



# RAMA UNIVERSITY

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## FACULTY OF ENGINEERING & TECHNOLOGY

### BCS-503: Object Oriented Techniques

#### Lecture-30

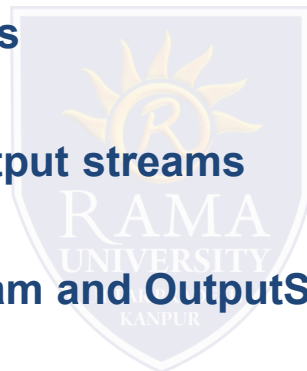
Preeti Singh

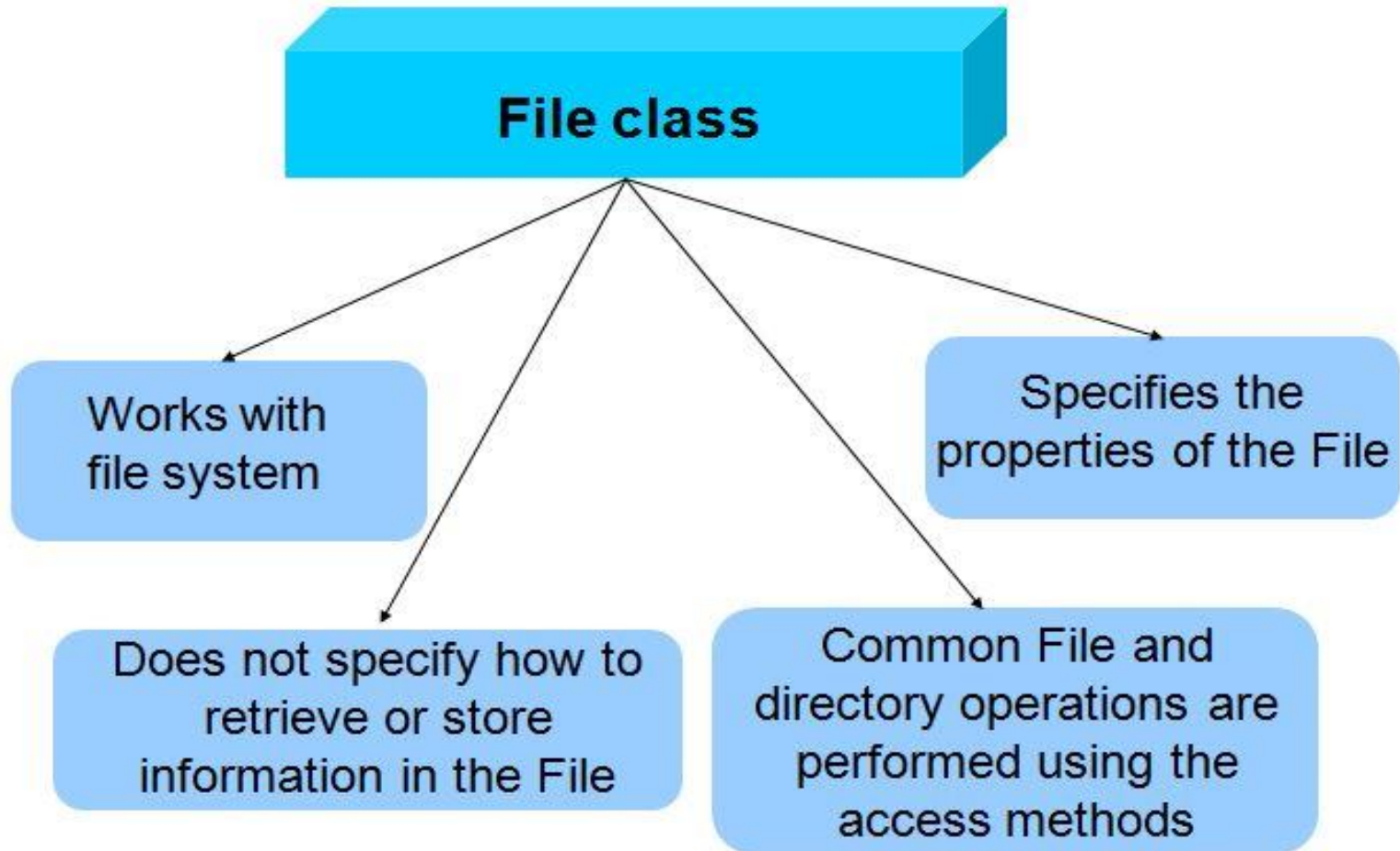
Computer Science & Engineering

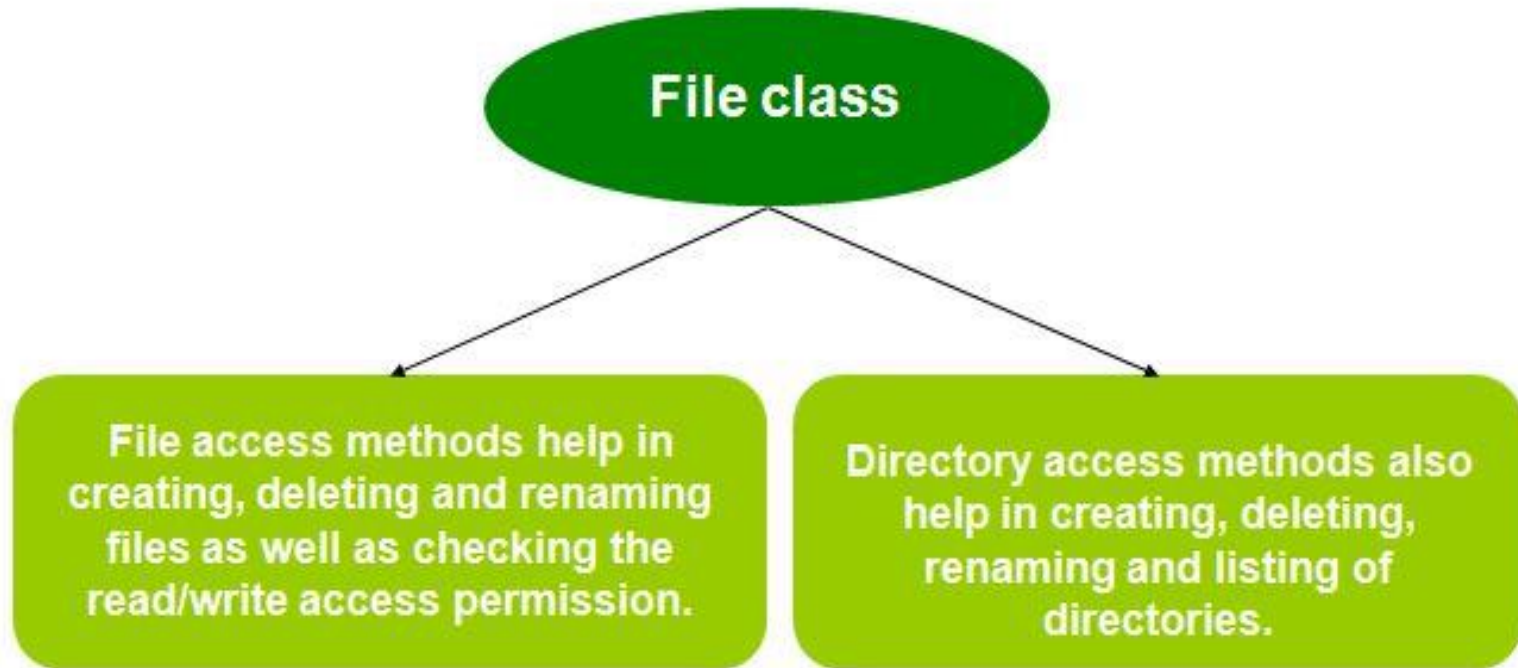
# OBJECTIVES

In this PPT, you will learn to:

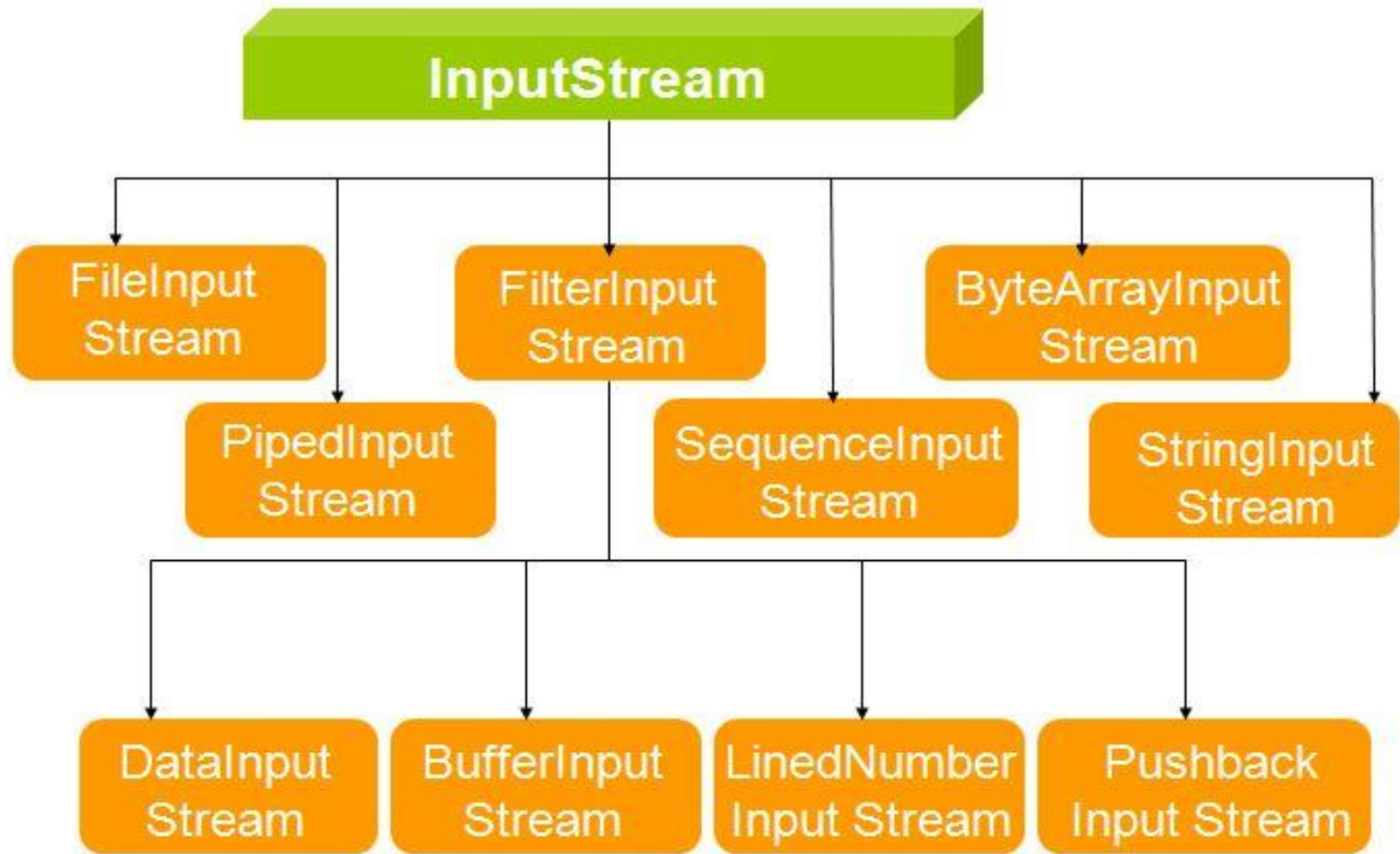
- ❖ Discuss I/O
- ❖ Explain the concept of streams
- ❖ Explain the standard input/output streams
- ❖ Explain the classes `InputStream` and `OutputStream`



