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Lab Exercise No: 1

Exercise Objective(s): Simple java program

Exercise: Write a program with a class name “Welcome” and display a message as follows: “Welcome to the world of Java”

Solution 1:

```
/**
 * This is a java program to print a statement.
 *
 * @author Rohitkaran
 */

package com.hsbc.day1;
public class Welcome {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        //Using println method to print something on a new line

        System.out.println("Welcome to the world of Java.");

    }

}
```

Lab Exercise No: 2

Exercise Objective(s): Compilation and execution from command line, Concept of object and class

Exercise: Write a program that takes a console input (Input given by the user while executing the program in command line) and prints the same.

Solution 2:

```
/**
 * This is a java program to print a statement taken as input from the console.
```

```

*
* @author Rohitkaran
*/
package com.hsbc.day1;
public class SecSol {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        //Printing the obtained input on the console

        System.out.println("Message:" + args[0]);

    }

}

```

Lab Exercise No: 3

Exercise Objective(s): Comments in java programs and java documentation

Exercise: Write a program with all the type of comments and execute it. User nested comments also

Solution 3:

```

/**
 * This is a java program displaying all the comment types.
 *
 * These are documentation comments.
 *
 * @author Rohitkaran
 * @version 1.8
 * @since 2020-09-15
 */
package com.hsbc.day1;
public class ThirdSol {

    public static void main(String[] args) {

        //This is a single line comment.

        /* This is

```

```

        A
        //This a nested comment.
        multiline
        comment.*/
    }
}

```

Lab Exercise No: 4

Exercise Objective(s): Primitive data types and their range, Variables, Constants and literals,

Conventions

Exercise: Write a program which declares variables of int, float, double data types and a constant of

long data type and displays all with an appropriate message. Follow the naming conventions for all the variables and literals.

Solution 4:

```

/**
 * This is a java program to learn different data types.
 *
 * @author Rohitkaran
 */
package com.hsbc.day1;
public class FourthSol {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        //Declaring various data types

        int age;
        float averagePercentage;
        double battingAverage;
        long phoneNumber;

        //Initializing the above variables
    }
}

```

```

        age = 21;
        averagePercentage = 98.05F;
        battingAverage = 80.5;
        phoneNumber = 9879879879L;

        //Displaying these different data type values

        System.out.println("The value of int variable is: " + age);
        System.out.println("The value of float variable is: " + averagePercentage);
        System.out.println("The value of double variable is: " + battingAverage);
        System.out.println("The value of long variable is: " + phoneNumber);

    }

}

```

Lab Exercise No: 5

Exercise Objective(s): Simple operators

Exercise: Write a program to get two numbers as input through command line and swap the values of two numbers without using a temporary variable and display the same.

Solution 5:

```

/**
 * This is a java program to swap two integers without temp variable.
 *
 * @author Rohitkaran
 */
package com.hsbc.day1;
import java.util.Scanner;

public class FifthSol {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        //Taking two integer inputs from the console

        System.out.println("Please enter your input:");
        Scanner scanner = new Scanner(System.in);
        int a = scanner.nextInt();
        int b = scanner.nextInt();
    }
}

```

```

        scanner.close();

        //Displaying the original values

        System.out.println("The current value of a is : " + a);
        System.out.println("The current value of b is : " + b);

        //Swapping the two integers

        a = a + b;
        b = a - b;
        a = a - b;

        //Displaying the swapped values

        System.out.println("The new value of a is : " + a);
        System.out.println("The new value of b is : " + b);

    }

}

```

Lab Exercise No: 6

Exercise Objective(s): Conditional statements

Exercise: Write a program to determine whether the given year is leap year or not(Get the input through command line).

Solution 6:

```

/**
 * This is a java program to determine whether the given year is leap year or not.
 *
 * @author Rohitkaran
 */
package com.hsbc.day1;
import java.util.Scanner;

public class SixthSol {

    //A boolean return function to check the given year

```

```

        static boolean checkYear(int year)
    {

        if (year % 400 == 0)
            return true;

        if (year % 100 == 0)
            return false;

        if (year % 4 == 0)
            return true;
        return false;
    }

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        //Taking input from the user
        System.out.println("Please enter the year you want to check :");
        Scanner scanner = new Scanner(System.in);
        int year = scanner.nextInt();
        scanner.close();

        System.out.println( checkYear(year)? "It's a Leap Year" : "It's not a Leap Year" );
    }
}

```

Lab Exercise No: 7

Exercise Objective(s): Conditional statements

Exercise: Write a program to determine the largest of three numbers.

