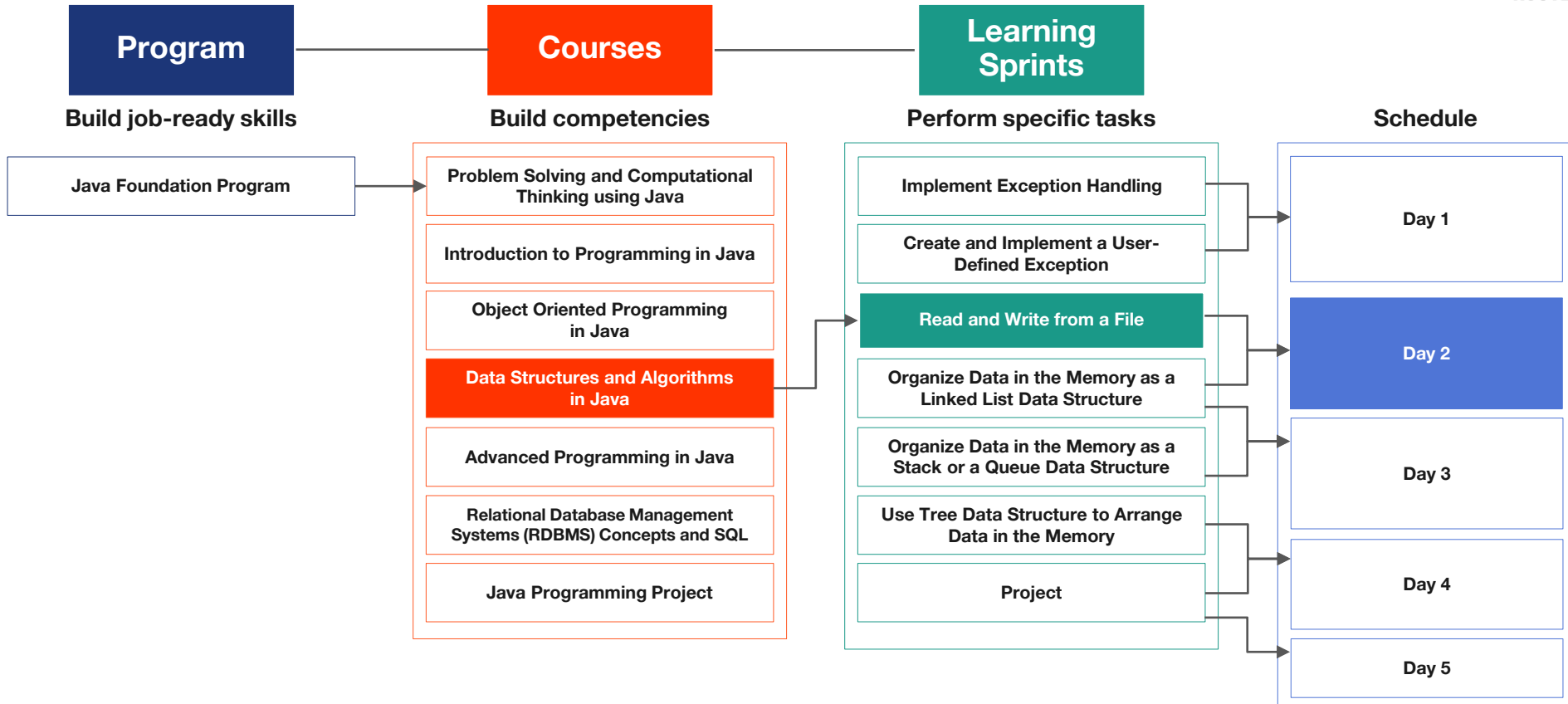


Java Program: Course 4: Plan



Think and Tell



Where do you think the scores of a soccer match get stored?

A Sign Up Form

Where do you think the data entered while filling a registration form or signing up for an account gets stored?

