1. Write an application that asks the user to enter two integers, obtains them from the user and displays the larger number followed by the words "is larger" . If the numbers are equal, print the message "These numbers are equal" .

Answer:

import java.util.Scanner;

class First {

public static void main(String args[]) {

Scanner input=new Scanner(System.in);

int x=input.nextInt();

int y=input.nextInt();

if(x>y)

System.out.println(x + " is larger");

else if(y>x)

System.out.println(y + " is larger");

else

System.out.println("These numbers are equal");

}

}

2. Write an application that inputs one number consisting of five digits from the user, separates the number into its individual digits and prints the digits separated from one another by three spaces each. For example, if the user types in the number 42339 , the program should print

4 2 3 3 9

Assume that the user enters the correct number of digits. What happens when you execute the

program and type a number with more than five digits? What happens when you execute the pro-

gram and type a number with fewer than five digits?

Answer:

import java.util.Scanner;

public class Second {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

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

int n = input.nextInt();

int[] arr=new int[5];

int i=0,digit;

while (n > 0) {

digit=n%10;

arr[i]=digit;

n/=10;

i++;

}

System.out.println(arr[4]+" "+arr[3]+" "+arr[2]+" "+arr[1]+" "+arr[0]);

}

}

If the number has more digits than 5, then there will be an error as it will go out of bounds (array size is 5) and if the number has less than 5 digits, then it will take 0 at empty index. For eg: for 12, output is 0 0 0 1 2.

3. Write a program that inputs five numbers and determines and prints the number of negative numbers input, the number of positive numbers input and the number of zeros input.

Answer:

import java.util.Scanner;

class Third{

public static void main(String[] args){

Scanner input=new Scanner(System.in);

int pos\_num=0;

int neg\_num=0;

int zero\_num=0;

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

int num=input.nextInt();

if(num>0)

pos\_num++;

else if(num<0)

neg\_num++;

else

zero\_num++;

}

System.out.println("Number of Positive numbers: "+pos\_num);

System.out.println("Number of Negitive numbers: "+neg\_num);

System.out.println("Number of Zeros: "+zero\_num);

}

}

4. Develop a Java application that determines the gross pay for each of three employees. The company pays straight time for the first 40 hours worked by each employee and time and a half for all hours worked in excess of 40. You’re given a list of the employees, their number of hours worked last week and their hourly rates. Your program should input this information for each employee, then determine and display the employee’s gross pay. Use class Scanner to input the data.

Answer:

import java.util.Scanner;

class fourth{

public static void main(String[] args){

Scanner input=new Scanner(System.in);

double payment;

int i=1;

while(i<=3){

System.out.println("Enter hourly rate");

double rate=input.nextDouble();

System.out.println("Enter hours worked");

double hrs\_worked=input.nextDouble();

if(hrs\_worked<=40)

payment=hrs\_worked\*rate;

else

payment=40.0\*rate + (hrs\_worked-40)\*rate\*1.5;

System.out.println("Gross Pay of Employee " + i + " is " + payment);

}

}

}

5. Write an application that prompts the user to enter the size of the side of a square, then displays a hollow square of that size made of asterisks. Your program should work for squares of all side lengths between 1 and 20

Answer:

import java.util.Scanner;

class fifth{

public static void main(String[] args){

Scanner input=new Scanner(System.in);

System.out.println("Enter a number between 1 and 20");

int side=input.nextInt();

for(int i=0;i<side;i++){

if(i==0 || i==side-1){

for(int j=0;j<side;j++){

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

}

}

else{

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

for(int j=0;j<side-2;j++){

System.out.print(" ");

}

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

}

System.out.println();

}

}

}

6. A palindrome is a sequence of characters that reads the same backward as forward. For example, each of the following five-digit integers is a palindrome: 12321, 55555, 45554 and 11611. Write an application that reads in a five-digit integer and determines whether it’s a palindrome. If the number is not five digits long, display an error message and allow the user to enter a new value.

Answer:

import java.util.Scanner;

class sixth{

public static void main(String[] args){

Scanner input=new Scanner(System.in);

int number=input.nextInt();

int num=number;

int digits=0;

while(num!=0){

num=num/10;

digits++;

}

if(digits!=5){

System.out.println("There is an Error");

System.out.println("Give new number");

number=input.nextInt();

}

int original=number;

int reversed=0;

int digit;

while(number!=0){

digit = number%10;

reversed = reversed\*10 + digit;

number/=10;

}

if(original==reversed){

System.out.println("Number is a palindrome");

}

else{

System.out.println("Number is not a palindrome");

}

}

}

7. A right triangle can have sides whose lengths are all integers. The set of three integer values for the lengths of the sides of a right triangle is called a Pythagorean triple. The lengths of the three sides must satisfy the relationship that the sum of the squares of two of the sides is equal to the square of the hypotenuse. Write an application that displays a table of the Pythagorean triples for side1 , side2 and the hypotenuse , all no larger than 500.

Answer:

import java.util.Scanner;

class seventh{

public static void main(String[] args){

for(int i=1;i<500;i++){

for(int j=1;j<500;j++){

for(int k=1;k<500;k++){

if(i\*i+j\*j==k\*k)

System.out.println(i+", "+j+", "+k);

}

}

}

}

}

8. Factorials are used frequently in probability problems. The factorial of a positive integer n (written n! and pronounced “n factorial”) is equal to the product of the positive integers from 1 to n. Write an application that calculates the factorials of 1 through 20. Use type long . Display the results in tabular format. What difficulty might prevent you from calculating the factorial of 100?

Answer:

import java.util.Scanner;

class eighth{

public static void main(String[] args){

long factorial=1;

for(long i=1;i<=20;i++){

factorial=factorial\*i;

System.out.println("Factorial of "+i+" is: "+factorial);

}

}

}

The difficulty that might prevent us from calculating the factorial of 100 is the range. The range of long is from -2^63 to 2^63 – 1.