Solution 7:

```

/**
 * This is a java program to determine the largest of three numbers.
 *
 * @author Rohitkaran
 */
package com.hsbc.day1;
public class SeventhSol {

```

```

public static void main(String[] args) {
    // TODO Auto-generated method stub
    //Considering the below three numbers
    int a=310,b=20,c=30;

    //If-else statements
    if(a>=b) {
        if(a>=c){
            System.out.println("The largest number is a : " + a);
        }
        else {
            System.out.println("The largest number is c : " + c);
        }
    }
    else {
        if(b>=c){
            System.out.println("The largest number is b : " + b);
        }
        else {
            System.out.println("The largest number is c : " + c);
        }
    }
}
}

```

Lab Exercise No: 8

Exercise Objective(s): Loops

Exercise: Write a program to determine whether a number is a palindrome or not.

Solution 8:

```

/**
 * This is a java program to determine whether a number is a palindrome or not.
 *
 * @author Rohitkaran
 */
package com.hsbc.day1;
public class EightSol {

```

```

//A integer return function to reverse the given number.
static int reverseDigits(int num)
{
    int reverseNumber = 0;
    while (num > 0) {
        reverseNumber = reverseNumber * 10 + num % 10;
        num = num / 10;
    }
    return reverseNumber;
}

//A integer return function to check the given number.
static int isPalindrome(int n)
{
    int reverse = reverseDigits(n);

    if (reverse == n)
        return 1;
    else
        return 0;
}

public static void main(String[] args) {
    // TODO Auto-generated method stub

    //Taking a random number of our choice to check
    int n = 4562;
    System.out.println(n +
        (isPalindrome(n) == 1 ? " is a palindrome. " : " is not a
palindrome."));

    n = 2002;

    System.out.println( n +
        (isPalindrome(n) == 1 ? " is a palindrome" : " is not a
palindrome."));

}

}

```

Lab Exercise No: 9

Exercise Objective(s): Loops

Exercise: Write a program to display the Fibonacci series starting from 0 till 200.

Solution 9:

```
/**
 * This is a java program to display the Fibonacci series starting from 0 till 200.
 *
 * @author Rohitkaran
 */
package com.hsbc.day1;
public class NinthSol {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        int num1 = 0, num2 = 1;

        for (int i = 1; num1<200; i++)
        {
            System.out.print(num1+" ");

            /* On each iteration, we are assigning second number
             * to the first number and assigning the sum of last two
             * numbers to the second number
             */
            int sumOfPrevTwo = num1 + num2;
            num1 = num2;
            num2 = sumOfPrevTwo;
        }
    }
}
```

Lab Exercise No: 10

Exercise Objective(s): Constants and literals, Loops

Exercise: Write a program to declare a set of 5 words and reverse each word and arrange the resulting words in alphabetical order and display the same.

Solution 10:

```
/**
```

* This is a java program to declare a set of 5 words and reverse each word and arrange the resulting words in alphabetical order and display the same.

*

* @author Rohitkaran

*/

```
package com.hsbc.day1;
```

```
public class TenthSol {
```

```
    public static void main(String[] args) {
```

```
        String temp;
```

```
        String str[]=new String[5];
```

```
        String revStr[]=new String[5];
```

```
        //Taking a set of 5 words
```

```
        str[0]="Ram";str[1]="Pam";str[2]="Sam";str[3]="Rohit";str[4]="Tom";
```

```
        //Reversing the words
```

```
        for(int i=0;i<5;i++) {
```

```
            System.out.println("The " + i + " word is " + str[i]);
```

```
            revStr[i]=reverseString(str[i]);
```

```
        }
```

```
        //Sorting the words alphabetically
```

```
        for (int j = 0; j < 5; j++)
```

```
        {
```

```
            for (int k = j + 1; k < 5; k++) {
```

```
                if (revStr[j].compareTo(revStr[k])>0)
```

```
                {
```

```
                    temp = revStr[j];
```

```
                    revStr[j] = revStr[k];
```

```
                    revStr[k] = temp;
```

```
                }
```

```
            }
```

```
        }
```

```
        //Displaying the alphabetically sorted reversed words
```

```
        for(int l=0;l<5;l++) {
```

```
            System.out.println("The final " + (l+1) +" word is " + revStr[l]);
```

```
        }
```

```
    }
```

```
    //This is the reversing function
```

```
    public static String reverseString(String str1)
```

```

    {
        if (str1.isEmpty())
            return str1;
        //Calling Function Recursively
        return reverseString(str1.substring(1)) + str1.charAt(0);
    }
}