Registration Form

* Name

* Email address

Country

* Phone

* Password

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CREATE ACCOUNT

Already have an account? [Sing in](#)

Let Us Discuss

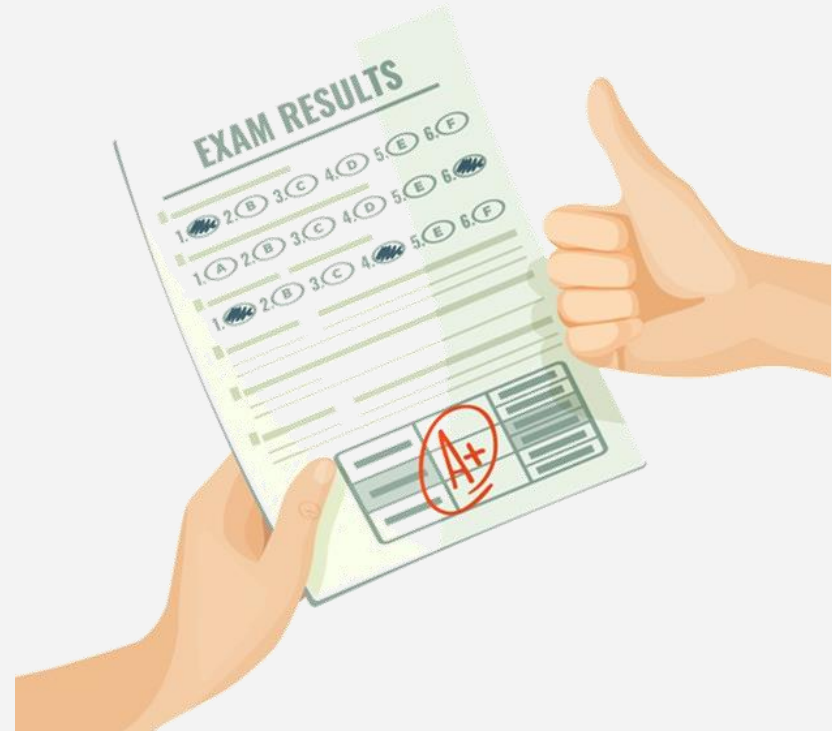


- Does the application retain data after the form has been filled?
- Can we modify or change the data stored at the time of sign up after a few days ?

Report Generation

In the mastery challenge, we learned to generate reports for students.

How did the program accept the student information, like the name, marks, roll number, etc.?



Let Us Discuss

- Were you able to retain the total and average marks and the grades obtained by students after exiting from the program?
- Did you run the program multiple times to do the same calculations?
- Was there a way to work with the data after you had exited from the program?



File Handling



Learning Objectives

- Define file handling and explain how it is done
- Read and write text files
- Write to a file
- Define input and output streams
- Implement reader and writer classes for file handling

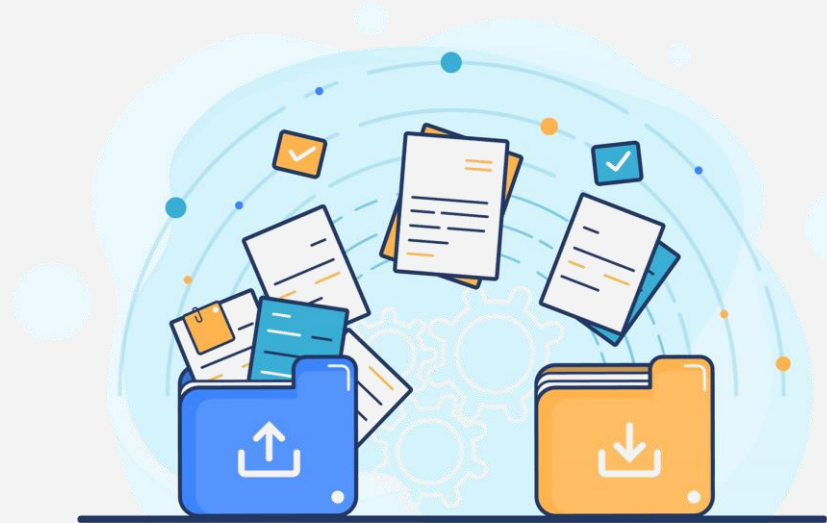


File Handling in Java

Files are used to store data in a storage device permanently

File handling in Java implies

- Reading data from a file on a storage device
- Storing the output of a program in a file
- Performing various operations on the data



How Is File Handling Done in Java?

