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FACULTY OF ENGINEERING & TECHNOLOGY

BCS-503: Object Oriented Techniques

Lecture-26

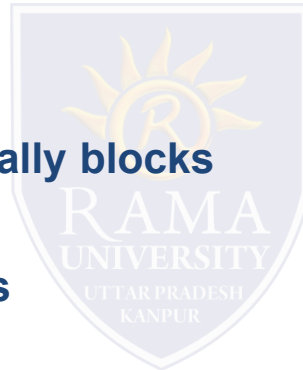
Preeti Singh

Computer Science & Engineering

OBJECTIVES

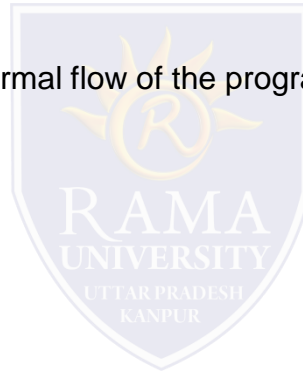
In this PPT, you will learn to:

- ❖ Define Exception
- ❖ Explain exception handling
- ❖ Describe the try, catch and finally blocks
- ❖ Examine multiple catch blocks



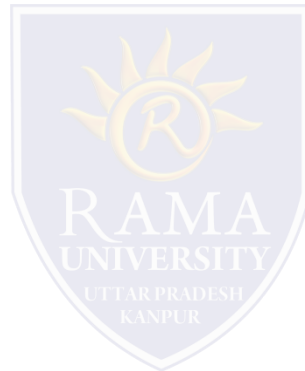
What is Exception

- Exception is an abnormal condition.
- An exception is an event that disrupts the normal flow of the program. It is an object which is thrown at runtime.

