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**EXERCISE USING JUNIT TESTING**

**AIM :**

To test the addition, sorting and to find maximum among given elements in java program using junit.

**Steps Involved:**

1. Open Visual Studio
2. Create a new Java project
3. Create test.java
4. Install libraries in lib folder (junit-4.13.2.jar & hamcrest\_core 1.3.jar)
5. Create App1.java
6. Write code and test the app

**Theoratical Backgroud:**

**JUnit:**

JUnit is a software testing framework that helps developers [test their applications](https://www.headspin.io/solutions/mobile-app-testing). It allows developers to write tests in Java and run them on the Java platform. JUnit also has a built-in reporter that can print out the results of the tests.

**JUnit Libraries:**

Junit – 4.13.2.jar

Hancrest core 1.3

**assertEquals:**

assertEquals. public static void assertEquals(Object expected, Object actual) Assets that two objects are equal. If they are not, an AssertionError without a message is thrown. If expected and actual are null , they are considered equal.

**junitCore class:**

JUnitCore is an inbuilt class in JUnit package and it is based on facade design pattern.JUnitCore class is used to run only specified test classes..

**SOURCE CODE :**

***# App1.java***

public class App1 {

    public static int add(int a,int b)

    {

        int c;

        c=a+b;

        return c;

    }

    public static int max(int a[])

    {

        int m=0;

        for(int i=0;i<a.length;i++)

        {

            if(m<a[i])

            {

                m=a[i];

            }

        }

        return m;

    }

    public static int[ ] sorting(int k[ ])

    {

        int temp;

        for(int i=0;i<k.length;i++)

        {

            for(int j=i+1;j<k.length;j++)

            {

                if(k[i]>k[j])

                {

                    temp=k[i];

                    k[i]=k[j];

                    k[j]=temp;

                }

            }

        }

        return k;

    }

}

***# TestCase.java***

import static org.junit.Assert.assertArrayEquals;

import static org.junit.Assert.assertEquals;

import org.junit.Test;

public class Test1 {

     @Test

    public void checkAdd( )

    {

        assertEquals(12, App1.add(5, 7));

    }

    @Test

    public void getmax( )

    {

        assertEquals(15, App1.max(new int[]{5,12,7,15,4}));

    }

    @Test

    public void sorting( ){

        assertArrayEquals((new int[]{5,15,24,45}), App1.sorting(new int[ ]{45,24,15,5}));

    }

}

***# App.java***

import org.junit.runner.JUnitCore;

import org.junit.runner.Result;

import org.junit.runner.notification.Failure;

import junit.framework.TestCase;

public class App {

    public static void main(String[] args) throws Exception {

        Result result=JUnitCore.runClasses(TestCase.class);

        for(Failure failure :result.getFailures())

        {

            System.out.println(failure.getMessage());

        }

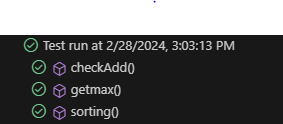
        System.out.println(result.wasSuccessful());

    }

}

**OUTPUT :**

***# TestCase.java***

****

***# App.java***



**RESULT:**

Thus, the addition, sorting and maximum among given elements in java program using Junit was executed successfully.