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Assignment: Exception Handling (finally Block)

Part A: MCQs

1. What is the main purpose of the `finally` block in Java?

- A. To throw exceptions
- B. To handle exceptions
- C. To execute important code compulsorily
- D. To stop program execution

2. When does the `finally` block execute?

- A. Only when an exception occurs
- B. Only when no exception occurs
- C. Always, whether an exception occurs or not
- D. Only if catch block is present

3. Which of the following is true about the `finally` block?

- A. It executes before try block
- B. It executes only if catch executes
- C. It executes after try or catch block
- D. It executes only during runtime error

4. Which block is mandatory to use the `finally` block?

- A. catch
- B. throw
- C. try
- D. throws

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5. Can we use `finally` without a `catch` block?

- A. Yes
 - B. No
 - C. Only in runtime exception
 - D. Only in checked exception
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6. Which of the following is a common use of the `finally` block?

- A. Reading user input
 - B. Closing database or file resources
 - C. Printing output
 - D. Throwing exceptions
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7. What happens if an exception occurs inside the `try` block?

- A. `finally` block is skipped
 - B. Program stops immediately
 - C. `catch` block executes first, then `finally`
 - D. `finally` executes before `catch`
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8. Will the `finally` block execute if a `return` statement is present in the `try` block?

- A. No
 - B. Yes
 - C. Only sometimes
 - D. Only if no exception occurs
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9. In which case does the `finally` block NOT execute?

- A. When exception occurs
 - B. When no exception occurs
 - C. When `System.exit(0)` is called
 - D. When catch block handles exception
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10. If an exception occurs inside the `finally` block, what happens?

- A. It is ignored
 - B. It behaves like any other exception
 - C. Program compiles but does not run
 - D. JVM ignores it
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Part B: Problem Statements

Problem 1: Finally Block Execution (No Exception)

Problem Statement

Write a Java program that divides two numbers where no exception occurs.

Use a `finally` block to print a message showing that it executes even when the program runs normally.

Sample Input

```
Enter first number: 10  
Enter second number: 2
```

Sample Output

```
Result: 5  
Finally block executed
```

Problem 2: Finally Block Execution (With Exception)

Problem Statement

Write a Java program that performs division by zero inside a `try` block.

Handle the exception using a `catch` block and use a `finally` block to print a compulsory message.

Sample Input

```
Enter first number: 10  
Enter second number: 0
```

Sample Output

```
Error: Division by zero  
Finally block executed
```

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Problem 3: Try, Catch and Finally Order

Problem Statement

Write a Java program that prints messages inside the `try`, `catch`, and `finally` blocks. Cause an exception to observe the execution order.

Sample Output

```
Inside try block  
Inside catch block  
Inside finally block
```

Problem 4: Try and Finally Without Catch

Problem Statement

Write a Java program using only `try` and `finally` blocks. The program should show that the `finally` block executes even without a `catch` block.

Sample Output

```
Inside try block  
Inside finally block
```

Problem 5: Finally Block with Return Statement

Problem Statement

Write a Java program where a `return` statement is written inside the `try` block. Use the `finally` block to print a message after the return.

Sample Output

```
Inside try block  
Inside finally block
```

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Problem 6: Simple Calculator Using Finally

Problem Statement

Create a Java program that performs division using user input.
Use a `finally` block to print “**Thank you for using the program**”.

Sample Input

```
Enter first number: 20  
Enter second number: 4
```

Sample Output

```
Result: 5  
Thank you for using the program
```

Problem 7: Finally Block with No Exception Handling

Problem Statement

Write a Java program that does not generate any exception but still uses `try` and `finally` blocks to print messages.

Sample Output

```
Program running normally  
Finally block executed
```

Problem 8: Multiple Statements in Finally Block

Problem Statement

Write a Java program where the `finally` block contains multiple print statements.
Show that all statements execute.

Sample Output

```
Inside try block  
Cleaning resources  
Closing program  
Finally block completed
```

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Problem 9: Exception Without Catch

Problem Statement

Write a Java program where an exception occurs in the `try` block but no `catch` block is used.
Use a `finally` block to print a message before program termination.

Sample Output

```
Inside finally block  
Exception in thread "main" java.lang.ArithmetricException
```

Problem 10: Importance of Finally Block

Problem Statement

Write a Java program with comments explaining why the `finally` block is important.
Use simple print statements to show its compulsory execution.

Sample Output

```
Program started  
Finally block is important  
Program ended
```