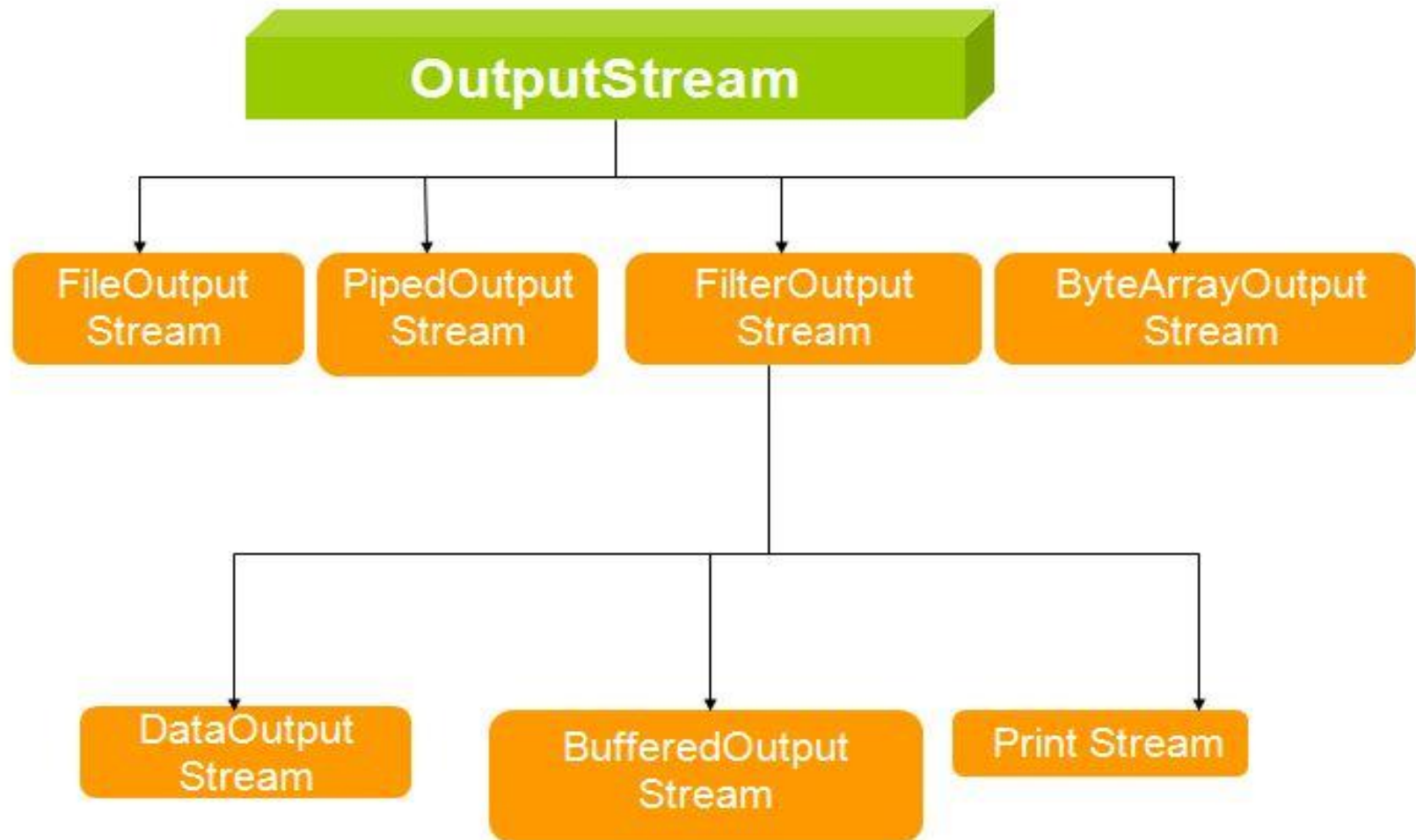




# INPUTSTREAM HIERARCHY

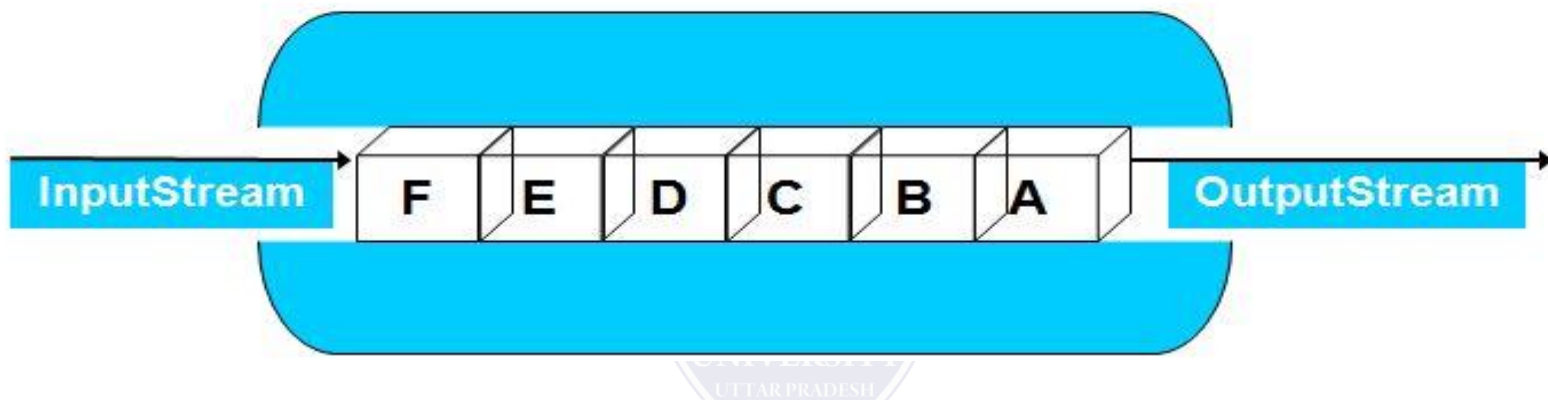


# OUTPUTSTREAM HIERARCHY



# STREAMS

- A channel for sending information in first-in, first-out manner.

