

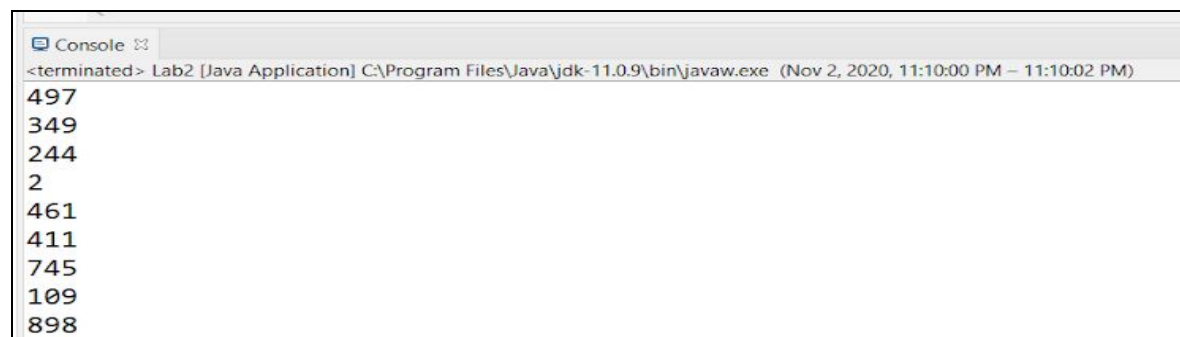


'for' Loop in java

syntax	example
for(initialization;Bool_expression; update) { // Statements}	for(int i=0; i<n; i++){ int sum = 0; sum += i;}

Example: Print 10 random numbers ($0 \leq \text{number} \leq 1000$)

```
1 package classExamples;  
2  
3 public class Lab2  
4 {  
5     public static void main(String[] args)  
6     {  
7         for(int i=0; i<10; i++)  
8             System.out.println((int)(Math.random()*1000));  
9     }  
10  
11 }
```



```
<terminated> Lab2 [Java Application] C:\Program Files\Java\jdk-11.0.9\bin\javaw.exe (Nov 2, 2020, 11:10:00 PM – 11:10:02 PM)  
497  
349  
244  
2  
461  
411  
745  
109  
898
```

while loop

syntax	example
while(Boolean_expression) { // Statements }	while(i<n) { int sum = 0; sum += i; i++;}

Example: Program that will take a number from the user and print the multiplication table of that number from 0 to 10

```
1 package classExamples;
2 import java.util.Scanner;
3
4 public class Lab2 {
5     public static void main(String[] args) {
6         Scanner input = new Scanner(System.in);
7         System.out.print("Enter a number: ");
8         int i = 1, n = input.nextInt();
9
10        while(i<11)
11        {
12            System.out.println(n + " x " + i + " = " + (n*i));
13            i++;
14        }
15        input.close();
16    }
17 }
```

Console

<terminated> Lab2 [Java Application] C:\Program Files\Java\jdk-11.0.9\bin\javaw.exe (Nov 2, 2020, 11:25:06 PM – 11:25:11 PM)

Enter a number: 8

8 x 1 = 8
8 x 2 = 16
8 x 3 = 24
8 x 4 = 32
8 x 5 = 40
8 x 6 = 48
8 x 7 = 56
8 x 8 = 64
8 x 9 = 72
8 x 10 = 80

do..while loop:

```
do {
    // Statements
}while(Boolean_expression);
```

Example: Find the GCD of two positive numbers.

```
2 package classExamples;
3 import java.util.Scanner;
4
5 public class Lab2 {
6     public static void main(String[] args) {
7         Scanner input = new Scanner(System.in);
8         System.out.print("enter two positive numbers: ");
9         int temp, n = input.nextInt(), m = input.nextInt();
10
11         do {
12             if(n<m) {
13                 temp = n;
14                 n = m;
15                 m = temp;
16             }
17             n -= m;
18         }
19         while(n>0);
20         System.out.println("GCD: " + m);
21         input.close();
22     }
23 }
```

Console

<terminated> Lab2 [Java Application] C:\Program Files\Java\jdk-11.0.9\bin\javaw.exe (Nov 2, 2020, 11:57:07 PM – 11:57:12 PM)

enter two positive numbers: 12 18

GCD: 6

Control statement : break

```
2 package classExamples;
3 import java.util.Scanner;
4
5 public class Lab2 {
6     public static void main(String[] args) {
7         Scanner input = new Scanner(System.in);
8         int number = 0, sum = 0;
9         while(number < 30) {
10             number++;
11             sum += number;
12
13             if(sum >= 200)
14                 break;
15         }
16         System.out.println("the number = " + number +
17                             "\nThe sum = " + sum);
18         input.close();
19     }
20 }
```

Console

<terminated> Lab2 [Java Application] C:\Program Files\Java\jdk-11.0.9\bin\javaw.exe (Nov 3, 2020, 1:19:16 AM – 1:19:18 AM)

the number = 20

The sum = 210

Control statement: continue

```
2 package classExamples;
3
4 public class Lab2 {
5     public static void main(String[] args) {
6         int number = 0;
7
8         while(number < 20) {
9             number++;
10            if(number%3 == 0)
11                continue;
12            System.out.println(number);
13        }
14    }
15 }
16 |
```

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<terminated> Lab2 [Java Application] C:\Program Files\Java\jdk-11.0.9\bin\javaw.exe (Nov 3, 2020, 1:36:25 AM – 1:36:27

```
1
2
4
5
7
8
10
11
13
14
16
17
19
20
<
```

Tasks:

1. Write a program that takes an integer and determines if it's prime or not. A number is prime if it is divisible by 1 and itself only, i.e. 2, 3, 11, 37 etc.
2. Write a program that finds the first 100 prime numbers.
3. Write a program that takes two integer inputs and finds out the GCD and LCM of those numbers.
4. Ayesha has just started as a graduate student in a medical school and she's needing your help to organize a laboratory experiment which she is responsible for. She wants to know, at the end of the year, how many animals were used in this laboratory and the percentage of each type of animal is used at all. This laboratory uses in particular three types of animals: frogs, rats and rabbits. To obtain this information, it knows exactly the number of experiments that were performed, the type and quantity of each animal is used in each experiment.

Input

The first line of input contains an integer N indicating the number of test cases that follows. Each test case contains an integer Amount ($1 \leq \text{Amount} \leq 15$) which represents the amount of animals used and a string ('C', 'R' or 'S'), indicating the type of animal:-

C: Cat

R: Rat

S: Snake

Output

Print the total of animals used, the total of each type of animal and the percentage of each one in relation to the total of animals used

Sample input	Sample output
10 10 C 6 R 15 S 5 C 14 R 9 C 6 R 8 S 5 C 14 R	Total: 92 animals Cat: 29 Rat: 40 Snake: 23 Cat% : 31.52% Rat%: 43.48% Snake%: 25%