Aditya Degree Colleges

Java Online Training Coding Test_7 Key

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Program – 1:

You are given a number of sticks of varying lengths. You will iteratively cut the sticks into smaller sticks, discarding the shortest pieces until there are none left. At each iteration you will determine the length of the shortest stick remaining, cut that length from each of the longer sticks and then discard all the pieces of that shortest length. When all the remaining sticks are the same length, they cannot be shortened so discard them.

Given the lengths of n sticks, print the number of sticks that are left before each iteration until there are none left.

For example, there are n=3 sticks of lengths arr=[1,2,3]. The shortest stick length is 1, so we cut that length from the longer two and discard the pieces of length 1. Now our lengths are arr=[1,2]. Again, the shortest stick is of length 1, so we cut that amount from the longer stick and discard those pieces. There is only one stick left, arr=[1], so we discard that stick. Our lengths are answer=[3,2,1].

Input Format

The first line contains a single integer n, the size of arr.

The next line contains n space-separated integers, each an arr[i] where each value represents the length of the i^{th} stick.

Output Format

For each operation, print the number of sticks that are present before the operation on separate lines.

Constraints:

1<=n<=1000

1<=arr[i]<=1000

Sample Input:

6

5 4 4 2 2 8

Sample Output

6

4

2

1

Explanation

sticks-length	length-of-cut	sticks-cut
5 4 4 2 2 8	2	6
3 2 2 _ _ 6	2	4
1 _ _ _ _ 4	1	2
_ _ _ _ _ 3	3	1
_ _ _ _ _ _	DONE	DONE

Sample Input:

8
1 2 3 4 3 3 2 1

Sample Output

8
6
4
1

Explanation

sticks-length	length-of-cut	sticks-cut
1 2 3 4 3 3 2 1	1	8
_ 1 2 3 2 2 1 _	1	6
_ _ 1 2 1 1 _ _	1	4
_ _ _ 1 _ _ _ _	1	1
_ _ _ _ _ _ _ _	DONE	DONE

Testcase1:

Input:

6
5 4 4 2 2 8

Output

6
4
2
1

Testcase2:

Input:

8
1 2 3 4 3 3 2 1

Output

8
6
4
1

Testcase3:

Input:

12

2 5 6 4 1 8 9 4 2 3 6 2

Output:

12

11

8

7

5

4

2

1

Source Code:

```
import java.util.Scanner;
class Cuttherods
{
    public static void main(String args[])
     {      Scanner sc=new Scanner(System.in);
            int arr_count,arr[], i,j,min=0,l=0, count=0;
            arr_count=sc.nextInt();
            arr=new int[arr_count];
            for(i=0;i<arr_count;i++)
                    arr[i]=sc.nextInt()
            int n=arr_count;
          while(n>0)
          {
              for(i=0;i<arr_count;i++)
               {
                  if(arr[i]>0)
                   {
                       min=arr[i];
                       break;
                   }
               }
               for(i=0;i<arr_count;i++)
                {
                  if(min>arr[i] && arr[i]!=0)
                      min=arr[i];
                 }
              count=0;
                for(i=0;i<arr_count;i++)
                {
                   if(arr[i]-min>=0)
                    {
                       count++;
                       if(arr[i]-min==0)
                           n--;
                       arr[i]=arr[i]-min;
                    }
               }
              System.out.println(count);
        }
   }
}
```

Program – 2:

Radha is good in handling all n-based numbers. She is having skills of converting any based number to other. Now her sister Lakshmi wants to prove others that she is weak in doing so. She gave Radha a Hexadecimal number and asked her to convert into a decimal number and say the number.

Note: Input must be contains [0 – 9 and A, B, C, D, E, F] only. If the input contains any other than these print the output as Invalid Input.

Input:

A single line contains a hexadecimal number

Output:

Print the decimal value for that hexadecimal value.

