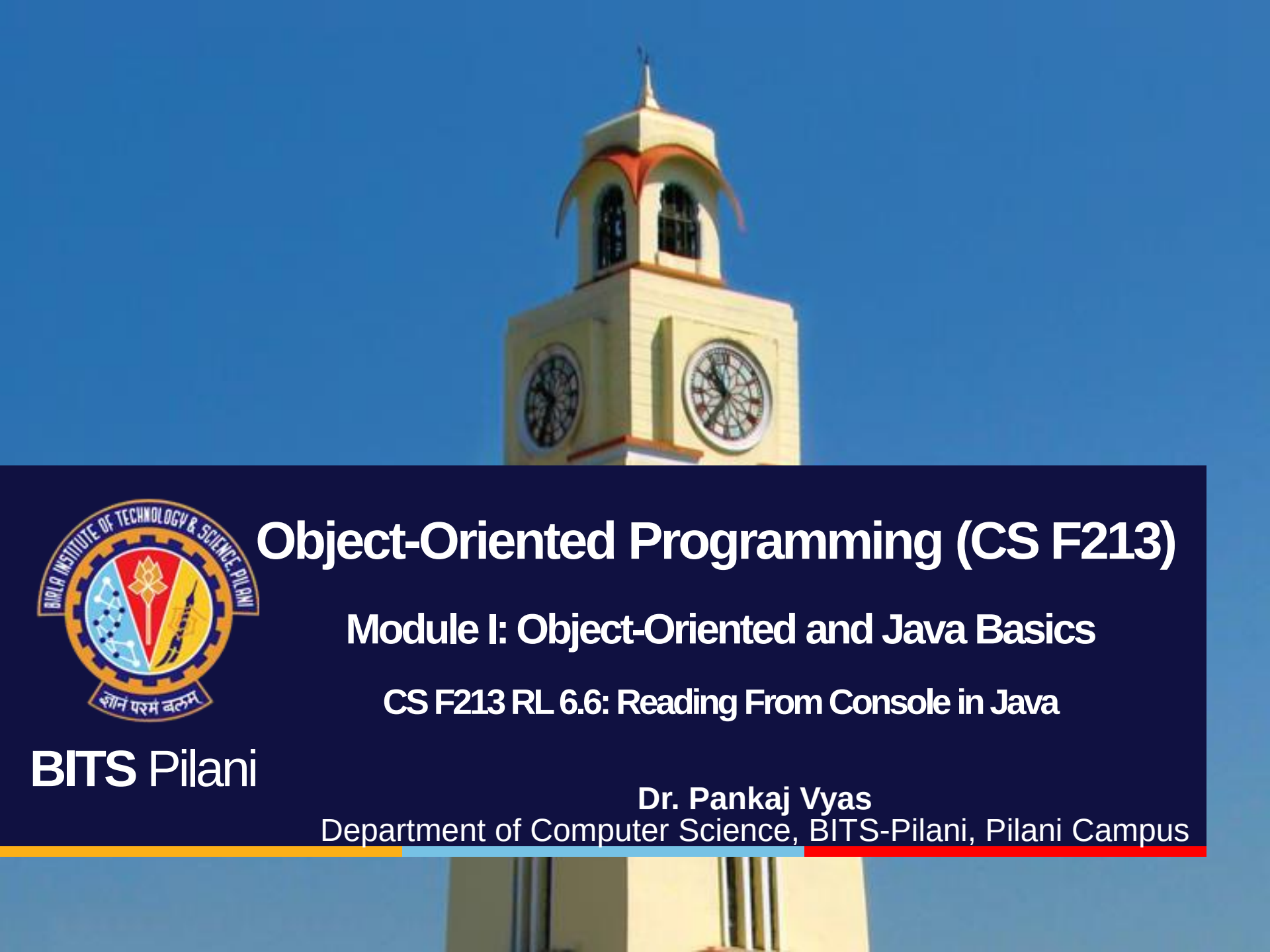

Object-Oriented Programming (CS F213)

Module I: Object-Oriented and Java Basics

CS F213 RL 6.6: Reading From Console in Java

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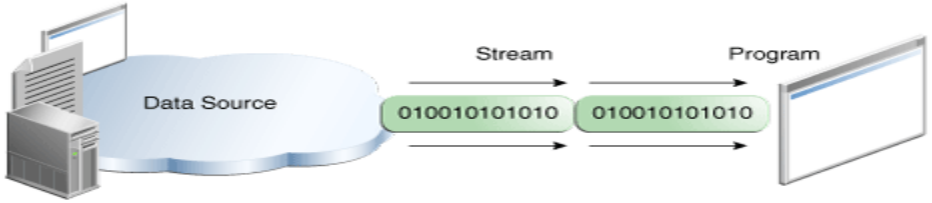
CS F213 RL 6.6 : Topics

