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Program to use Newton's Method to compute the square root of the number.

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**import** java.text.DecimalFormat;

**import** java.util.Scanner;

**public** **class** Newton {

**public** **static** **float** Compute(**float** num)

{

**float** sqrRoot = 0, temp = 0, value = 0, xold = 0, xnew = 0;

**int** n = 0;

DecimalFormat fiveDecimal = **new** DecimalFormat("0.00000");

// method definition

xold = num/2;

System.***out***.println();

**do** {

temp = xold;

xnew = xold - (xold \* xold - num) / (2 \* xold);

value = Math.*abs*(xold - xnew);

n += 1;

// Test successive approximations

System.***out***.println(fiveDecimal.format(xold)+ " " +

fiveDecimal.format(xnew)+ " " + n + " "

+ fiveDecimal.format(value));

xold = xnew;

} **while** (Math.*abs*(xnew - temp) > 0.00001);

System.***out***.println();

sqrRoot = xnew;

**return** sqrRoot;

}

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

// declare a Scanner class object

Scanner sc = **new** Scanner(System.***in***);

// declare a DecimalFormat class object

DecimalFormat fourDecimal = **new** DecimalFormat("0.0000");

**float** Number = 0;

System.***out***.println("Program: find square roots by Newton's Method");

System.***out***.print("Please enter a number: ");

Number = sc.nextFloat();

**while** (Number < 0) {

System.***out***.println("negative don't have square roots");

System.***out***.print("Please enter a number: ");

Number = sc.nextFloat();

}

System.***out***.println("The square root of " + Number +

" is " + fourDecimal.format(*Compute*(Number)));

// dismiss the Scanner class object

sc.close();

}

}