```

Lab Exercise No: 11

Exercise Objective(s): Constants and literals, Loops

Exercise: Write a program to arrange an array of elements in ascending order using selection sort algorithm.

Solution 11:

```

/**
 * This is a program to arrange an array of elements in ascending order using selection sort
 * algorithm.
 *
 * @author Rohitkaran
 */
package com.hsbc.day1;

public class EleventhSol {

    //Function for Selection Sort
    public static void selectionSort(int[] arr){
        for (int i = 0; i < arr.length - 1; i++)
        {
            int index = i;
            for (int j = i + 1; j < arr.length; j++){
                if (arr[j] < arr[index]){
                    //searching for lowest index
                    index = j;
                }
            }
            int smallerNumber = arr[index];
            arr[index] = arr[i];
            arr[i] = smallerNumber;
        }
    }
}

```

```

    }

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        int[] arr1 = {20,104,93,26,43,1,58,22};
        System.out.println("The original string:");
        for(int i=0;i<arr1.length;i++){
            System.out.print(arr1[i]+" ");
        }
        System.out.println();

        //sorting the given array using selection sort
        selectionSort(arr1);

        System.out.println("The string after Selection sort:");
        for(int i=0;i<arr1.length;i++){
            System.out.print(arr1[i]+" ");
        }
    }
}

```

Lab Exercise No: 12

Exercise Objective(s): Conditional statements, Loops

Exercise: A shopkeeper sells three products whose retail prices are as follows: Product 1 - 22.50 Product 2 - 44.50 Product 3 - 9.98 Write an application that reads a series of pairs of numbers as follows: a) Product number b) Quantity sold. The application should use a switch statement to determine the retail price for each product. It should calculate and display the total retail value of all products sold.

Solution 12:

```

/**
 * This is a java program to calculate the total cost of a product number.
 *
 * @author Rohitkaran
 */
package com.hsbc.day1;

```

```

public class TwelvthSol {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        //Taking the input from user
        int productNumber = Integer.parseInt(args[0]);
        int quantity = Integer.parseInt(args[1]);
        float totalCost = 0f;

        float costProduct1 = 22.50f, costProduct2 = 44.50f, costProduct3 = 9.98f;

        switch(productNumber) {
            case 1:
                totalCost = costProduct1 * quantity;
                System.out.println("The total cost for product 1 is : " + totalCost);
                break;
            case 2:
                totalCost = costProduct2 * quantity;
                System.out.println("The total cost for product 2 is : " + totalCost);
                break;
            case 3:
                totalCost = costProduct3 * quantity;
                System.out.println("The total cost for product 3 is : " + totalCost);
                break;
            default :
                System.out.println("Wrong Input from user");
        }
    }
}

```

Lab Exercise No: 13

Exercise Objective(s): Simple operators, Conditional statements, Loops

Exercise: Consider user has N eggs. Then display the no of eggs in gross (144 eggs make one gross) and no of eggs in dozen (12 eggs make one dozen) and the no of eggs that is left out remaining. The total no of eggs can be got as input through command line. The program should display how many gross, how many dozen, and how many left over eggs the user has.

Solution 13:

```
/**
 * This is a java program to display gross number of eggs.
 *
 * @author Rohitkaran
 */
package com.hsbc.day1;

import java.util.*;

public class ThirteenSol {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        int gross,dozen,left;

        //Taking the input from user
        System.out.println("Enter the total number of eggs : ");
        Scanner scan = new Scanner(System.in);
        int count = scan.nextInt();
        scan.close();

        //Implementing the conditions given in the problem
        gross = count/144;
        count = count%144;
        dozen = count/12;
        left = count%12;

        System.out.println("The total number of eggs are : " + gross + " gross," + dozen +
" dozen and " + left);
    }

}
```