JAVA OOPS

LAB 01

CMS ID 023-22-0273

Qalandar Bux

5-2-2023

TASK1:

```java
import java.util.Scanner;
 public class Task1 {     public static void
main(String[] args) {         int size=0;
int average=0;         boolean flag=false;
int arr[];

        Scanner sc=new Scanner(System.in);
while(!flag){             try{
               System.out.println("how many number do you want
to enter ?");                 size=sc.nextInt();
if(size<0){                     throw new Exception(size+"
must be positive");                 }                 else{
flag=true;                      arr=new int[size];
for(int i=0 ; i<arr.length ; i++){
arr[i]=sc.nextInt();                          average+=arr[i];
                   }
                   System.out.println("Average
"+average/size);
                }             }
catch(Exception e){
                System.out.println(e.getMessage());
System.out.println("Enter again");                flag=false;
```

```
        }

    }

}
```

OUTPUT:

```
how many number do you want to enter ?
-3
-3 must be positive
Enter again
how many number do you want to enter ?
3
4
5
0
Average 3
PS C:\Users\Mujeeb\Desktop\Lab10>
```

TASK2:

```
import java.util.Scanner; public
class Task2 {
    public static void main(String[] args) {
int n1=0, n2=0;
        Scanner scan=new Scanner(System.in);
double r;          boolean flag=true;
while(flag){             try{
                System.out.println("Enter two number");
n1 = scan.nextInt();                  n2 =
scan.nextInt();                 flag=false;

            }catch(Exception e){
scan.nextLine();
                System.out.println("not correctly written whole
number");
                System.out.println("try again");
flag=true;
            }
            if(flag==false){
try{
                    r = ( double) n1 / n2;




                    System.out.println("division"+r);
if(n2==0){
```

```
                    throw new Exception(n1+" can not divided by
zero");
                    }
                }catch(Exception e){
                  System.out.println(e.getMessage());
                  System.out.println("try again");
                }
            }
        }
    }
}
```

OUTPUT:

```
Enter two number
R
not correctly written whole number
try again
Enter two number
4
T
not correctly written whole number
try again
Enter two number
4
2
division2.0
PS C:\Users\Mujeeb\Desktop\Lab10>
```

TASK3:

```
import java.util.InputMismatchException; import
java.util.Scanner;
 class DivisionByZeroException extends Exception {
public DivisionByZeroException(String message) {
super(message);
    }
}  public class Main {     public static void
main(String[] args) {         while (true) {
try {                 double ratio =
ReturnRatio();
                System.out.println("The ratio is: " + ratio);
break;
            } catch (InputMismatchException e) {
                System.out.println("Invalid input! Please enter
integers.");
            } catch (DivisionByZeroException e) {
                System.out.println(e.getMessage());
                System.out.println("Division by zero is not
allowed! Please enter a non-zero second integer.");
            }
        }
    }          public static double ReturnRatio()
throws InputMismatchException,
DivisionByZeroException {         Scanner scan =
new Scanner(System.in);         int n1, n2;
double r;

        System.out.print("Enter the first integer: ");
```

```
        n1 = scan.nextInt();

        System.out.print("Enter the second integer: ");
n2 = scan.nextInt();
         if  (n2  ==  0)  {                          throw  new
DivisionByZeroException("Cannot divide by zero!");
        }
         r = (double) n1 /
n2;          return r;
    }
}
```

OUTPUT:

```
Enter the first integer: 4
Enter the second integer: 0
Cannot divide by zero!
Division by zero is not allowed! Please enter a non-zero second integer.
Enter the first integer: 4
Enter the second integer: 3
The ratio is: 1.3333333333333333
PS C:\Users\Mujeeb\Desktop\Lab10>
```

