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| **Registration Number:** | **FA23-BSE-014** |
| **Lab** | **07** |
| **Date:** | **29th March,2024** |
| **Instructor:** | **Mr.Muzaffar Iqbal** |

# **Activity 01 :**

**Code :**

package com.mycompany.lab\_07;

public class Activity\_01

{

public static void main(String[] args)

{

int i = 5;

int j = 2;

int k = max(i, j);

System.out.println("The maximum of " + i + " and " + j + " is " + k);

}

public static int max(int num1, int num2)

{

int result;

if (num1 > num2)

{

result = num1;

}

else

{

result = num2;

}

return result;

}

}

**Output :**

A screen shot of a computer code

Description automatically generated

# **Activity 02 :**

**Code :**

package com.mycompany.lab\_07;

public class Activity\_02

{

public static void main(String[] args)

{

System.out.print("The grade is ");printGrade(78.5);

System.out.print("The grade is ");

printGrade(59.5);

}

public static void printGrade(double score)

{

if(score >= 90.0)

{

System.out.println('A');

}

else if(score >= 80.0)

{

System.out.println('B');

}

else if (score >= 70.0)

{

System.out.println('C');

}

else if (score >= 60.0)

{

System.out.println('D');

}

else

{

System.out.println('F');

}

}

}

**Output :**

A computer code on a white background

Description automatically generated

# **Activity 03 :**

**Code :**

package com.mycompany.lab\_07;

public class Activity\_03

{

public static void main(String[] args)

{

int num1 = 1;

int num2 = 2;

System.out.println("Before invoking the swap method, num1 is " +num1 + " and num2 is " + num2);

swap(num1, num2);

System.out.println("After invoking the swap method, num1 is" + num1 + " and num2 is " + num2);

}

public static void swap(int n1, int n2)

{

System.out.println("\tInside the swap method");

System.out.println("\t\tBefore swapping, n1 is " + n1 + " and n2 is " + n2);

int temp = n1;

n1 = n2;

n2 = temp;

System.out.println("\t\tAfter swapping, n1 is " + n1+ " and n2 is " + n2);

}

}

**Output :**

A white text with black and white text

Description automatically generated

# **Activity 04 :**

**Code :**

package com.mycompany.lab\_07;

public class Activity\_04

{

public static void main(String[] args)

{

System.out.println("The maximum of 3 and 4 is " + max(3, 4));

System.out.println("The maximum of 3.0 and 5.4 is "+

max(3.0,5.4));

System.out.println("The maximum of 3.0, 5.4, and 10.14 is " + max(3.0, 5.4, 10.14));

}

public static int max(int num1, int num2)

{

if (num1 > num2)

{

return num1;

}

else

{

return num2;

}

}

public static double max(double num1, double num2)

{

if (num1 > num2)

{

return num1;

}

else

{

return num2;

}

}

public static double max(double num1, double num2, double num3)

{

return max(max(num1, num2), num3);

}

}

**Output :**

A screen shot of a computer code

Description automatically generated

# **Activity 05 :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Activity\_05

{

public static void main(String[] args)

{

Scanner input = new Scanner(System.in);

System.out.print("Enter a nonnegative integer: ");

int n = input.nextInt();

System.out.println("Factorial of " + n + " is " +

factorial(n));

}

public static long factorial(int n)

{

if (n == 0)

{

return 1;

}

else

{

return n \* factorial(n - 1);

}

}

}

**Output :**

A screenshot of a computer code

Description automatically generated

# **Activity 06 :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Activity\_06

{

public static void main(String[] args)

{

Scanner input = new Scanner(System.in);

System.out.print("Enter index for a Fibonacci number: ");

int index = input.nextInt();

System.out.println("The Fibonacci number at index " + index + " is " + fib(index));

}

public static long fib(long index)

{

if (index == 0)

{

return 0;

}

else if (index == 1)

{

return 1;

}

else

{

return fib(index - 1) + fib(index - 2);

}

}

}

**Output :**

A screenshot of a computer code

Description automatically generated

# **Task 01\_A :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_01\_a

{

public static void main (String [] args)

{

Scanner input= new Scanner (System.in);

System.out.print("Enter Number to get sum of integers : ");

long number=input.nextLong();

int result=sumDigits(number);

System.out.println("Sum of Integers is "+result);

}

public static int sumDigits(long n)

{

int sum=0;

while (n>0)

{

sum+= (int) n%10;

n=n/10;

}

return sum;

}

}

**Output :**

A screenshot of a computer code

Description automatically generated

# **Task 01\_B :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_01\_b

{

public static void main (String []args)

{

Scanner input = new Scanner (System.in);

System.out.print("Enter Number to get it Reversed : ");

int num=input.nextInt();

reverse(num);

}

public static void reverse (int number)

{

System.out.print("Reverse Number is : ");

while (number>0)

{

System.out.print(number%10);

number/=10;

}

}

}

**Output :**

A screen shot of a computer

Description automatically generated

# **Task 02 :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_02

{

public static void main (String [] args)

