WEB ENGINEERING

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LAB 03

Abstract Class, Interface & Exception Handling

TASK # 1

Write an abstract class called **Armstrong** which contains an abstract method called **armstrongNumbers().**

- Then create a class that extends Armstrong class and provide the implementation of **armstrongNumbers()** here which lists the Armstrong numbers ranging from 0 to 1000.
- Now call the **armstrongNumbers()** in Main method

Hint:

A positive integer is called an Armstrong number if the sum of cubes of individual digit is equal to that number itself. For example:

```
153 = 1 * 1 * 1 + 5 * 5 * 5 + 3 * 3 * 3// 153 is an Armstrong number.

12 is not equal to 1 * 1 * 1 + 2 * 2 * 2 // 12 is not an Armstrong number.
```

TASK # 2

Write an Interface of **StudentData**, having methods like **setName** (), **setRollNumber** (), **setCGPA** (), **getName** (), **getRollNumber** (), **getCGPA** (), **showData** (). Then implement and use this interface in a class named as **Student** . Implement all methods and show proper working.

TASK # 3

Write a class that takes two input numbers from the user and pass these numbers to a function

- "**CalculateQuotient**(int,int)".

- "**CalculateQuotient**(int,int)" will Use the
- "throws clause"
- Throw new Exception if the divisor is zero
- Divide both numbers
- Return the float result to main function
- Display the result in main using exception handling.

TASK # 4

Write a program that count how many prime numbers between minimum and maximum values provided by user. If minimum value is greater than or equal to maximum value, the program should throw a InvalidRange exception and handle it to display a message to the user on the following format:Invalid range: minimum is greater than or equal to maximum.

For example, if the user provided 10 as maximum and 20 as minimum, the message should be: Invalid range: 20 is greater than or equal to 10.