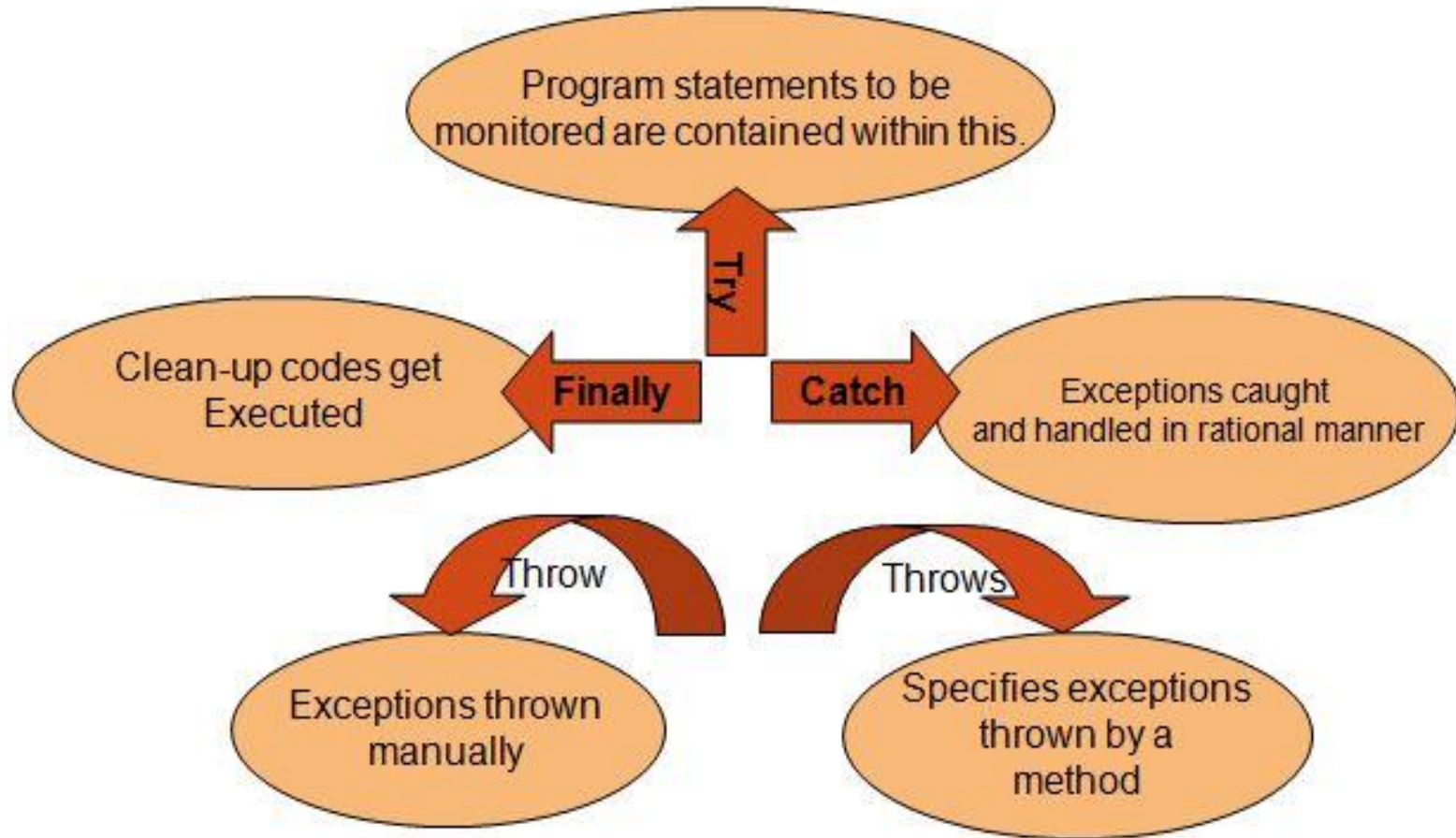


EXPLAIN EXCEPTION HANDLING

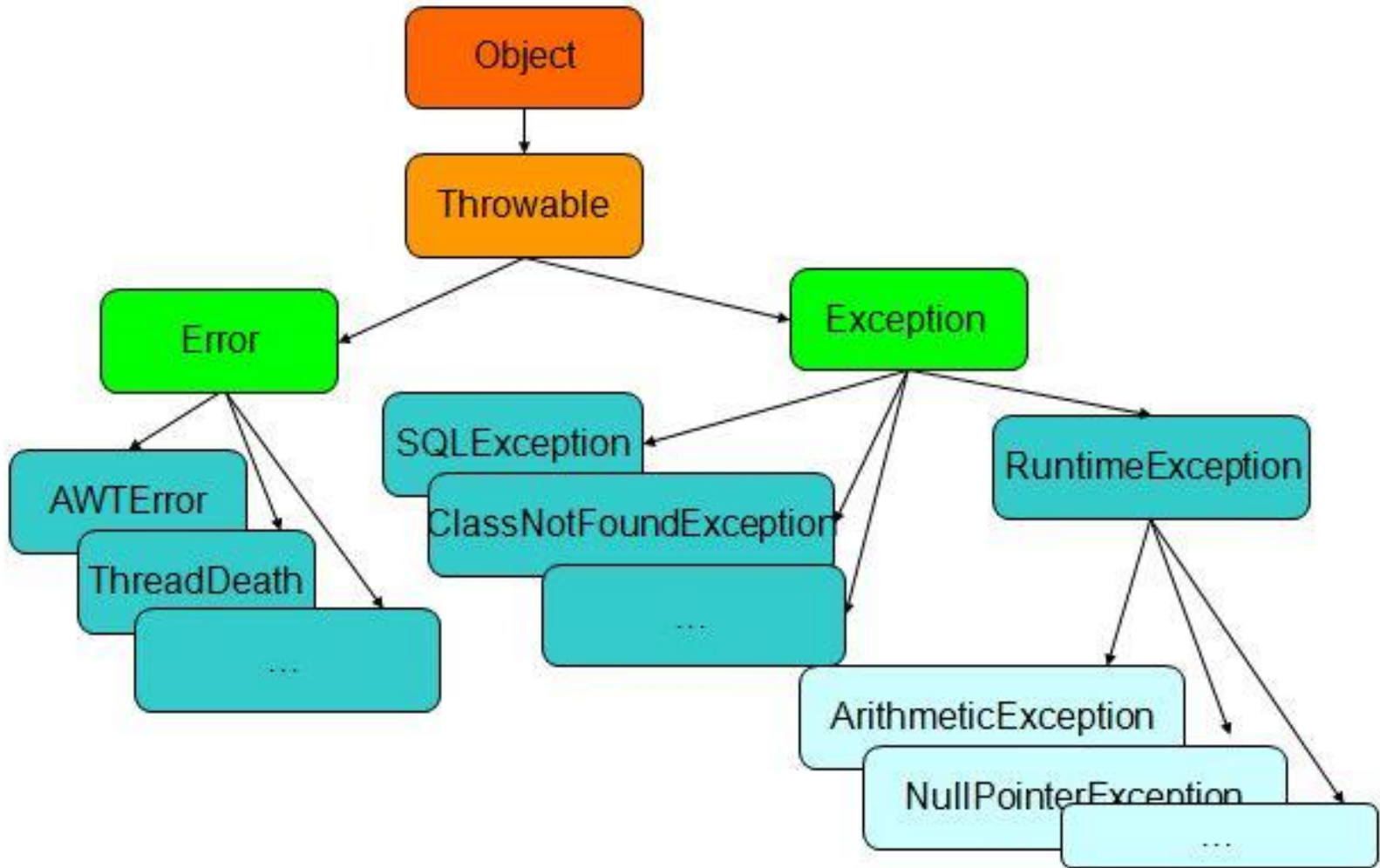
The Exception Handling in Java is one of the powerful mechanism to handle the runtime errors so that normal flow of the application can be maintained.