- Java provides pre-defined classes from the java.io package to perform file handling
- Java provides streams as a mechanism for reading and writing to files
- The data is converted to a stream and then the read and write operations are performed
- A stream is a sequence of data

Types of Streams

- There are two kinds of streams:
 - Byte streams
 - Programs use byte streams to perform input and output of 8-bit bytes
 - Character streams
 - Character streams are like byte streams, but they contain 16-bit Unicode characters

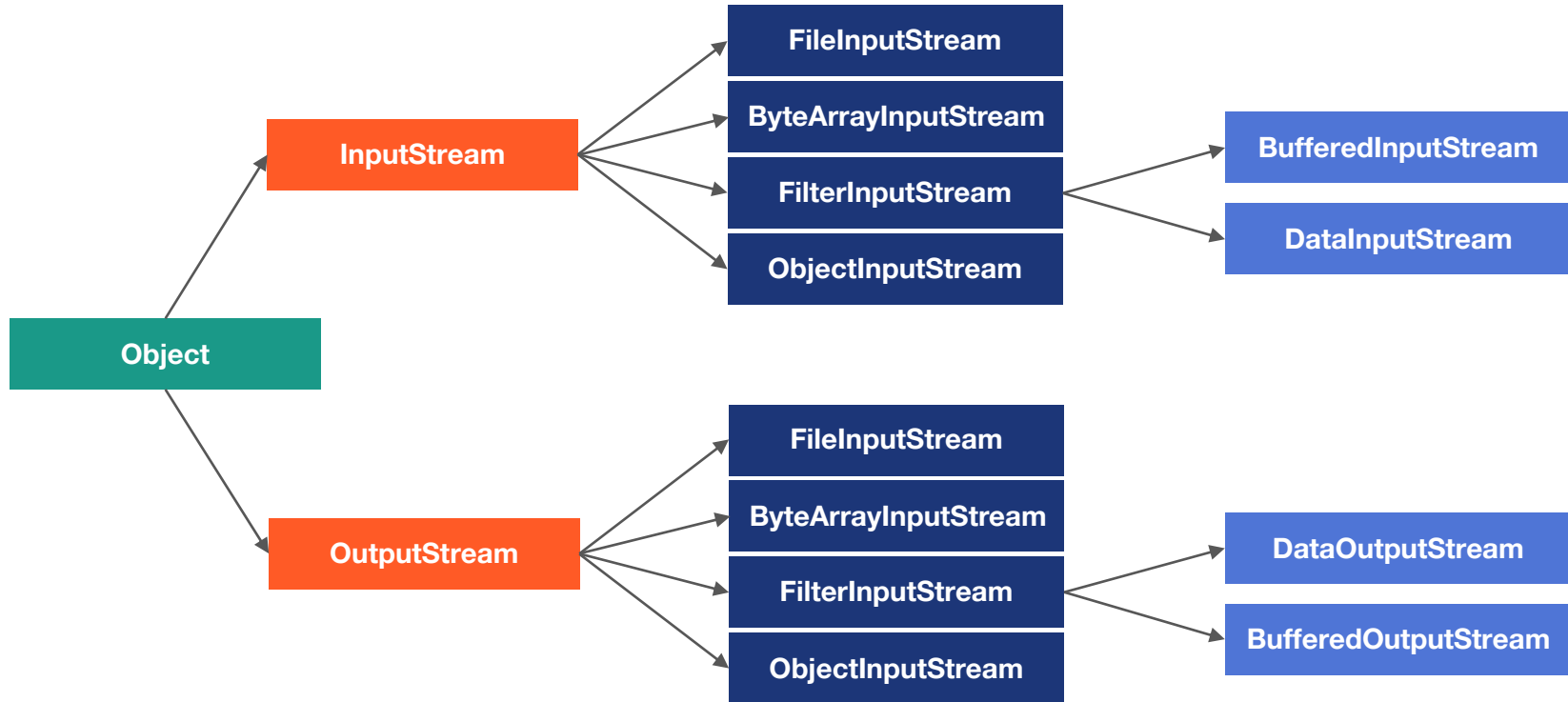
Input Stream to Read Byte Stream

- An input stream is used to read data
- The `java.io` package provides `InputStream` class to read byte data
- The `InputStream` class is an abstract class
- There are many subclasses that can be derived from the `InputStream` and the class which will help to read data from files.

Output Stream to Write Byte Stream

- An output stream is used to write data
- The `java.io` package provides `OutputStream` class to write byte data
- The `OutputStream` class is an abstract class
- There are many sub classes that can be derived from the `OutputStream` class which will help to write data to files

Input Output Stream Class Hierarchy



Reading a Text File

Write a program to read data from a file using the InputStream Classes
(FileInputStream and BufferedInputStream).

Handle all checked exceptions



Write to a file

Write a program to write data to a file using the `FileOutputStream` class.

