CORE JAVA

MANUAL V8.3

MODULE CODE:

ANUDIP FOUNDATION


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Module 4: Array, Enumeration and Collections

Chapter 5

Objective: After completing this lesson you will be able to : * Gain an understanding of Java collection interfaces and its fundamental types * Learn about iteration and enumeration * Gain an understanding about generic collections in Java	**Materials Required:** 1. Computer 2. Internet access
Theory Duration: 120 minutes	**Practical Duration:** 0 minute
Total Duration: 120 minutes	

Chapter 5

5.1 Collection Interfaces

Interfaces are one of the fundamental components of Java collections. They are considered as the foundations of the Java Collections Framework, and are generic in nature. Collection interfaces make data handling easy and convenient. They are utilized to declare the core methods of all Java collections.

An interface declaration must contain information specifying which object type can be contained. The declaration of a collection interface is –

interface Collection < E ।

The <E। in this declaration is the syntax that must be utilized to specify the object type.

The main types of collection interfaces in Java include –

i) List – The List collection interface is an ordered group of objects capable of storing duplicate values. Java.util.List is a Collections child interface. It can be implemented by the ArrayList, Stack, Vector, and LinkedList classes.

ii) Queue – The Queue interface is useful for extending the Collection interface. It is utilized to contain elements that are to be processed. Insertion and removal are two tasks that can be performed with Queue interface. Functionality of this interface is limited to being able to insert elements at a queue's end, and removing only at the beginning of the queue.

iii) Set – The Set interface is also utilized for extending the Collection interface. It is an unordered group of objects, incapable of storing any duplicate values. This interface can be implemented with LinkedHashSet, HashSet, or TreeSet

iv) Iteration – The iterator is an interface belonging to the Collection framework in Java. It is used for navigating a

collection, gaining access to elements within it, and removing elements if needed. The public interface iterator within the java.util package contains the Object next(), boolean hasNext() and void remove() methods.

* Enumeration – An enumeration is a type of iterator interface in Java. It is used to access the elements of Java legacy collections. Calling the elements() method of any vector object's vector class can be used to create an enumeration.

5.2 Generic Collection – Generics make coding a less error-prone experience by detecting any bugs during the compile time phase. It is a feature of Java used for compile-type checking of types. It helps in reducing ClassCastException eventualities that many programmers used to face with collection classes.

Generics let class and interface types be parameters while defining methods, classes and interfaces. Using Generics code has many advantages including –

* Type-safety – Errors are showcased during the compile time instead of run time.
* Reusability – An interface, class or method written once can be used for all collection types.

Instructions: The progress of students will be assessed with the exercises mentioned below.

MCQ (10 minutes)

1. _____ are considered as the foundations of the Java Collections Framework.

a) Intervals

b) Interfaces

c) Types

d) both b and c

2. _____ interfaces make data handling convenient.

a) Projection

b) Selection

c) Collection

d) None of the mentioned

3. An interface declaration should specify the _____ type it contains.

a) subject

b) object

c) character

d) None of the mentioned

4. The list collection interface can store_____ values.

a) true

b) false

c) duplicate

d) None of the mentioned

5. The Arraylist class can be used for implementing a list _____ interface.

a) destruction

b) collection

c) initiation

d) None of the mentioned

6. The Queue interface can be used for insertion and _____.

a) combination

b) removal

c) reduction

d) None of the mentioned

7. Set can be used to utilized to _____ the Collection interface.

a) construct

b) constrict

c) extend

d) None of the mentioned

8. A _____ can be used for implementing the Set interface.

a) HashSet

b) TreeSet

c) ClassSet

d) Both a and b

9. The public interface iterator within the java.util package has the method

a) class( )

b) void Next( )

c) void remove( )

d) None of the mentioned

10. Using Generic Collections reduces events of ClassCastException

a) CastException

b) ClassCastException

c) ClassVoid

d) None of the mentioned