Exception

- An exception is unexpected/ unwanted unnormal situation that occurred at runtime called excecution

Eg:

- ✓ Powercut exception
- ✓ Ill exception
- ✓ File not found exception

Exception handling

- In exception handling , we should have an alternate source through which we can handle the exception

```
class main {
    public static void main(String[] args) {
        int a = 10, b = 0;
        int c = a / b;
        System.out.println(c);
    }
}
Output:- Exception in thread "main" java.lang.ArithmeticException: / by zero
        at main.main(text.java:4)
```

- the object orientation mechanism has provide the following techniques to work with exception
- catch, throw,throew,finally.

Program:

```
class main {
    public static void main(String[] args) {
        int a = 10, b = 0;
        try {
            int c = a / b;
            System.out.println(c);
        } catch (Exception e) {
            System.out.println("exception handle");
        }

    }
}output:-
exception handle
```

file handling

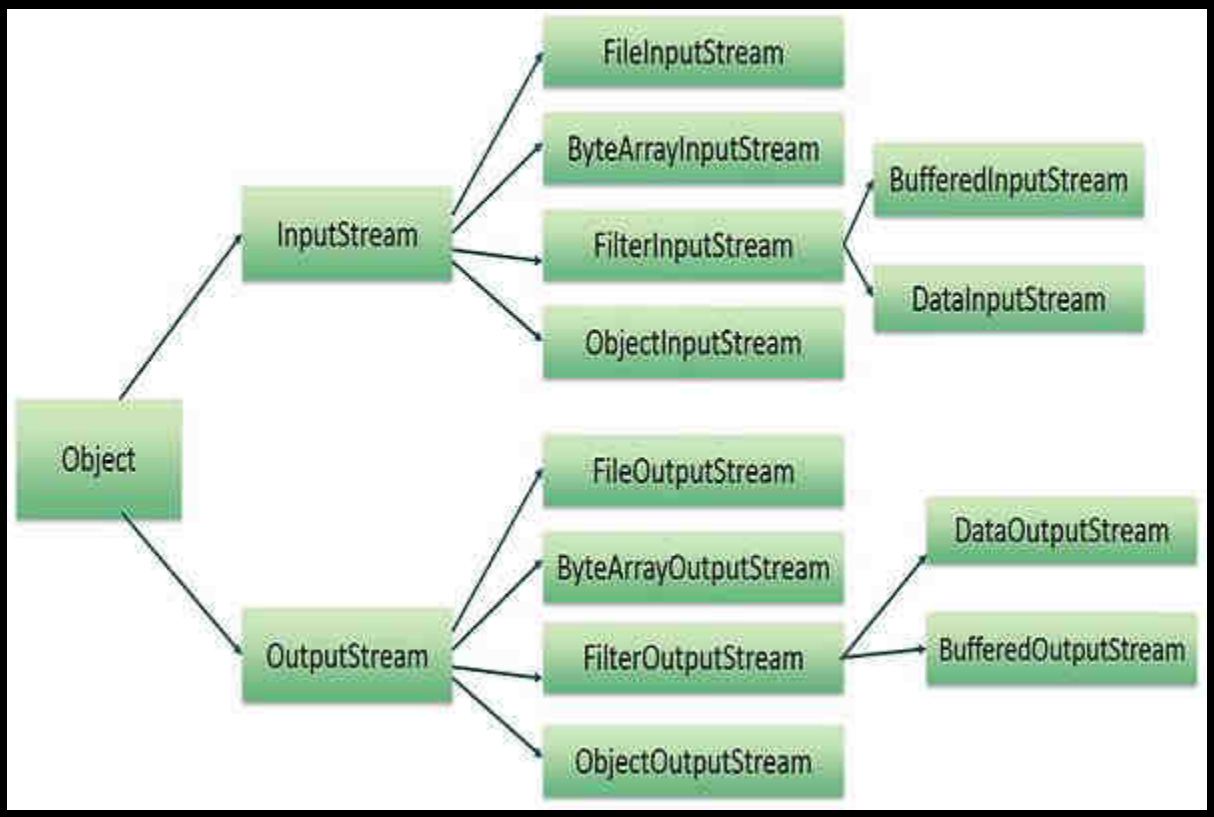
- file handling define how we can read and write data an a file. Java io package contains all the classes through which be can perform all input and output operation in the fiel

stream:

- stream is asequence of data on the basis of java io package all the classes devided into two steam
- 1.byte stream & 2.character steam

Operation of file

- ✓ Create file
- ✓ Read file
- ✓ Write file
- ✓ Get file information
- ✓ File handling class:



Create a file :

```
import java.io.File; // Import the File class
import java.io.IOException; // Import the IOException class to handle errors

public class text {
```

```
    public static void main(String[] args) {
        try {
            File myObj = new File("C:\\Users\\91635\\OneDrive\\Desktop\\sanjit.txt");
            if (myObj.createNewFile()) {
                System.out.println("File created: " + myObj.getName());
            } else {
                System.out.println("File already exists.");
            }
        } catch (IOException e) {
            System.out.println("An error occurred.");
            e.printStackTrace();
        }
    }
}
```

Write on file

```
import java.io.FileWriter; // Import the FileWriter class
import java.io.IOException; // Import the IOException class to handle errors

public class text {
    public static void main(String[] args) {
        try {
            FileWriter myWriter = new FileWriter("C:\\Users\\91635\\OneDrive\\Desktop\\sanjit.text");
            myWriter.write("Files in Java might be tricky, but it is fun enough!");
            myWriter.close();
            System.out.println("Successfully wrote to the file.");
        } catch (IOException e) {
            System.out.println("An error occurred.");
            e.printStackTrace();
        }
    }
}
```