{

Scanner input=new Scanner (System.in);

System.out.print("Enter Number to Check Palindrome : ");

int number=input.nextInt();

boolean status=isPalindrome(number);

if (status==true)

{

System.out.println("Your Number is Palindrome");

}

else

{

System.out.println("Your Number is Not Palindrone");

}

}

public static int reverse(int number)

{

int result=0;

while (number>0)

{

result=(result\*10)+(number%10);

number=number/10;

}

return result;

}

public static boolean isPalindrome(int number)

{

boolean status=(number==reverse(number));

return status;

}

}

**Output :**

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# **Task 03 :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_03

{

public static void main (String [] args)

{

System.out.println("Enter Numbers to sort them in increasing order .");

Scanner input= new Scanner (System.in);

System.out.print("Enter Number 1 : ");

double num1=input.nextDouble();

System.out.print("Enter Number 2 : ");

double num2=input.nextDouble();

System.out.print("Enter Number 3 : ");

double num3=input.nextDouble();

displaySortedNumbers(num1,num2,num3);

}

public static void displaySortedNumbers(double num1, double num2, double num3)

{

if(num1==num2 || num1==3 || num2==num1 || num2==num3 || num3==num1 || num3==num2)

{

System.out.println("Any of Two Numbers are Eequall Please Run Programme Again !");

}

else

{

if (num1>num2 && num1>num3)

{

if(num2>num3)

{

System.out.printf("%.1f %.1f %.1f",num3,num2,num1);

}

else

{

System.out.printf("%.1f %.1f %.1f",num2,num3,num1);

}

}

else if (num2>num1 && num2>num3)

{

if(num1>num3)

{

System.out.printf("%.1f %.1f %.1f",num3,num1,num2);

}

else

{

System.out.printf("%.1f %.1f %.1f",num1,num3,num2);

}

}

else if (num3>num1 && num3>num2)

{

if (num1>num2)

{

System.out.printf("%.1f %.1f %.1f",num2,num1,num3);

}

else

{

System.out.printf("%.1f %.1f %.1f",num1,num2,num3);

}

}

}

}

}

**Output :**

A screen shot of a computer code

Description automatically generated

# **Task 04 :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_04

{

public static void main (String []args )

{

Scanner input= new Scanner (System.in);

System.out.print("Enter Year to Check Number of Days (Year from 2000 to 2020) : ");

int year=input.nextInt();

if (year>=2000 && year <=2020)

{

int days =numberOfDaysInAYear(year);

System.out.println("Your Number of Days in year are "+days);

}

else

{

System.out.println("Enter Year between 2000 and 2020");

}

}

public static int numberOfDaysInAYear(int year)

{

if(isLeap(year)==true)

{

int days=366;

return days;

}

else

{

int days=365;

return days;

}

}

public static boolean isLeap(int year)

{

if ((year %400==0) || (year%4==0 && year%100 !=0))

{

return true;

}

else

{

return false;

}

}

}

**Output :**

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# **Task 05 :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_05

{

public static void main (String [] args)

{

Scanner input=new Scanner (System.in);

System.out.print("Enter String to count letters in it : ");

String s=input.nextLine();

int letters=countLetters(s);

System.out.println("Number of letters in string are "+letters);

}

public static int countLetters(String s)

{

int length =s.length();

int count=0;

for (int i=0; i<length; i++)

{

if (s.charAt(i)!=' ')

{

count++;

}

}

return count;

}

}

**Output :**

A screen shot of a computer code

Description automatically generated

# **Task 06 :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_06

{

public static void main (String[] args)

{

Scanner input= new Scanner (System.in);

String line=input.nextLine();

int firstSpace=line.indexOf(" ");

int lastSpace=line.lastIndexOf(" ");

if (firstSpace != lastSpace)

{

multiWord(line);

}

else

{

capitalize(line);

}

}

public static void capitalize(String lower\_case\_word)

{

String subString=lower\_case\_word.substring(1);

String firstWord=lower\_case\_word.substring(0,1);

firstWord=firstWord.toUpperCase();

String finalWord=firstWord.concat(subString);

System.out.println(finalWord);

}

public static void multiWord(String line)

{

int length=line.length();

for (int i=0;i<length; i++)

{

if(line.charAt(i)==' ')

{

int start=i+1;

for (int j=i;j<length;j++)

{

if(line.charAt(j)==' ')

{

int end=j;

String word=line.substring(start,end);

capitalize(word);

break;

}

}

}

}

}

}

**Output :**

A screenshot of a computer code

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# **Task 07 :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_07

{

public static void main (String [] args )

{

Scanner input=new Scanner (System.in);

System.out.print("Enter Number : ");

int number=input.nextInt();

printMatrix(number);

}

public static void printMatrix(int n)

{

for(int i=1; i<=n;i++)

{

for (int j=1 ;j<=n;j++)

{

double doubleRandom=Math.random();

int random=(int) Math.round(doubleRandom);

