These exercises will cover the concept of exception handling and packages:

1. Write a Java program that demonstrates the use of try-catch blocks to handle exceptions. Include a division operation by zero within the try block and catch the ArithmeticException to display a custom error message.

2. Develop a Java program that reads input from the user for two numbers and performs division. Implement try-catch blocks to handle both ArithmeticException and InputMismatchException separately, providing appropriate error messages for each scenario.

3. Create a custom exception class named InvalidAgeException. Write a Java program to accept the age of a user as input. If the age is less than 18, throw an InvalidAgeException with a message "Age must be 18 or above." Handle this custom exception using a try-catch block.

4. Develop a Java program that reads user input from the command line. Implement a method to validate the input and throw an IllegalArgumentException if the input is invalid. In the main method, catch the IllegalArgumentException and rethrow it as a RuntimeException with a custom message.

5. Write Java programs using the concepts of user-defined packages for Mathematics, with the packages named 'Arithmetic', 'Trigonometry', and 'Geometry'. The details for each package are as follows:
   a. **Arithmetic package**: This package can include classes for performing basic arithmetic operations such as addition, subtraction, multiplication, and division. Each operation can be implemented as a separate method within its respective class.
   b. **Trigonometry package**: This package can include classes for trigonometric functions such as sine, cosine, and tangent. Each function can be implemented as a separate method within its respective class.
   c. **Geometry package**: This package can include classes for geometric calculations such as calculating the area and perimeter of various shapes like squares, rectangles, circles, and triangles. Each shape can be implemented as a separate class with methods for calculating its area and perimeter

   In the main class, write a program to call various methods by importing different user-defined packages. Allow all inputs to be provided by the user, and provide options to repeatedly call different methods based on the user's choices until the user chooses to exit the program.

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