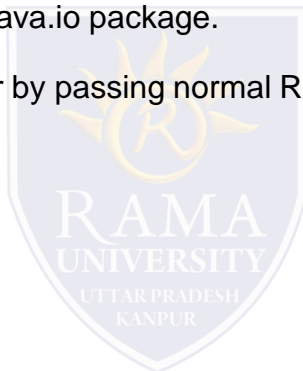


**Stream of data flowing from a source**

**Stream of data flowing to a destination**

# CHARACTER STREAMS

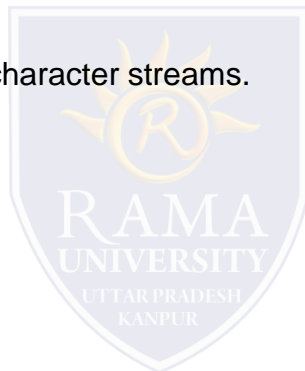
- Basic unit for this type of stream is Unicode character.
- Preferred way of handling strings and text.
- Extend from Reader and Writer classes in the java.io package.
- It creates a BufferedReader and BufferedWriter by passing normal Reader / Writer subclass into the constructors.

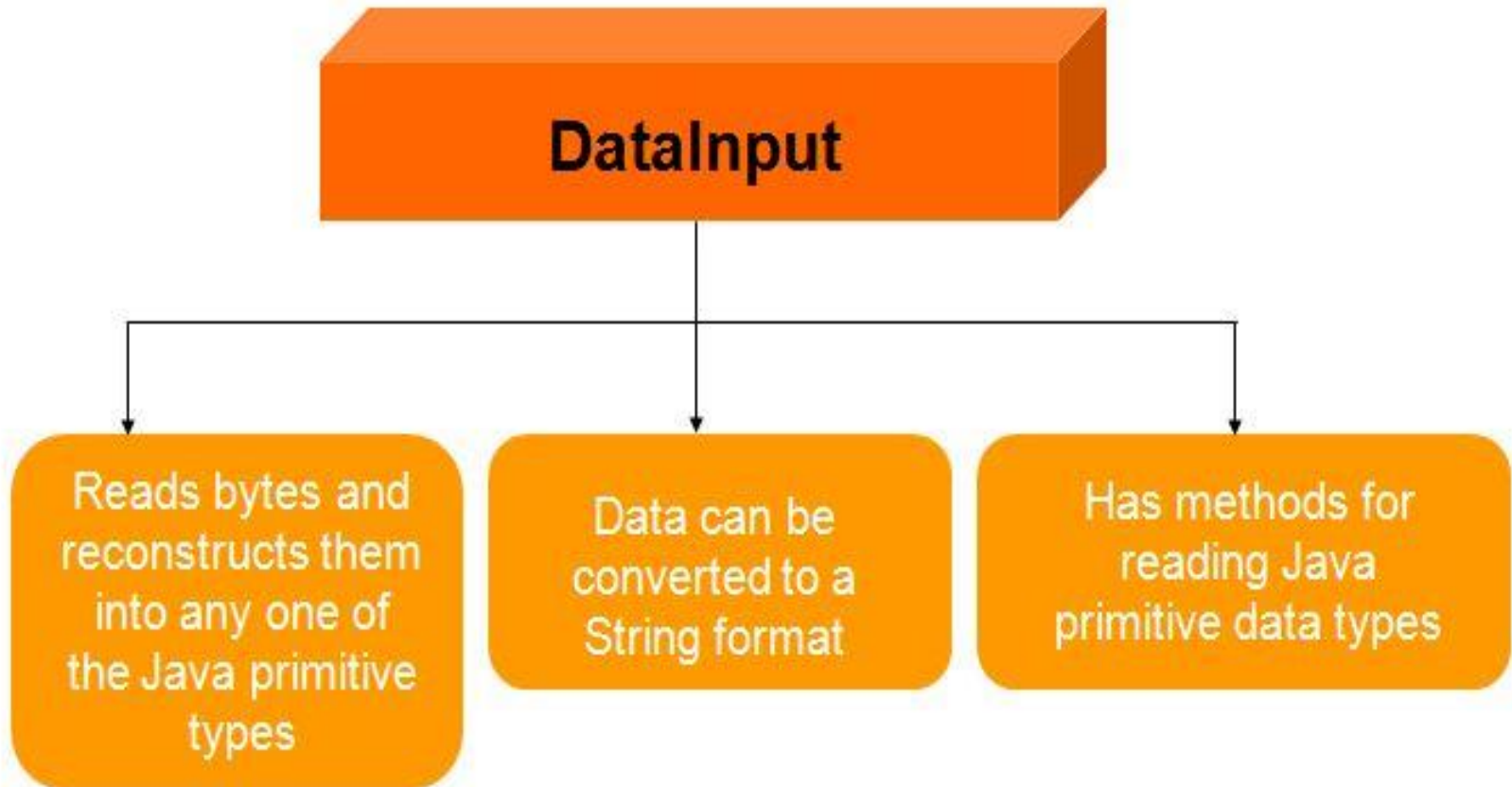




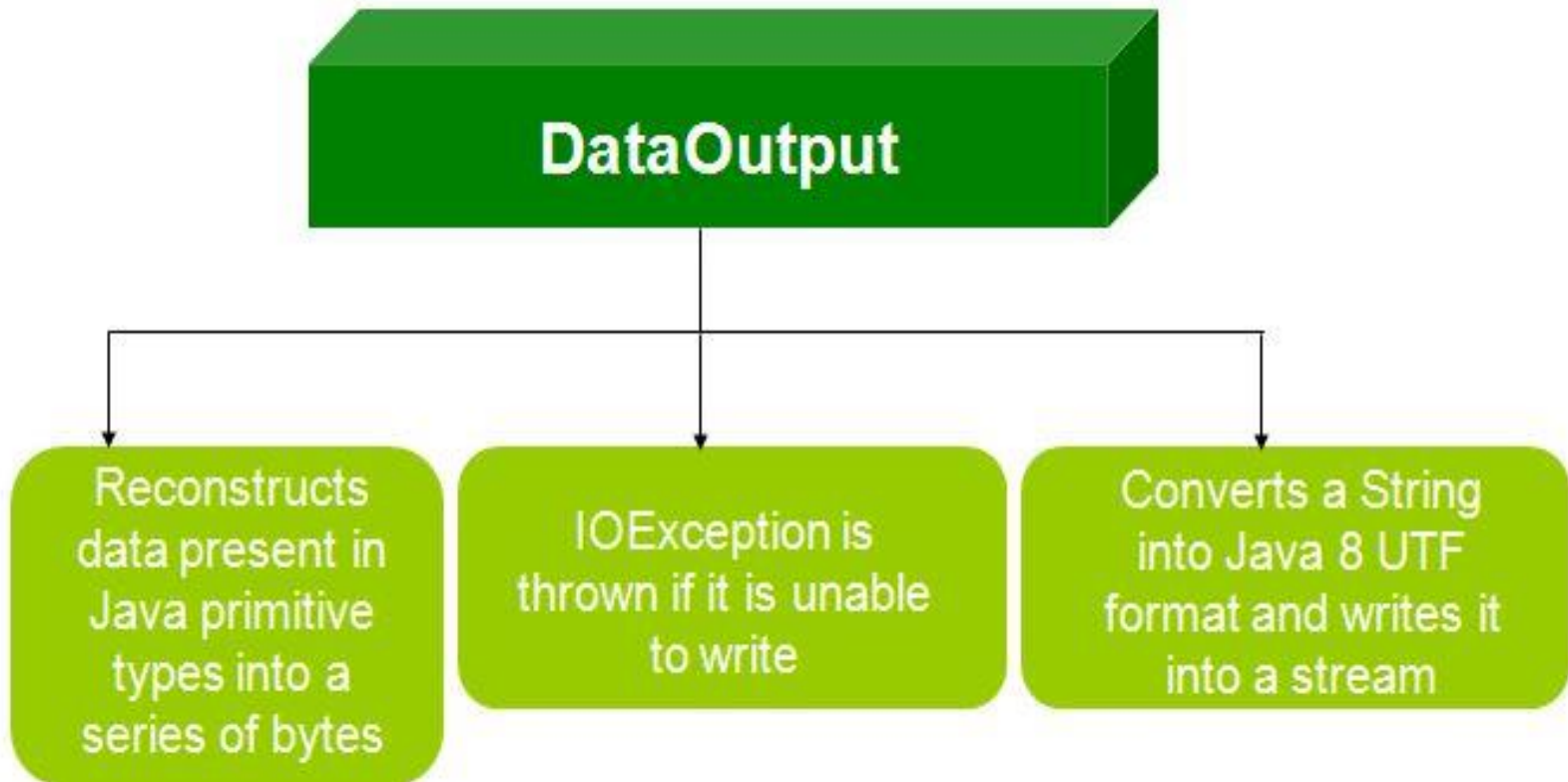
# BYTESTREAM

- Basic unit for this type of stream is a byte.
- Extends InputStream and OutputStream class.
- There are classes to convert byte streams into character streams.



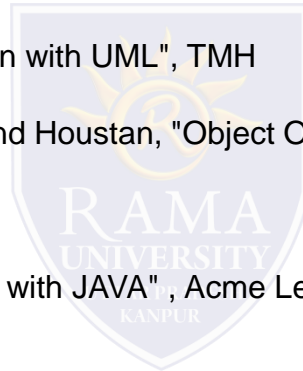


# DATAOUTPUT INTERFACE



# REFERENCES

1. James Rumbaugh et al, "Object Oriented Modeling and Design", PHI
2. Grady Booch, James Rumbaugh, Ivar Jacobson, "The Unified Modeling Language User Guide", Pearson Education