System.out.printf("%2d",random);

}

System.out.println("");

}

}

}

**Output :**

A screenshot of a computer code

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# **Task 08 :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_08

{

public static void main (String [] args)

{

Scanner input=new Scanner (System.in);

System.out.print("Enter String : ");

String str=input.nextLine();

str=str.toUpperCase();

int number=vowelsCounter(str);

System.out.println("Number of vowels in string are "+number);

}

public static int vowelsCounter(String s)

{

int length=s.length();

int count=0;

for (int i=0; i<length; i++)

{

if("AEIOU".indexOf(s.charAt(i)) !=-1 )

{

count++;

}

}

return count;

}

}

**Output :**

A screenshot of a computer code

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# **Task 09 :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_09

{

public static void main(String [] args)

{

Scanner input= new Scanner (System.in);

System.out.print("Enter Number : ");

int number=input.nextInt();

System.out.print("Enter Power : ");

int power=input.nextInt();

int result=power(number,power);

System.out.println("Your Output is "+result);

}

public static int power(int a, int n)

{

if(n==0)

{

return 1;

}

else

{

return a\*power(a,n-1);

}

}

}

**Output :**

A screenshot of a computer code

Description automatically generated

# **Task 10\_patteren\_A :**

**Code :**

package com.mycompany.lab\_07;

public class Task\_10PatternA

{

public static void main(String[] args)

{

int num=5;

int i=1;

int j=1;

rows(num,i,j);

}

public static void rows(int num,int i,int j)

{

if (i<=num)

{

space(i, j, num);

int k=1;

star(i, k);

System.out.println("");

rows(num, i+1, j);

}

}

public static void space (int i,int j,int num)

{

if (j<=(num-i) )

{

System.out.print(" ");

space(i, j+1, num);

}

}

public static void star ( int i,int k)

{

if (k<=i)

{

System.out.print("\* ");

star(i, k+1);

}

}

}

**Output :**

A screenshot of a computer code

Description automatically generated

# **Task 10\_pattern\_b :**

**Code :**

package com.mycompany.lab\_07;

public class Task\_10PatternB

{

public static void main(String[] args)

{

//By changing the num we can extend our pattern

int num=5;

int i=1;

int j=1;

rows(num,i,j);

}

public static void rows(int num,int i,int j)

{

if (i<=num)

{

space(i, j, num);

int k=1;

star(i, k);

System.out.println("");

rows(num, i+1, j);

}

}

public static void space (int i,int j,int num)

{

if (j<=(num-i) )

{

System.out.print(" ");

space(i, j+1, num);

}

}

public static void star ( int i,int k)

{

if (k<=i)

{

System.out.print(" \*");

star(i, k+1);

}

}

}

**Output :**

A screenshot of a computer program

Description automatically generated

# **Task 10\_pattern\_C :**

**Code :**

package com.mycompany.lab\_07;

public class Task\_10PatternC

{

public static void main (String [] args)

{ int i=1;

int j=1;

rows(i,j);

}

public static void rows (int i ,int j)

{

if (i<=5)

{

stars(i,j);

System.out.println("");

rows(i+1,j);

}

}

public static void stars (int i,int j)

{

if (j<=i)

{

System.out.print("\* ");

stars(i,j+1);

}

}

}

**Output :**

A screenshot of a computer program

Description automatically generated

# **Task 10\_pattern\_D :**

**Code :**

package com.mycompany.lab\_07;

public class Task\_10PatternD

{

public static void main (String [] args)

{ int i=1;

int j=5;

rows(i,j);

}

public static void rows (int i ,int j)

{

if (i<=5)

{

stars(i,j);

System.out.println("");

rows(i+1,j);

}

}

public static void stars (int i,int j)

{

if (j>=i)

{

System.out.print("\* ");

stars(i,j-1);

}

}

}

**Output :**

A screenshot of a computer program

Description automatically generated

# **Task 10\_A :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_10\_a

{

public static void main (String [] args)

{

Scanner input=new Scanner(System.in);

System.out.print("Enter Number to get its reversed : ");

int number=input.nextInt();

System.out.print("Its reversed Number is : ");

reverse(number);

}

public static void reverse(int number)

{

if (number !=0)

{

System.out.print(number%10);

number/=10;

reverse( number);

}

}

}

**Output :**

A screenshot of a computer

Description automatically generated

# **Task 10\_B :**

**Code :**

package com.mycompany.lab\_07;

import java.util.Scanner;

public class Task\_10\_b

{

public static void main (String [] args)

{

Scanner input=new Scanner (System.in);

System.out.print("Enter Number to Convert in Binary : ");

int number=input.nextInt();

long binaryOutput=binaryConverter(number);

System.out.println("Your Binary number is : "+binaryOutput);

}

public static long binaryConverter(int number)

{

if (number !=0)

{

return (long)(number%2 +10\*binaryConverter( number/2));

}

else

{

return 0;

}

}

}

**Output :**