HANDLING EXCEPTIONS



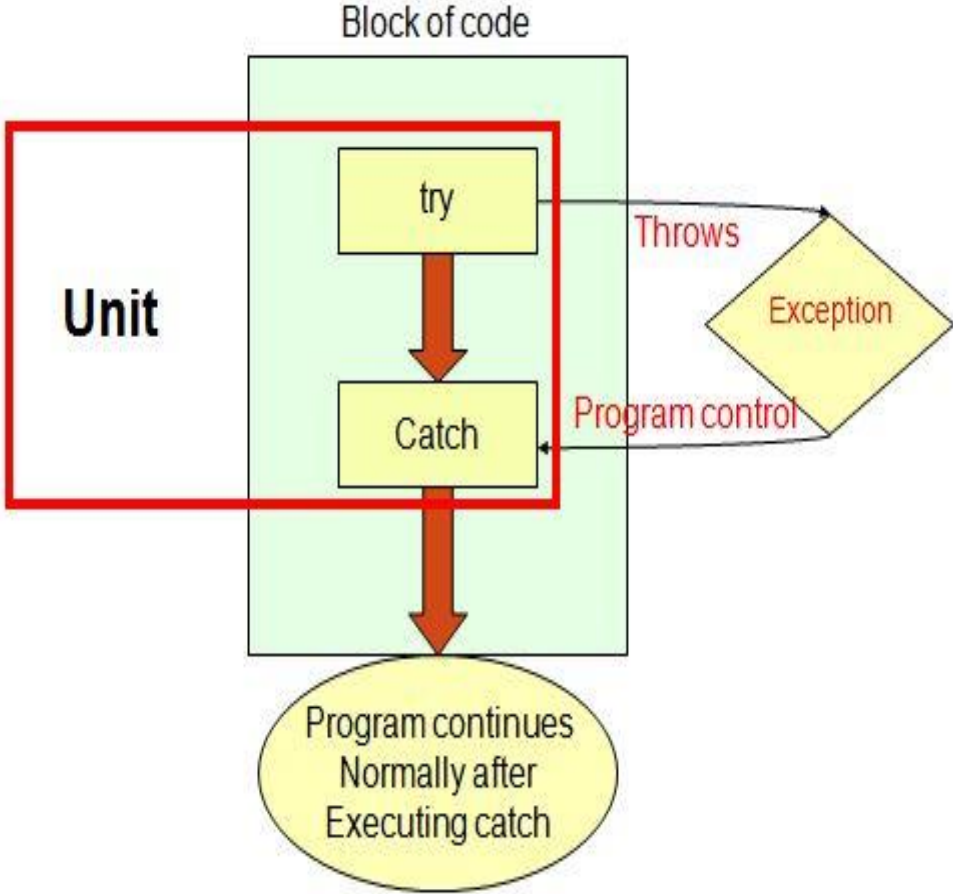
HIERARCHY OF EXCEPTION CLASSES



HIERARCHY OF EXCEPTION CLASSES (Contd.)

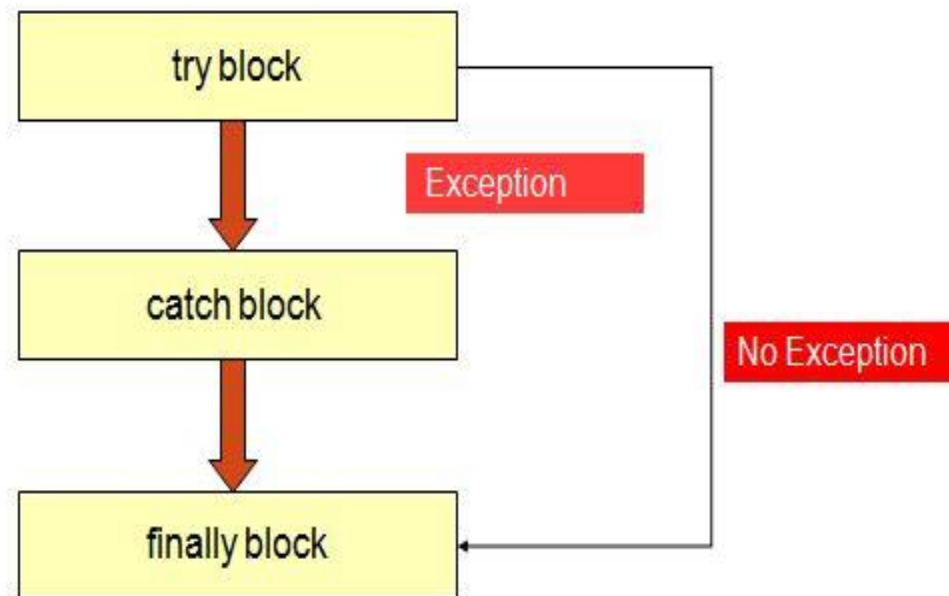
Exception	Description
Exception	Root class of exception hierarchy
RuntimeException	Base class for many java.lang exceptions
ArithmeticException	Arithmetic error condition, such as divide by zero
IllegalArgumentException	Method received illegal argument
ArrayIndexOutOfBoundsException	Array size is less or greater than actual array size
NullPointerException	Attempt to access <i>null</i> object member
SecurityException	Security settings do not allow operation
ClassNotFoundException	Unable to load requested class
NumberFormatException	Invalid conversion of a string to a numeric float
IOException	Root class for I/O exceptions
FileNotFoundException	Unable to locate a file
EOFException	End of file
IllegalAccessException	Access to a class denied
NoSuchMethodException	Requested method does not exist
InterruptedException	Thread interrupted

