LAB SET QUESTIONS – JAVA PROGRAMMING : LAB CYCLE 2

1. Create both fixed and dynamic stack by implementing interface that defines push and pop methods.

2. Consider a Student Management System that demonstrates
   i) Exception handling using built-in exceptions. The system should simulate various real-time errors such as:
      - Invalid marks entry (ArithmeticException)
      - Missing or null student records (NullPointerException)
      - Unauthorized access to confidential student data (IllegalAccessException)
      - Unexpected failures during result processing (RuntimeException)
      - File reading or loading failures (IOException)
   ii) Create a Custom Exception "InvalidMarksException" that is Thrown when a student's marks are entered as negative or greater than 100.

3. Develop a java program to accept command line arguments. If the arguments are numeric, convert them and perform all possible arithmetic operations and display results suitably and handle exceptions if any. If arguments are strings treat it as exception and handle it

4. Declare a non-generic class called GenMethDemo and a static generic method within that class called isIn( ). The isIn( ) method determines if an object is a member of an array. It can be used with any type of object and array as long as the array contains objects that are compatible with the type of the object being sought.

5. Demonstrate a Generic Stack in Java. The program shall define a generic Stack class using Java Generics and a Student class to demonstrate storing user-defined objects inside a generic stack. Ensure to demonstrate following concepts:
   i) Generic Class with Type Parameter <E>
   ii) Type Safety (no explicit casting)
   iii) Generic Array Creation using Type Casting
   iv) Use of Generic Methods (push, pop, hasElements)
   v) Custom Object Handling with Generics

6. A university wants to build a that accepts feedback from the console and stores it in a text file. Design a Java program that
      - Reads student name, course, and feedback using or
      - Writes the details into a file using or .
      - Automatically closes the file using .

7. our college wants to display results in a browser using an applet. Create an applet that:
      - Reads two marks from <PARAM> tags using getParameter()
      - Calculates total and displays pass/fail using paint()
      - Write the corresponding HTML APPLET tag.
      -Explain how the applet lifecycle (init(), start(), paint(), stop(), destroy()) works in this example.

8. You are building a login window using AWT. Create a Frame with:
      - TextField for username
      - PasswordField

- Login Button
- When the Login button is clicked:
- Validate the username/password
- Display success/failure in a Label
- Add an event listener for pressing Enter key inside the password box to trigger login.
9. You are developing the UI for an online examination system in JavaFX. Build UI with -
Label for question
- Radio buttons for options
- Next / Previous buttons
- Add event handling to:
- Track selected answers
- Prevent going next without selecting an option
- Show summary using a new JavaFX scene.