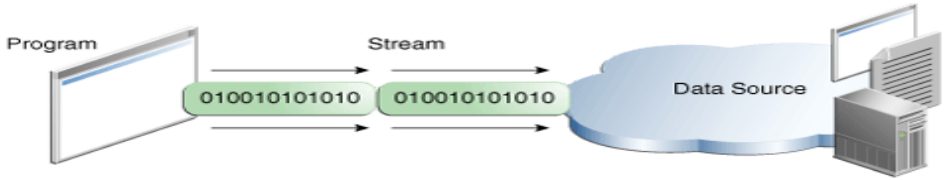
- Reading Inputs from Keyboard in Java
  - What is Stream
  - Introduction to System class
  - Reading Inputs From Keyboard via Scanner class

What is Stream?

- Stream is a sequence of data. [Channel Through which data moves]
- Program may require to read data from various sources [Keyboard, Files, etc.)
- Programs may require to write the data to various destinations [Console, Printer, Files etc.]
- InputStream → Reads Data From Data Sources. [Data Moves from Data Source to Program]



- OutputStream → Writes Data to Destinations. [Data Moves from Program to Data Destination]



System class in Java

- <public> and <final> class in java.lang package.

```
public final class System extends Object
{
```

static InputStream in;

- System.in is "standard" input stream.
- This stream is already open and ready to supply input data.
- Typically this stream corresponds to keyboard input

static PrintStream out;

- System.out "standard" output stream.
- This stream is already open and ready to accept output data.
- Typically this stream corresponds to display output over console.

```
}// End of class System
```

Reading Input Using Scanner

- Scanner class is introduced in Java 1.5
- To use Scanner class, import java.util package
- Important Constructor Methods of Scanner class
  - Scanner(File source) → Constructs a new Scanner that produces values scanned from the specified file.
  - Scanner(InputStream source) → Constructs a new Scanner that produces values scanned from the specified input stream.
- Steps to Use Scanner class for keyboard input
  - Step 1: Create a Scanner Instance using 'System.in' as parameter

    Scanner sc = new Scanner(System.in);
  - Step 2: Use a suitable Scanner class Method shown in the next slide
- Scanner class reads input in the form of tokens.
- A token is a block of text which may contain values of multiple fields separated via delimiters.
- A delimiter is a character that separates the values of different fields. Whitespace character is the default delimiter. [Genral Demiliters are ',' ';' etc]
- Examples: Suppose you reading the name, age and sex of a person as an input in a single line.

David 20 M	→	(white space default delimiter)
David,20,M	→	(comma is used as delimiter)

Important Scanner class Methods

- String next() Finds and returns the next complete token from this scanner.
- boolean nextBoolean() Scans the next token of the input into a boolean value and returns that value.
- byte nextByte() Scans the next token of the input as a byte.
- double nextDouble() Scans the next token of the input as a double.
- float nextFloat() Scans the next token of the input as a float.
- int nextInt() Scans the next token of the input as an int.
- String nextLine() Advances this scanner past the current line and returns the input that was skipped.
- long nextLong() Scans the next token of the input as a long.
- short nextShort() Scans the next token of the input as a short.

Scanner class Example

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```
// File Name: Test.java
// Program Reads Name, age and sex of a person and then displays the read values on console
import java.util.*;       // → To use Scanner class
class Test
{
        public    static    void main(String args[])
        {
                // Step 1 : Create a Scanner Instance using System.in
                Scanner   sc        =        new       Scanner(System.in);

                System.out.println("Enter Name, Age and Sex of the Person");

                // Step 2 : Use Suitable Scanner class Methods

                String    name      =        sc.next();          // Reads Name
                int       age       =        sc.nextInt();       // Reads Age
                String    sex       =        sc.next();          // Reads Sex

                System.out.println("Name : " + name + "Age: "+age+" Sex: "+sex);

        }// End of Method
}// End of class Test
```

Scanner class Example …

- You can Input the value of each field in a separate line or on the same line using whitespace character as a delimiter

Inputs in Separate Lines

```
F:\>java Test
Enter Name, Age and Sex of the Person
David
30
M
Name : DavidAge: 30 Sex: M
```

Inputs in Same Line

```
F:\>java Test
Enter Name, Age and Sex of the Person
David 30 M
Name : DavidAge: 30 Sex: M
```

Scanner class Example …

- Mismatched Type Values May Results into Exceptions

```
F:\>java Test
Enter Name, Age and Sex of the Person
David S 20
Exception in thread "main" java.util.InputMismatchException
        at java.util.Scanner.throwFor(Unknown Source)
        at java.util.Scanner.next(Unknown Source)
        at java.util.Scanner.nextInt(Unknown Source)
        at java.util.Scanner.nextInt(Unknown Source)
        at Test.main(its.java:14)
```

Thank You