TRY AND CATCH BLOCKS



FINALLY BLOCK

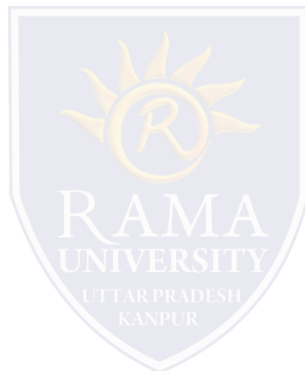
Execution flow of try, catch and finally blocks



MULTIPLE CATCH BLOCKS

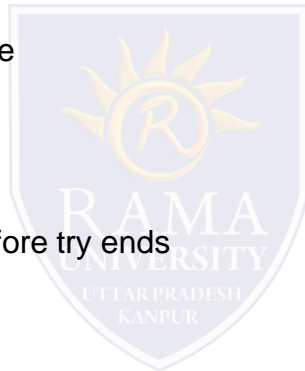
- Single piece of code can generate more than one error.
- When an exception is thrown, each catch statement is inspected in order, and the first one whose type matches that of the exception is executed.
- After one catch statement executes, the others are bypassed.

```
.....  
    try{  
}  
catch(ArrayIndexOutOfBoundsException e) {  
}  
catch(Exception e) {  
}  
.....
```



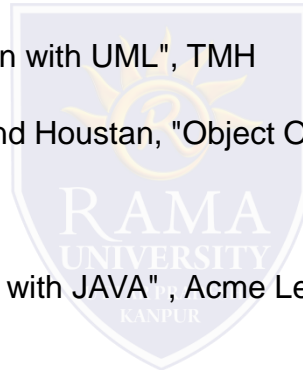
GENERAL FORM OF EXCEPTION-HANDLING BLOCK

```
try{  
    // block of code to monitor for errors  
    methodGeneratingException();  
}  
  
catch (Exception e) {  
    // exception handler for Exception e  
}  
  
finally{  
    // block of code to be executed before try ends  
    cleanup();  
}
```



REFERENCES

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8. <https://www.tutorialspoint.com/java/index.htm>
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10. <https://www.slideshare.net/niitstudentcare/>



MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q1. When does Exceptions in Java arises in code sequence?

- a) Run Time
- b) Compilation Time
- c) Can Occur Any Time
- d) None of the mentioned



MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q2. Which of these keywords is not a part of exception handling?

- a) try
- b) finally
- c) thrown
- d) catch

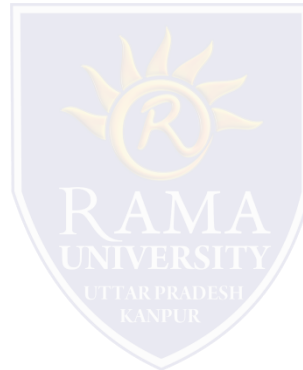


MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q3. Which of these keywords must be used to monitor for exceptions?

- a) try
- b) finally
- c) throw
- d) catch



MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q4. Which of these keywords must be used to handle the exception thrown by try block in some rational manner?

- a) try
- b) finally
- c) throw
- d) catch

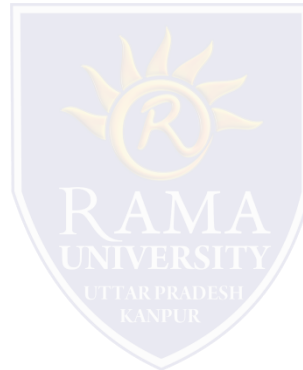


MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q5. Which of the following classes can catch all exceptions which cannot be caught?

- a) RuntimeException
- b) Error
- c) Exception
- d) ParentException



In this PPT, you learned that:

- Whenever an error is encountered during run time, an Exception occurs.
- A Java exception is an object that describes an exceptional condition that has occurred in a piece of code.
- When an exceptional condition arises, an object representing that exception is created and thrown in the method that caused the error.
- Java exception handling is managed using try, catch, throw, throws, and finally.
- Program statements to monitor are contained within a try block. Code within catch block catches the exception and handles it.
- Any code that absolutely must be executed before a method returns is put in a finally block.