Sample Input:

ABCD

Sample Output:

43981

Testcase1:

Input:

1A

Output:

26

Testcase2:

Input:

ABCD

Output:

43981

Testcase3:

Input:

ABG2

Output:

Invalid Input

Testcase4:

Input:

FFFF

Output:

65535

Testcase5:
Input:
1112
Output:
4370
Source Code:

```
import java.util.*;
class Prog7_2
{
   public static void main(String args[])
    {   Scanner sc=new Scanner(System.in);
                String str=sc.next();
                char a[]=str.toCharArray();
                int sum=0,k=0;
                for(int i=a.length-1;i>=0;i--)
                {
                        if(a[i]>'F')
                        {
                                System.out.println("Invalid Input");
                                return;
                        }
                        else
                        {
                                if(Character.isDigit(a[i]))
                                        sum=sum+(a[i]-'0')*(int)Math.pow(16,k);
                                else
                                        sum=sum+(a[i]-'A'+10)*(int)Math.pow(16,k);
                        }
                        k++;
                }
                System.out.println(sum);
        }
}
```

MCQ_Day7_KEY:

What is the output for the below code?

```
1. public class A {
2. int add(int i, int j){
3. return i+j;
4. }
5.}
6.public class B extends A{
7. public static void main(String argv[]){
8. short s = 9;
9. System.out.println(add(s,6));
10. }
11.}
```

A.Compile fail due to error on line no 2

B.Compile fail due to error on line no 9

C.Compile fail due to error on line no 8

D.15

Answer :B

What is the output for the below code ?

```
class A {
int i = 10;
public void printValue()
        {
                System.out.println("Value-A ");
        }
}
class B extends A{
int i = 12;
public void printValue() {
                System.out.print("Value-B ");
}
}
class Test{
public static void main(String argv[]){
A a = new B();
a.printValue();
System.out.println(a.i);
}
}
```

Options are

A.Value-B 11
B.Value-B 10
C.Value-A 10
D.Value-A 11
Answer : B

What is the output for the below code ?

```
1. public class Test {
2. public static void main(String[] args){
3. int i = 010;
4. int j = 07;
5. System.out.print(i+" ");
6. System.out.println(j);
7. }
8. }
```

Options are
A.8 7
B.10 7
C.Compilation fails with an error at line 3
D.Compilation fails with an error at line 5
Answer :A

What is the output for the below code ?

```
public class A {
public void printValue(){
System.out.print("Value-A ");
}
}
public class B extends A{
public void printNameB(){
System.out.print("Name-B ");
}
}
public class C extends A{
public void printNameC(){
System.out.println("Name-C ");
}
}
1. public class Test{
2. public static void main (String[] args) {
```

```
3. B b = new B();
4. C c = new C();
5. newPrint(b);
6. newPrint(c);
7. }
8. public static void newPrint(A a){
9. a.printValue();
10. }
11. }
```

Options are

A.Value-A Name-B

B.Value-A Value-A

C.Value-A Name-C

D.Name-B Name-C

Answer :B

What is the output for the below code ?

```
1. public interface InfA {
2.   protected String getName();
3. }
public class Test implements InfA{
public String getName(){
return "test-name";
}
public static void main (String[] args){
Test t = new Test();
System.out.println(t.getName());
}
}
```

Options are

A.test-name

B.Compilation fails due to an error on lines 2

C.Compilation fails due to an error on lines 1

D.Compilation succeed but Runtime Exception

Answer :B

What is the output for the below code ?

```
public class Test {
public static void main(String... args) {
int x =5;
x *= 3 + 7;
System.out.println(x);
```

```
 }
 }
```
Options are
A.22
B.50
C.10
D.Compilation fails with an error
Answer :B

```
class Base
{
  public Base(String str)
   {
     System.out.print("Base1");
   }
  public void Base(String n)
   {
     System.out.print("Base2");
   }
}
class Derived extends Base
{
   public Derived()
         {
           System.out.print("Derived");
         }

   public static void main(String[] args)
      {
         new Derived();
     }
}
```
A) Base1Derived
B) Base2Derived
C) Derived
D) Compilation error
ANSWER:D

