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TP04

Java Operators, if…else and switch

1. Prime Number

- Main

```java
package s2java.src.TP4;
import java.util.Scanner;
public class EX1 {
    Run | Debug
    public static void main(String[] args) {
        primenumber prime;    "primenumber": Unknown word.
        Scanner input = new Scanner(System.in);    Resource leak: 'input' is never closed
        System.out.println(x:"Input number to check whether it is prime number: ");
        prime = new primenumber(input.nextInt());    "primenumber": Unknown word.
        if(prime.isprime()){
            System.out.printf(format:"%d is a prime number .\n", prime.number);
        }else
            System.out.printf("%d is not a prime number , "+"because it is divisible by %d\n", prime.number, prime.divisible);
    }
}
```

- Class

```java
package s2java.src.TP4;
class primenumber {    "primenumber": Unknown word.
    int number, divisible =1;
    public primenumber(int number) {    "primenumber": Unknown word.
        this.number = number;
    }
    boolean isprime(){    "isprime": Unknown word.
        if(number<=1)return false;
        for (int i=2; i<number; i++){
            if(number%i==0){
                divisible =i;
                return false;
            }
        }
        return true;
    }
}
```

- Result

```
PROBLEMS 31   OUTPUT   DEBUG CONSOLE   TERMINAL   COMMENTS

PS D:\Code stock\vs code> cd "d:\Code stock\vs code\s2java\src\TP4\" ; if ($?) { javac EX1.java } ; if ($?) { java EX1 }
Input number to check whether it is prime number:
23
23 is a prime number .
PS D:\Code stock\vs code\s2java\src\TP4>
```

2. Lucky Number
   - Main

```java
package s2java.src.TP4;
import java.util.Scanner;
public class EX2 {
    Run | Debug
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);    Resource leak: 'input' is never closed
        System.out.println("""
                ------------------------------------------------
                            >>>>Lucky Number<<<<
                ------------------------------------------------
                """);
        System.out.println(x:"Program for testing for lucky number.");
        System.out.print(s:"Please input 6 digits number: ");
        LuckyNumber luckyNumber =  new LuckyNumber(input.nextInt());
        if(!luckyNumber.Valid(digits:6)) {
            System.out.println(x:"\nInvalid input number, please input only 6 digits number.");
        }
        else if(luckyNumber.Lucky()) {
            System.out.println("\n" + luckyNumber.amount + " is lucky number.");
        }
        else {
            System.out.println("\n" + luckyNumber.amount + " is not lucky number.");
            System.out.println(x:"Try again!");
        }
        System.out.println(x:"================================================");
    }
}
```

   - Class

```java
package s2java.src.TP4;
public class LuckyNumber {
    public int number;
    public int amount;
    public LuckyNumber(int num) {
        this.number = num;
        this.amount = num;
    }
    public boolean Valid(double digits) {
        int a = (int)Math.pow(a:10.00,(digits-1));
        if(number/a >= 1 && number/a < 10) {
            return true;
        }
        return false;
    }
    public boolean Lucky() {
        int head = 0, tail = 0;
        for(int i=1; i<=6; i++) {
            if (i<=3) {
                tail = tail + number%10;
                number /= 10;
            }
            else {
                head = head + number%10;
                number /= 10;
            }
        }
        if(head == tail) {
            return true;
        }
        return false;
    }
}
```

   - Result

```
PS D:\Code stock\vs code> cd "d:\Code stock\vs code\s2java\src\TP4\" ; if ($?) { javac EX2.java } ; if ($?) { java EX2 }
------------------------------------------------
            >>>>Lucky Number<<<<
------------------------------------------------

Program for testing for lucky number.
Please input 6 digits number: 123321

123321 is lucky number.
================================================
```