TASK4:

```
import java.util.Scanner;
 class MonthException extends Exception {
public MonthException(String message) {
super(message);
    }
}  class DayException extends Exception {
public DayException(String message) {
super(message);
    }
}  class YearException extends Exception {
public YearException(String message) {
super(message);
    }
}  public class DateConverter {     public static
void main(String[] args) {         Scanner
scanner = new Scanner(System.in);         int
month = 0, day = 0, year = 0;         boolean
isValidInput = false;
                 while
(!isValidInput) {
try {
                System.out.print("Enter the month (1-12): ");
month = scanner.nextInt();                  if (month < 1 ||
month > 12) {                     throw new
MonthException("Invalid month!");
                }
```

```
                System.out.print("Enter the day (1-31): ");
day = scanner.nextInt();                    if (day < 1 || day
> 31) {                        throw new DayException("Invalid
day!");
                }

                System.out.print("Enter the year (1000-3000):
");                    year = scanner.nextInt();
if (year < 1000 || year > 3000) {                        throw
new YearException("Invalid year!");
                }
isValidInput = true;
            } catch (MonthException e) {
                System.out.println(e.getMessage());
} catch (DayException e) {
                System.out.println(e.getMessage());
} catch (YearException e) {
                System.out.println(e.getMessage());
            } catch (Exception e) {
                System.out.println("Invalid input!");
scanner.nextLine();
            }
        }

        String monthName = getMonthName(month);
        System.out.println(monthName + " " + day + ", " +
year);     }          private static String
getMonthName(int month) {         switch (month) {
case 1: return "January";             case 2: return
"February";             case 3: return "March";
```

```
            case 4: return "April";             case 5: return
"May";              case 6: return "June";              case 7:
return "July";              case 8: return "August";
case 9: return "September";             case 10: return
"October";              case 11: return "November";
case 12: return "December";             default: return "";
        }
    }
}
```

OUTPUT:

```
Enter the month (1-12): 34
Invalid month!
Enter the month (1-12): 5
Enter the day (1-31): 32
Invalid day!
Enter the month (1-12): 5
Enter the day (1-31): 2
Enter the year (1000-3000): 2023
May 2, 2023
PS C:\Users\Mujeeb\Desktop\Lab10>
```

TASK5:

```
import java.util.Scanner;

class UnknownOperatorException extends Exception {
public UnknownOperatorException(String message) {
super(message);
    } }
public class Calculator {
    public static void main(String[] args) {
Scanner sc = new Scanner(System.in);
boolean again = true;         while (again)
{             double result = 0.0;
           System.out.println("Calculator is on.");
System.out.println("result = " + result);             while
(true) {
               String input = sc.nextLine().toLowerCase();
char operator = input.charAt(0);                 if
(operator == 'r') {
                   System.out.println("Final result = " +
result);
                   break;
               }
               double operand=0;;
```

```
                try {
                    operand =
Double.parseDouble(input.substring(1));
                } catch (NumberFormatException e) {
                    System.out.println("Invalid input, try
again.");
                    continue;
                }
try {
                    switch (operator) {
case '+':                           result
+= operand;                           break;
case '-':                           result -
= operand;                           break;
case '*':                           result
*= operand;                           break;
case '/':                           result
/= operand;                           break;
default:
                            throw new
UnknownOperatorException("Unknown operator: " + operator);
                    }
```

```
                    System.out.println("result " + operator + "
" + operand + " = " + result);
                } catch (UnknownOperatorException e) {
                    System.out.println(e.getMessage());
                    System.out.println("Reenter, your last
line:");
                }
            }
            System.out.println("Again? (y/n)");
            String choice = sc.nextLine().toLowerCase();
if (!choice.startsWith("y")) {                again =
false;
            }
        }
 }
}
```

OUTPUT:

```
Calculator is on.
result = 0.0
+5
result + 5.0 = 5.0
*2.0
result * 2.0 = 10.0
-1
result - 1.0 = 9.0
/3
result / 3.0 = 3.0
r
Final result = 3.0
Again? (y/n)
n
```