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H2 Batch
Roll No- 27

Date: __/__/____

Java Programming

Assignment-4

→ **Aim:**
Write a Java Program to demonstrate the usage of abstract class and Interface in Java and I/O stream classes.

→ **Objective:**

1. To study abstract class
2. To study Interfaces in Java.
3. To study I/O stream classes.

→ **Theory:**

1) Java Abstraction.
(i) An abstraction is a process of exposing all the necessary details and hiding the rest.
(ii) In Java, data abstraction is defined as the process of reducing the object to its essence so that only the necessary characteristics are exposed to the user.

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(iii) We can achieve abstraction using abstract mass and interfaces.

2) Java Interface.

(i) An Interface in Java is a blueprint of a class. It has static constants and abstract methods.

(ii) The interface in Java is a mechanism to achieve abstraction and multiple inheritance.

(iii) There can be only abstract methods in Java interface, not method body.

(iv) It also represent the IS-A relationship.

3) Java IO: Input-Output stream classes.

(i) Java brings various streams with its I/O package that helps the user to perform the input-output operations.

(ii) These streams support all the types of objects, data-types, characters, files, etc to fully execute the I/O operations.

(iii) There are 3 default streams that Java has to provide.

a) System.in: This is the standard input

stream that is used to read characters from the keyboard or any other standard input device.

b) System.out : This is the standard output stream that is used to output all the ~~error~~ data that a program produce the result of a program on an output device like the computer screen.

c) System.in : This is the standard error that is used to output all the error data that a program might throw, on a computer screen any standard output device.

→ Conclusions:

Thus, we have successfully implemented usage of abstract class, interface in Java and I/O stream classes.

→ FAQ's:

1. What is the difference between abstract class and concrete class?

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Ans

	Abstract Class	Concrete Class
(i)	An abstract class is declared using abstract modifier.	(i) A concrete class is not declared using abstract modifier.
(ii)	An abstract class can-not be directly instant-iated using the new keyboard.	(ii) A concrete class can be directly instantiated using new keyboard.
(iii)	An abstract class may or may not contain abstract methods	(iii) An concrete class cannot contain an abstract Method.
(iv)	An abstract class cannot be declared as final	(iv) A concrete class can be declared as final

2. Can we define private and protected modifiers for data members in interfaces?

Ans No, we cannot define private & protected modifiers for data members in interfaces.

3. List down various byte & character stream classes in Java.

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Ans (i) Byte Stream Classes.
a) Buffered Input Stream.
b) Byte Array Input Stream.
c) Data Input Stream.
d) File Input Stream.
e) Buffered Output Stream.
f) Byte Array Output Stream.
g) Data Output Stream.
h) File Output Stream.

(ii) Character Stream Class.
a) Buffered Reader.
b) Character Array Reader.
c) File Reader
d) Input Stream Reader.
e) Buffered Writer.
f) File writer.
g) Character Array Writer.
h) Output Stream Writer.