How to write a good FOR LOOP

Academic Resource Center
What’s For loop?

• Welcome to this workshop
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Or
Or something even harder

- $0 \times 0 = 0; \quad 0 \times 1 = 0; \quad 0 \times 2 = 0; \quad 0 \times 3 = 0; \quad 0 \times 4 = 0; \quad 0 \times 5 = 0; \quad 0 \times 6 = 0; \quad 0 \times 7 = 0; \quad 0 \times 8 = 0$
- $1 \times 0 = 0; \quad 1 \times 1 = 1; \quad 1 \times 2 = 2; \quad 1 \times 3 = 3; \quad 1 \times 4 = 4; \quad 1 \times 5 = 5; \quad 1 \times 6 = 6; \quad 1 \times 7 = 7; \quad 1 \times 8 = 8$
- $2 \times 0 = 0; \quad 2 \times 1 = 2; \quad 2 \times 2 = 4; \quad 2 \times 3 = 6; \quad 2 \times 4 = 8; \quad 2 \times 5 = 10; \quad 2 \times 6 = 12; \quad 2 \times 7 = 14; \quad 2 \times 8 = 16$
- $3 \times 0 = 0; \quad 3 \times 1 = 3; \quad 3 \times 2 = 6; \quad 3 \times 3 = 9; \quad 3 \times 4 = 12; \quad 3 \times 5 = 15; \quad 3 \times 6 = 18; \quad 3 \times 7 = 21; \quad 3 \times 8 = 24$
- $4 \times 0 = 0; \quad 4 \times 1 = 4; \quad 4 \times 2 = 8; \quad 4 \times 3 = 12; \quad 4 \times 4 = 16; \quad 4 \times 5 = 20; \quad 4 \times 6 = 24; \quad 4 \times 7 = 28; \quad 4 \times 8 = 32$
• System.out.println("Welcome to the " + "For Loop" + " workshop");
  System.out.println("Welcome to the " + "For Loop" + " workshop");
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  System.out.println("Welcome to the " + "For Loop" + " workshop");
  System.out.println("Welcome to the " + "For Loop" + " workshop");
  System.out.println("Welcome to the " + "For Loop" + " workshop");

• for(int i = 0; i<10; i++) {
  System.out.println("Welcome to the " + "For Loop" + " workshop");
}

• System.out.println("*");
  System.out.println("**");
  System.out.println("***");
  System.out.println("****");
  System.out.println("*****");
  System.out.println("******");
  System.out.println("*******");
  System.out.println("********");
  System.out.println("*********");
  System.out.println("**********");

• for(int i = 0; i< 10; i++){
   for(int j = 0; j<i; j++){
      System.out.print("*");
   }
   System.out.println();
}
• for (int i = 0; i < 5; i++) {
  for (int j = 0; j < 9; j++) {
    System.out.print(i + " x " + j + " = " + j*i + "; ");
  }
  System.out.println();
How to use the for loop

• For most of the computer languages available:

```plaintext
for (statement 1 ; statement 2; increment step)
{
    Your command;
    ...
}
```
Statement 1

• Declare and initial the counter
• I.e.

```plaintext
Int I;
i = 0;
```
Statement 2

• A Boolean expression to check the condition:
• i.e.

\[ \begin{align*}
    &I < 10; \\
    &I >= 100;
\end{align*} \]
Increment

- i.e.

  
  i++;
  i+= 5;
  i+= 10;
How the complete for loop look like

• Java: for(int i = 0; i < 10; i++){
    your command;
}

• C/C++: int I;

For( I =0; i<10; i++){
    Your command;
}
Sequence of For Loop

• For(int l = 0; l < 3; i++){  
System.out.println(“this is a first for loop”);  
    }  
For(int l = 0; l<3; l++){  
System.out.println(“this is the second for loop”);  
}
Result:

• this is a first for loop
• this is a first for loop
• this is a first for loop
• this is the second for loop
• this is the second for loop
• this is the second for loop
Nested for loop

• for(int i = 0; i < 3; i++){
    for(int j = 0; j < 3; j++){
        System.out.println("this is the second for loop");
    }

    System.out.println("this is a first for loop");
}

Result

- this is the second for loop
- this is the second for loop
- this is the second for loop
- this is a first for loop
- this is the second for loop
- this is the second for loop
- this is the second for loop
- this is a first for loop
- this is the second for loop
- this is the second for loop
- this is the second for loop
- this is a first for loop
Different kind of for loop

• For each loop:
• for ( type a : Array){
    
    your command;

}
• For ever loop:

```java
For ( ; ; ){
}
```

• For loop with one condition:

```java
For (; input == 'q' ;){
}
```