Handle all checked exceptions



Reader Class to Read Character Streams

- The `java.io` package provides `Reader` class to read character stream data
- The `Reader` class is abstract
- There are many subclasses that can be derived from the `Reader` class.

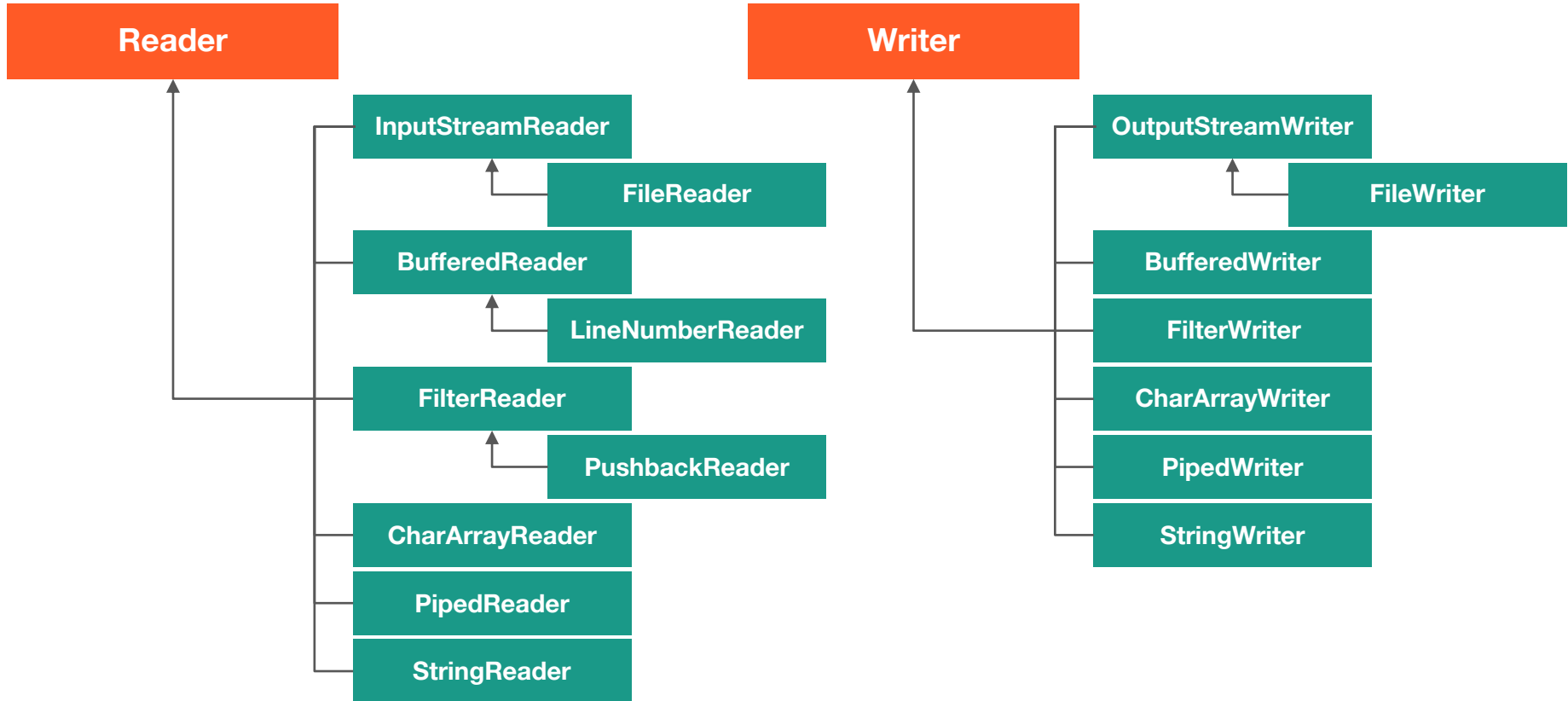
These help in reading character data from the files

Writer Class to Write Character Streams

- The `java.io` package provides `Writer` classes to write character data
- The `Writer` class is abstract
- There are many subclasses that can be derived from the `Writer` class.

These help in writing character data to files

Reader and Writer Class Hierarchy



Read a file

Write a program to read a text file by using the FileReader class.

Handle all checked exceptions



Write to a file

Write a program to write data to a file using the `FileWriter` class.

Handle all checked exceptions



Key Takeaway

- Input and output in Java
- Input and output streams
- Byte streams
- Character streams
- Class hierarchy of I/O streams and the reader/writer classes





Thank you!