3. Reversing Number
   - Main

```java
package s2java.src.TP4;
import java.util.Scanner;
public class EX3 {
    public int reverseNumber(int num, int digits) {
        int reverseNum = 0;
        int n = digits;
        int a;
        for(int i=0; i<digits; i++) {
            a = (int)Math.pow(a:10.00,(n-1));
            reverseNum = reverseNum + (num%10)*a;
            num/=10;
            n--;
        }
        return reverseNum;
    }
    Run | Debug
    public static void main(String[] args) {
        int number, reverseNumber;
        Scanner sc = new Scanner(System.in);    Resource leak: 'sc' is never closed
        System.out.println(x:"----------------------------------------");
        System.out.println(x:"         >>>>Reversing Number<<<<        ");
        System.out.println(x:"----------------------------------------");
        System.out.println(x:"Program for reversing a 4 digits number");
        System.out.print(s:"Please input a 4-digit number: ");
        number = sc.nextInt();
        int digits = (int) (Math.log10(number) + 1);

        if (digits != 4) {
            System.out.println(x:"\nError: Invalid input number, please input only a 4-digit number.");
        } else {
            EX3 ex = new EX3();
            reverseNumber = ex.reverseNumber(number, digits:4);
            System.out.println("\nAfter reversing: " + reverseNumber);
        }
        System.out.println(x:"----------------------------------------");
    }
}
```

   - Result

```
PS D:\Code stock\vs code\s2java\src\TP4> cd "d:\Code stock\vs code\s2java\src\TP4\" ; if ($?) { javac EX3.java } ; if ($?) { java EX3 }
----------------------------------------
         >>>>Reversing Number<<<<
----------------------------------------
Program for reversing a 4 digits number
Please input a 4-digit number: 2310

After reversing: 132
----------------------------------------
```

4. Money Exchanges

```java
package s2java.src.TP4;
import java.util.Scanner;

public class EX4 {
    public double amount;
    public EX4(double amount) {
        this.amount = amount;
    }
    public double reilsToUsd() {    "reils": Unknown word.
        double usd;
        usd = amount/4100.00;
        return usd;
    }
    public double bahtsToReils() {    "Reils": Unknown word.
        double riels;
        riels= amount/34.00*4100.00;
        return riels;
    }
    public double usdToReils() {    "Reils": Unknown word.
        double riels;
        riels = 4100.00*amount;
        return riels;
    }
    public double usdToBaht() {
        double baht;
        baht = 34.00*amount;
        return baht;
    }
    public void menu() {
        System.out.print("""
            Welcome to program Money Exchanges!
            1. Riels to Dollar
            2. Riels to Thai Baht
            3. Dollar to Riels
            4. Dollar to Thai Baht
            5. Thai Baht to Riels
            6. Exit
            ---------------------------------------------------------------
                """);
    }
```

```java
    public void moneyExchanges(int option) {
        double currency,amount;
        Scanner sc = new Scanner(System.in);    Resource leak: 'sc' is never closed
        EX4 EX4;
        switch(option) {
            case 1:
                System.out.print(s:"Input money in RIELS: ");
                amount = sc.nextDouble();
                EX4 = new EX4(amount);
                currency = EX4.reilsToUsd();
                System.err.printf(format:"\n%.0f REILS = %.2f USD\n", amount, currency);    "REILS": Unknown word.
                break;
            case 2:
                System.out.print(s:"Input money in RIELS: ");
                amount = sc.nextDouble();
                EX4 = new EX4(amount);
                currency = EX4.reilsToUsd();
                EX4 = new EX4(currency);
                currency = EX4.usdToBaht();
                System.err.printf(format:"\n%.0f REILS = %.2f BAHTs\n", amount, currency);    "REILS": Unknown word.
                break;
            case 3:
                System.out.print(s:"Input money in USD: ");
                amount = sc.nextDouble();
                EX4 = new EX4(amount);
                currency = EX4.usdToReils();
                System.err.printf(format:"\n%.2f USD = %.0f REILS\n", amount, currency);    "REILS": Unknown word.
                break;
            case 4:
                System.out.print(s:"Input money in USD: ");
                amount = sc.nextDouble();
                EX4 = new EX4(amount);
                currency = EX4.usdToBaht();
                System.err.printf(format:"\n%.2f USD = %.2f BAHTS\n", amount, currency);
                break;
            case 5:
                System.out.print(s:"Input money in BAHTS: ");
                amount = sc.nextDouble();
                EX4 = new EX4(amount);
                currency = EX4.bahtsToReils();
                System.err.printf(format:"\n%.0f BAHTS = %.0f RIELS\n", amount, currency);
                break;
```

```
            default :
                System.out.println(x:"Thanks for using our programs!");
            }
        }
        Run | Debug
        public static void main(String[] args) {
            int option;
            EX4 EX4 = new EX4(amount:0);
            Scanner sc = new Scanner(System.in);    Resource leak: 'sc' is never closed
            System.out.println("""
                    ---------------------------------------------------
                                >>>>Money Exchanges<<<<
                    ---------------------------------------------------
                    """);
            EX4.menu();
            System.out.print(s:"Choose an option: ");
            option = sc.nextInt();
            EX4.moneyExchanges(option);
            System.out.println(x:"---------------------------------------------------");
        }
    }
```