Read In file

```
import java.io.File; // Import the File class
import java.io.FileNotFoundException; // Import this class to handle errors
import java.util.Scanner; // Import the Scanner class to read text files

public class text {
    public static void main(String[] args) {
        try {
            File myObj = new File("C:\\Users\\91635\\OneDrive\\Desktop\\sanjit.text");
            Scanner myReader = new Scanner(myObj);
            while (myReader.hasNextLine()) {
                String data = myReader.nextLine();
                System.out.println(data);
            }
            myReader.close();
        } catch (FileNotFoundException e) {
            System.out.println("An error occurred.");
            e.printStackTrace();
        }
    }
}
Output:- Files in Java might be tricky, but it is fun enough!
```

Package

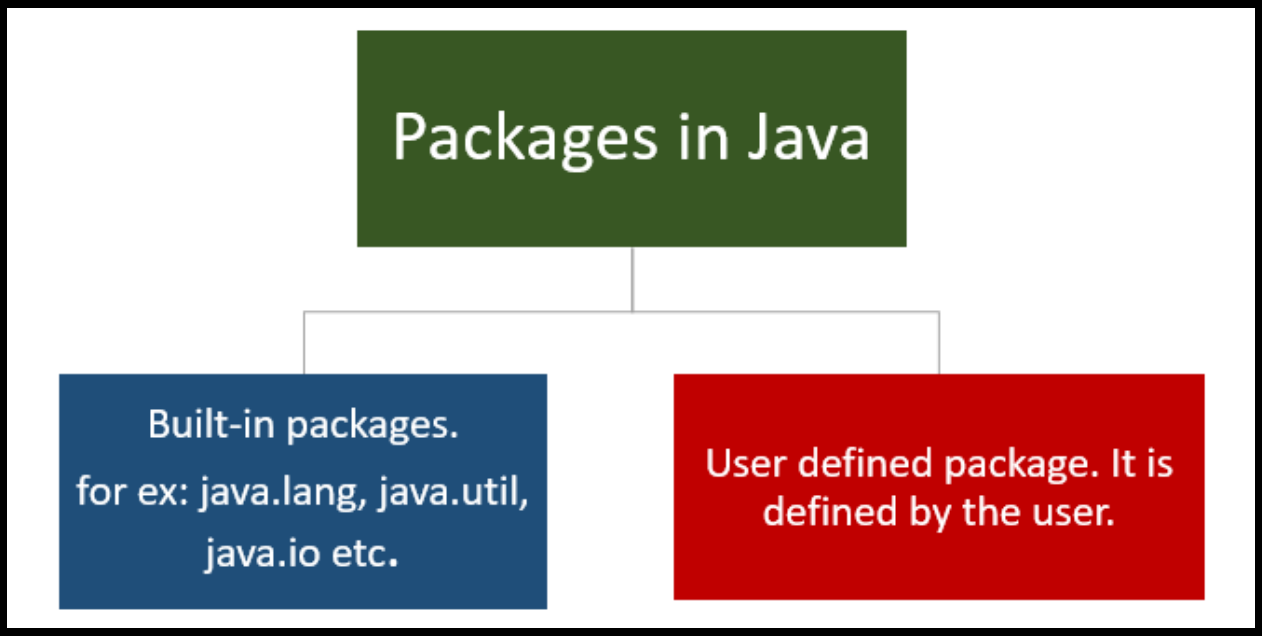
- A package arrange number of classes interface and sub-package of same type into a particular group
- Package is nothing but folder in window

Advantage

- ✓ Reusability
- ✓ Security
- ✓ Fast searching
- ✓ Naming conflecting
- ✓ Hiding

Dis-Advantage

- ✓ We can't pass parameter to package



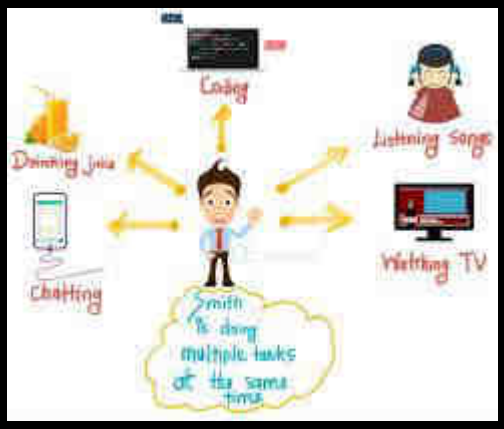
User define package

- The package which are created by java programmer or user for their own use are called user defined package
- Package statement must be first line of the program
- The way of compilation of these classes would be diffent(javac –d. class-name.java)

Syntax:- package package-name;

Multithreading

- Multithreading is a process to execute multiple threads at the same time without dependency of other threads called multithreading



Thread

- Thread is a pre-defined class which is available in java.lang.package
- Thread is a basic unit of cpu and it is well know for independent execution

Create threads:

By extending thread class

```
class abc extends Thread {
    public void run() {
        try {
            for (int i = 0; i < 10; i++) {
                System.out.println("welecome" + " ");
                Thread.sleep(1000);
            }
        } catch (InterruptedException e) {
            System.out.println("array: " + e);
        }
    }
}

class main {
    public static void main(String[] args) {
        abc obj = new abc();
        obj.start();
    }
}
```

By implementing runnable interface

```java
class abc implements Runnable {
    public void run() {
        try {
            for (int i = 0; i < 10; i++) {
                System.out.println("welecome" + " ");
                Thread.sleep(1000);
            }
        } catch (InterruptedException e) {
            System.out.println("array: " + e);
        }
    }
}

class main {
    public static void main(String[] args) {
        abc obj = new abc();
        Thread thread = new Thread(obj);
        thread.start();

    }
}
```