LAB 4: EXCEPTIONS

Implement a Java program to calculate the Mathematical expressions

- x + y
- x - y
- x * y
- x / y
- x % y

Notes:

- All the arithmetic expressions should consist of exactly two operands and one operator.
- The two operands x and y are integers.
- You can assume that there is at least one blank before the operator and at least one blank after the operator. (Use the **Scanner *nextInt***() method to read the operands and the **Scanner *next***() method to read the operator).
- Echo the arithmetic expression that is calculated when giving the result. For instance, if the user enters "3 + 4" then your calculator program should output
  3 + 4 = 7
- Note that the user input could be erroneous (in which case the expression cannot be computed). In the case of errors, give precise error messages to the user, for example:
  - the operand is not an integer
  - illegal operator
  - / by zero

IMPLEMENTATION DETAILS

- Use try catch blocks to handle the exceptions.
- Use **one** switch statement. Do **not** use any 'if statements'.
- Use as many methods as you want.
- Keep calculating expressions until the user indicates that s/he wants to quit. The user enters a single 'q' instead an operator e.g. 4 q 5 means quit the program

Exceptions:

- ✓ The nextInt() Scanner method generates `InputMismatchException` if the input is not an integer number.
- ✓ If you divide a number by 0, the / and % operations throw `ArithmeticException`.
- ✓ In your program, throw `IllegalArgumentException` if the operator is none of (+, -, *, /, or %).

Marking Scheme:

- [10 marks] Complete Purse class