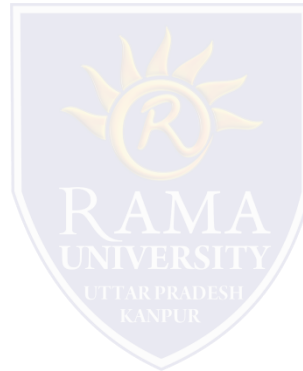   d) MallocList()

Multiple Choice Question:

Q3. Which of these standard collection classes implements a linked list data structure?
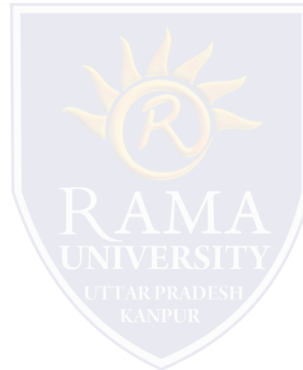
a) AbstractList

b) LinkedList

c) HashSet

d) AbstractSet

Multiple Choice Question:

Q4. Which of these method is used to add an element to the start of a LinkedList object?

    a) add()

    b) first()

    c) AddFirst()

    d) addFirst()

Multiple Choice Question:

Q5. How to sort elements of ArrayList?

a) Collection.sort(listObj);

b) Collections.sort(listObj);

c) listObj.sort();

d) Sorter.sortAsc(listObj);

In this PPT, you learned that:

➢ An object of Date class represents current date and time.

➢ An object of the Calendar class can retrieve information in the form of integers such as YEAR, MONTH and so on.

➢ Random numbers can be generated by using an object of the Random class.

➢ An object of Collection class groups multiple elements into a single unit.

➢ A Collection Framework is a unified architecture for representing and manipulating collections.