- Result

```
PS D:\Code stock\vs code> cd "d:\Code stock\vs code\s2java\src\TP4\" ; if ($?) { javac EX4.java } ; if ($?) { java EX4 }
---------------------------------------------------
              >>>>Money Exchanges<<<<
---------------------------------------------------

Welcome to program Money Exchanges!
1. Riels to Dollar
2. Riels to Thai Baht
3. Dollar to Riels
4. Dollar to Thai Baht
5. Thai Baht to Riels
6. Exit
-----------------------------------------------------------------
Choose an option: 1
Input money in RIELS: 402000

402000 REILS = 98.05 USD
---------------------------------------------------
PS D:\Code stock\vs code\s2java\src\TP4>
```

5. Max among 8 Numbers

```
package s2java.src.TP4;
import java.util.Scanner;
public class EX5 {
    public int maxNum(int number, int digits) {
        int max = 0;
        for(int i=0; i<digits; i++) {
            int n = number % 10;
            number /= 10;
            if(n > max) {
                max = n;
            }
        }
        return max;
    }
    Run | Debug
    public static void main(String[] args) {
        int number;
        Scanner sc = new Scanner(System.in);    Resource leak: 'sc' is never closed
        EX5 ex5 = new EX5();
        System.out.println(x:"---------------------------------------");
        System.out.println(x:"        >>>>Finding Maximum Number<<<<   ");
        System.out.println(x:"---------------------------------------");
        System.out.println(x:"Program for finding the maximum of an 8-digit number");
        System.out.print(s:"Please input an 8-digit number: ");
        number = sc.nextInt();
        int digits = (int) (Math.log10(number) + 1);

        if (digits != 8) {
            System.out.println(x:"\nError: Invalid input number, please input only an 8-digit number.");
        } else {
            System.out.println("\nThe maximum digit: " + ex5.maxNum(number, digits:8));
        }
        System.out.println(x:"---------------------------------------");
    }
}
```

- Result

```
PS D:\Code stock\vs code\s2java\src\TP4> cd "d:\Code stock\vs code\s2java\src\TP4\" ; if ($?) { javac EX5.java } ; if ($?) { java EX5 }
----------------------------------------
        >>>>Finding Maximum Number<<<<
----------------------------------------
Program for finding the maximum of an 8-digit number
Please input an 8-digit number: 12312313

The maximum digit: 3
----------------------------------------
PS D:\Code stock\vs code\s2java\src\TP4>
```

