

# JPL :: For...Loops

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# Learning Objectives

The content in this presentation is aimed at teaching learners to:

- Write solutions for simple problems needing iterative execution of a set of steps a certain number of times.
- Write Java programs using **for** loops

# For...Loops

## Sum of 'n' Numbers

10, 7, 232, 44, 8, 526, 49, 64, 98, 12, ..., n



What is the sum?

How about the following approach:

Read number of numbers (n).

Repeat 'n' times.

Read next number (new\_number)

`sum_so_far = sum_so_far + new_number`

Print sum\_so\_far

# For...Loops

## Solution for finding Sum of 'n' Numbers

Read n;

sumSoFar = 0;

**for** i = 1 to n

Read next number (newNumber)

sumSoFar = sumSoFar + newNumber

print sumSoFar

# For...Loops

## Java Code to find Sum of 'n' Numbers Using - 'for' Loop

```
public class SumWithFor {  
    public static void main(String[] args) {  
        int next, count, sumSoFar = 0;  
        for (count = 0; count < args.length; count++) {  
            next = Integer.parseInt(args[count]);  
            sumSoFar += next;  
        }  
        System.out.println("Sum: " + sumSoFar);  
    }  
}
```

# For...Loops

```
java SumWithFor 2 3 4 2
```

Output

Sum: 11

Before entering loop, sumSoFar = 0

count	sumSoFar	condition
0	0	T
1	2	T
2	5	T
3	9	T
4	11	F

# For...Loops

## 'for' Statement

The '**for**' statement allows you to repeat execution of a set of statements a specific number of times.

## Syntax of 'for' Statement:

```
for ( initialization ; termination; increment/decrement) {  
    statement(s);  
}
```

# For...Loops

Write Java code, using **'for'** loop, to find largest number among **'n'** numbers.





# For...Loops

## Solution:

```
public class LargestWithFor {  
    public static void main(String[] args) {  
        int next, count, largestSoFar;  
        for (count=1; count < args.length; count++) {  
            next = Integer.parseInt(args[count]);  
        }  
        System.out.println("Largest: " + largestSoFar);  
    }  
}
```

# For...Loops

Find Even or Odd numbers among the numbers from 1 to 'n'

## Solution:

Read n

**for** x from 1 to n

**if** (x % 2 == 0)

        printf("%d", x, ": is even.");

**else**

        printf("%d", x, ": is odd.");

# For...Loops

## Java Code to Find Odd or Even Numbers:

```
public class EvenNumber {  
    public static void main(String[] args) {  
        int i;  
        int givenNumber = Integer.parseInt(args[0]);  
        for (i = 1; i <= givenNumber; i++) {  
            if (i % 2 == 0)  
                System.out.println(i + " is even.");  
            else  
                System.out.println(i + " is odd.");  
        }  
    }  
}
```

# For...Loops

## The Problem

Find if a number is a Prime number or not.

## High Level Solution

Check if there is a divisor to given number which is other than 1 and itself. If there is, the number is not prime. Otherwise, prime.

# For...Loops

## Detailed Solution

Read the number into `n`.

**for** `i` from 2 to `n-1`,

**if** `n % i == 0`, then print ("`n` not prime").

Print ("`n` prime");

# For...Loops

## Java Code to Find Prime Numbers:

```
public class PrimeNumber {  
    public static void main(String[] args) {  
        int i;  
        int givenNumber = Integer.parseInt(args[0]);  
        for (i = 2; i <= givenNumber - 1; i++) {  
            if (givenNumber % i == 0) {  
                System.out.println (givenNumber + " is not  
prime.");  
                return;  
            }  
        }  
        System.out.println(givenNumber + " is prime");  
    }  
}
```

# For...Loops

Write Java code for printing first 'n' odd numbers.



# For...Loops

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