Which lines will evaluate to true?

```
interface Colorable { }
interface Bouncable extends Colorable { }
class Super implements Bouncable { }
class Sub extends Super implements Bouncable { }
public class Tester {
public static void main(String[] args) {
System.out.println(new Sub() instanceof Super);
System.out.println(new Sub() instanceof Bouncable);
System.out.println(new Sub() instanceof Colorable);
}
}
```

Please choose only one answer:

A) All lines will evaluate to true

B) line1 and line2 will evaluate to true and only line 3 will evaluate to false

C) Only line 1 and 2 will evaluate to false

D) None of the above

ANSWER:A

```
interface Colorable { }
interface Bouncable extends Colorable { }
class Super implements Bouncable { }
class Sub extends Super implements Bouncable { }
class Tester {
public static void main(String[] args) {
System.out.println(new Super() instanceof Sub);
System.out.println(new Super() instanceof Colorable);
}
}
```

A) truefalse

B) falsetrue

C) falsefalse

D) truetrue

ANSWER:B

A package is the collection of

A) editing tools and interfaces

B) interfaces

C) classes

D) classes and interfaces

ANSWER:D

```
interface MyInterface
{
  void display();
}
interface MySubInterface extends MyInterface
{
   void display();
}
public class Test implements MySubInterface
{
   public void display()
   {
     System.out.print("Welcome to Aditya");
   }
  public static void main(String args[])
   {
     Test t=new Test();
     t.display();
   }
}
```

A) The code will compile and execute successfully showing the output Welcome to Aditya
B) None of these
C) The code will lead to a compilation error as the display method is not declared as abstract.
D) The code will lead to a compilation error as declaration of the display method has been provided in two interface.
ANSWER:A

Choose the correct statement.
Restriction on static methods are
i) They can call other static methods directly.
ii) They can access static data.
iii) They cannot refer this or super in any way.
A) only i
B) i and ii
C) i, ii and iii
D) i and iii
ANSWER:C

which of the following are legal declarations for
abstract classes and interfaces?
i) final abstract class Test{}
ii) public static interface Test{]
iii) final public class Test{}
iv) protected abstract class Test{}
v) protected interface Test{}
vi) abstract public class Test{}
A) i and ii
B) ii and iv
C) v and vi
D) iii and vi
ANSWER:D

suppose A is an abstract class, B is a concrete
subclass of A, and both A and B have a default
constructor. which of the following is correct?
1) A a=new A();
2) A a=new B();
3) B b=new A();
4) B b=new B();
A) 1 and 3
B) 1 and 2
C) 2 and 4
D) 2 and 3
ANSWER:C

Giventhe following piece of code
interface A
{ void doYourJob();
}
abstract public class B implements A
{
}
which of the following statements is correct?
A) This code will not compile, because in the declaration of class B we must use the keyword extends instead of implements.
B) This code will not compile, because class B must implement method doYourJob() from interface Guard.
C) This code will compile without any errors.
D) This code will not compile, because method doYourJob() in interface A must be defined abstract.

ANSWER:C

Which of the following is correct about interfaces?
A) abstract interface A { print(); }
B) interface A { void print(); }
C) abstract interface A { abstract void print();{ }}
D) interface A { void print() { } }
ANSWER:B

which of the following the abstract method in the abstract class?
a) public abstract method();
b) public abstract void method();
c) public void abstract Method();
d) public abstract void method() {}
ANSWER:B

Given the following piece of code:

```
public class School
{
  public abstract double numberOfStudent();
}
```

which of the following is true?
a) Class School must be defined abstract.
b) The keywords public and abstract cannot be used together.
c) You must add a return statement in method numberOfStudent().
d) The method numberOfStudent() in class School must have a body.
ANSWER:A

In java, declaring a class abstract is useful
a) When default implementations of some methods are not desirable.
b) When it doesn't make sense to have objects of that class.
c) To force developers to extend the class not to use its capabilities.
d) To prevent developers from further extending the class.
ANSWER:B
A method within a class is only accessible by classes that are defined within the same package as the class of the method. Which one of the following is used to enforce such restriction?
a) Declare the method with the keyword public.
b) Declare the method with the keyword public and private.
c) Declare the method with the keyword protected.
d) Do not declare the method with any accessibility modifiers.
ANSWER:D