6. Shipping

```java
package s2java.src.TP4;
import java.util.Scanner;
public class EX6 {
    public double disAToB, disBToC, weight, petro;
    public EX6(double disAToB, double disBToC, double weight) {
        this.weight = weight;
        this.disAToB = disAToB;
        this.disBToC = disBToC;
    }
    public double minLiters(double litersUsage) {
        double litersAToB, litersBToC, liters, petro;
        litersAToB = disAToB*litersUsage;
        litersBToC = disBToC*litersUsage;
        petro = 5000 - litersAToB;
        liters = litersBToC - petro;
        this.petro = petro;
        return liters;
    }
    Run | Debug
    public static void main(String[] args) {
        double disAToB, disBToC, weight, liters=0;
        Scanner sc = new Scanner(System.in);    Resource leak: 'sc' is never closed
        System.out.println("""
                ------------------------------------------------
                                >>>>Shipping<<<<
                ------------------------------------------------
                """);
        System.out.println(x:"Calculate the minimum number of liters needed to refill at point B in order to reach point C.");
        System.out.print(s:"Please input distance between A to B(Km): ");
        disAToB = sc.nextDouble();
        System.out.print(s:"Please input distance between B to C(Km): ");
        disBToC = sc.nextDouble();
        System.out.print(s:"Please input weight of goods(Kg): ");
        weight = sc.nextDouble();
        System.out.println();
        EX6 EX6 = new EX6(disAToB, disBToC, weight);
        if (weight<=30000) {
            if(weight<=5000) {
                liters = EX6.minLiters(litersUsage:10);
            }
            else if(weight<=10000) {
                liters = EX6.minLiters(litersUsage:20);
            }
            else if(weight<=20000) {
                liters = EX6.minLiters(litersUsage:25);
            }
            else if(weight<=30000) {
                liters = EX6.minLiters(litersUsage:35);
            }
            if(EX6.petro<0) {
                System.out.println(x:"The distance between A and A is too far, 5000L of petro cannot reach at point B.");
            }
            else if((liters+EX6.petro)>5000) {
                System.out.println(x:"The distance between B and C is too far, 5000L of petro cannot reach at point C.");
            }
            else {
                System.out.println("The minimum number of liters needed to refill at point B: " + liters + "L.");
            }
        }
        else {
            System.out.println(x:"The weight is too high, ship cannot be loaded!!");
        }
        System.out.println(x:"------------------------------------------------");
    }
}
```

- Result

```
Calculate the minimum number of liters needed to refill at point B in order to reach point C.
Please input distance between A to B(Km): 4
Please input distance between B to C(Km): 5
Please input weight of goods(Kg): 12

The minimum number of liters needed to refill at point B: -4910.0L.
-------------------------------------------------
PS D:\Code stock\vs code\s2java\src\TP4>
```

7. Leap Year

```
package s2java.src.TP4;
import java.util.Scanner;
public class EX7 {
    Run | Debug
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);    Resource leak: 'sc' is never closed
        System.out.println("""
                -------------------------------------------------
                        >>>> Leap year<<<<
                -------------------------------------------------
                """);
        System.out.println(x:"Program for telling the Leap year.");
        System.out.print(s:"Please input year(More than 1): ");
        int year = sc.nextInt();
        if(year<1) {
            System.out.println(x:"Error: Please input more than than 1.");
        }
        else if(year%100==0) {
            System.out.println("\n" + year + " is not a leap year.");
        }
        else if(year%4==0) {
            System.err.println("\n" + year + " is a leap year.");
        }
        else {
            System.out.println("\n" + year + " is not a leap year.");
        }

        System.out.println(x:"-------------------------------------------------");
    }
}
```

- Result

```
PS D:\Code stock\vs code> cd "d:\Code stock\vs code\s2java\src\TP4\" ; if ($?) { javac EX7.java } ; if ($?) { java EX7 }
-------------------------------------------------
          >>>> Leap year<<<<
-------------------------------------------------

Program for telling the Leap year.
Please input year(More than 1): 20

20 is a leap year.
-------------------------------------------------
PS D:\Code stock\vs code\s2java\src\TP4>
```

8. Manu

```java
package s2java.src.TP4;
import java.util.Scanner;
public class Manu {    "Manu": Unknown word.
    public void Menu() {
        System.out.println("""
            -------- Menu ---------
            1. Prime number
            2. Lucky number
            3. Reversing number
            4. Money EXchange
            5. Max among 8 numbers
            6. Shipping
            7. Leap year
            0. EXit""");
    }
    Run | Debug
    public static void main(String[] args) {
        int option;
        Scanner sc = new Scanner(System.in);    Resource leak: 'sc' is never closed
        Manu tr = new Manu();    "Manu": Unknown word.
        do {
            tr.Menu();
            System.out.print(s:"Choose an option: ");
            option = sc.nextInt();
            switch(option) {
                case 1: EX1.main(args);
                    break;
                case 2: EX2.main(args);
                    break;
                case 3:EX3.main(args);
                    break;
                case 4:EX4.main(args);
                    break;
                case 5: EX5.main(args);
                    break;
                case 6:EX6.main(args);
                    break;
                case 7: EX7.main(args);
                    break;
                case 0:
                    System.out.println(x:"Thank you!\n");
                    System.exit(0status:);
                    break;
            }
        }while(option != 0);
    }
}
```