3. Naughton, Schildt, "The Complete Reference JAVA2", TMH
4. Mark Priestley "Practical Object-Oriented Design with UML", TMH
5. Booch, Maksimchuk, Engle, Young, Conallen and Houston, "Object Oriented Analysis and Design with Applications", Pearson Education
6. Pandey, Tiwari, " Object Oriented Programming with JAVA" , Acme Learning
7. <https://www.javatpoint.com/java-tutorial>
8. <https://www.tutorialspoint.com/java/index.htm>
9. [https://www.tutorialspoint.com/object\\_oriented\\_analysis\\_design/index.htm](https://www.tutorialspoint.com/object_oriented_analysis_design/index.htm)
10. <https://www.slideshare.net/niitstudentcare/>



# MULTIPLE CHOICE QUESTION

## Multiple Choice Question:

**Q1. Which of these stream contains the classes which can work on character stream?**

- a) InputStream
- b) OutputStream
- c) Character Stream
- d) All of the mentioned



# MULTIPLE CHOICE QUESTION

## Multiple Choice Question:

**Q2. Which of these packages contain classes and interfaces used for input & output operations of a program?**

- a) java.util
- b) java.lang
- c) java.io
- d) all of the mentioned

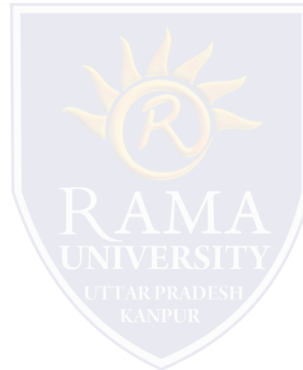


# MULTIPLE CHOICE QUESTION

## Multiple Choice Question:

**Q3. Which of these class is not a member class of java.io package?**

- a) String
- b) StringReader
- c) Writer
- d) File



# MULTIPLE CHOICE QUESTION

## Multiple Choice Question:

**Q4. Which of these interface is not a member of java.io package?**

- a) DataInput
- b) ObjectInput
- c) ObjectFilter
- d) FileFilter



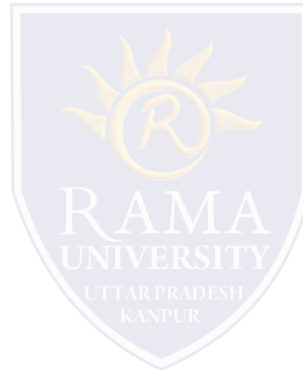


# MULTIPLE CHOICE QUESTION

## Multiple Choice Question:

**Q5. Which of these class is not related to input and output stream in terms of functioning?**

- a) File
- b) Writer
- c) InputStream
- d) Reader



# Summary

## In this PPT, you learned that:

- A File class is used to access the File system.
- InputStream and OutputStream are abstract classes that define how data is received or written to streams.

