

## Program:

### JAVA File

```
import java.util.Scanner;

public class JNI {

    public native void JniAdd(int no1,int no2);
    public native void JniSub(int no1,int no2);
    public native void JniMult(int no1,int no2);
    public native void JniDiv(double no1,double no2);
    public native void JniPow(int no1,int no2);
    public native void JniSqrt(int no1);
    public native void JniMod(int no1,int no2);
    static { System.load("C:\\Users\\Bhushan
Kadam\\Desktop\\Practical\\LP1\\DLL\\libJNI.dll");}

    public static void main(String[] args)throws Exception {
        int no1,no2;
        Scanner in =new Scanner(System.in);
        JNI MJ=new JNI();
        System.out.println("JNI using C");
        System.out.print("Enter first number: ");
        no1=in.nextInt();
        double no1f=no1;
        System.out.print("Enter second number: ");
        no2=in.nextInt();
        MJ.JniAdd(no1,no2);
        MJ.JniSub(no1,no2);
        MJ.JniMult(no1,no2);
        MJ.JniDiv((double)no1,(double)no2);
        MJ.JniPow(no1,no2);
        MJ.JniSqrt(no2);
        MJ.JniMod(no1,no2);
    }
}
```

## C File\_JNI.h

```
/* DO NOT EDIT THIS FILE - it is machine generated */
```

```
#include <jni.h>
```

```
/* Header for class JNI_JNI */
```

```
#ifndef _Included_JNI_JNI
```

```
#define _Included_JNI_JNI
```

```
#ifdef_cplusplus
```

```
extern "C" {
```

```
#endif
```

```
/*
```

```
 * Class:   JNI_JNI
```

```
 * Method:  JniAdd
```

```
 * Signature: (II)V
```

```
 */
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniAdd
```

```
(JNIEnv *, jobject, jint, jint);
```

```
/*
```

```
 * Class:   JNI_JNI
```

```
 * Method:  JniSub
```

```
 * Signature: (II)V
```

```
 */
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniSub
```

```
(JNIEnv *, jobject, jint, jint);
```

```
/*
```

```
 * Class:   JNI_JNI
```

```
 * Method:  JniMult
```

```
 * Signature: (II)V
```

```
 */
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniMult
```

```
(JNIEnv *, jobject, jint, jint);
```

```
/*
```

```
 * Class:   JNI_JNI
```

```
 * Method:  JniDiv
```

```
 * Signature: (II)V
```

```
 */
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniDiv
    (JNIEnv *, jobject, jdouble, jdouble);
```

```
/*
```

```
 * Class:   JNI_JNI
```

```
 * Method:  JniPow
```

```
 * Signature: (II)V
```

```
*/
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniPow
    (JNIEnv *, jobject, jint, jint);
```

```
/*
```

```
 * Class:   JNI_JNI
```

```
 * Method:  JniSqrt
```

```
 * Signature: (I)V
```

```
*/
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniSqrt
    (JNIEnv *, jobject, jint);
```

```
/*
```

```
 * Class:   JNI_JNI
```

```
 * Method:  JniMod
```

```
 * Signature: (II)V
```

```
*/
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniMod
    (JNIEnv *, jobject, jint, jint);
```

```
#ifdef __cplusplus
```

```
}
```

```
#endif
```

```
#endif
```

## C file\_JNI.c

```
#include <JNI.h>
```

```
#include<math.h>
```

```
#define PI 3.14159265
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniAdd
```

```
(JNIEnv *e, jobject obj, jint no1, jint no2)
```

```
{
```

```
int add=no1+no2;
```

```
printf("Addition of nos.= %d",add);
```

```
}
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniSub
```

```
(JNIEnv *e, jobject obj, jint no1, jint no2)
```

```
{
```

```
int sub=no1-no2;
```

```
printf("\nSubtraction of nos. is= %d",sub);
```

```
}
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniMult
```

```
(JNIEnv *e, jobject obj, jint no1, jint no2)
```

```
{
```

```
int mult=no1*no2;
```

```
printf("\nMultiplication of nos. is= %d",mult);
```

```
}
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniDiv
```

```
(JNIEnv *e, jobject obj, jdouble no1, jdouble no2)
```

```
{
```

```
double div=no1/no2;
```

```
printf("\nDivision of nos. is= %.3f",div);
```

```
}
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniMod
```

```
(JNIEnv *e, jobject obj, jint no1, jint no2)
```

```
{
```

```
    printf("\nRemainder is= %.3f",fmod(no1,no2));  
}
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniPow  
(JNIEnv *e, jobject obj, jint no1, jint no2)  
{  
    printf("\nPower is= %.3f",pow(no1,no2));  
}
```

```
JNIEXPORT void JNICALL Java_JNI_JNI_JniSqrt  
(JNIEnv *e, jobject obj, jint no1)  
{  
    printf("\nSquare root %d is= %.3f",no1,sqrt(no1));  
  
}
```

## Output:

Microsoft Windows [Version 10.0.22621.674]

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```
C:\Users\Desktop\Practical\LP1\DLL>javac -h . JNI.java C:\Users\Desktop\Practical\LP1\DLL>
gcc -o libJNI.dll -shared -fPIC -I"C:\Program Files\Java\jdk-18.0.1.1\include" -I"C:\Program
Files\Java\jdk-18.0.1.1\include\win32"
```

JNI using C

Enter first number: 21

Enter second number: 15

Addition of nos.= 36

Subtraction of nos. is= 6

Multiplication of nos. is= 315

Division of nos. is= 1.400

Power is= 68122318582951682000.000

Square root 15 is= 3.873

Remainder is= 6.000