Session Goals

- User should understand why do we need condition based loops i. e while loops.
- User should be able to trace the flow of while loops.
- User should understand why do we need count based loops i. e for loops.
- User should be able to trace the flow of for loops.
- User should be able to write programs using for loops.
- User should be able to debug errors that might occur while using for loops.
- User should understand when to use jump statements in loops.
- User should be able write programs utilizing jump statements inside loops.

Java-111- Loops in Java

Session 4

Session Agenda

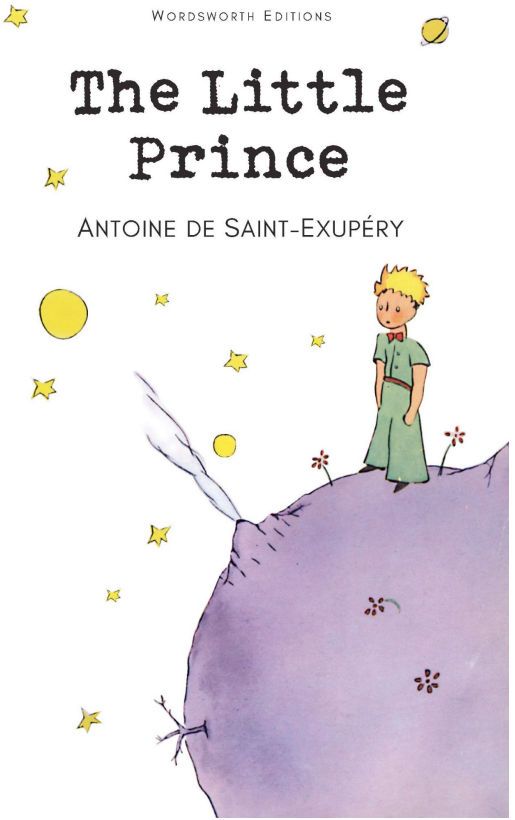
- While Loop
- do while loop
- For Loop
- Jump Statements

While loop

1. *You have met a little prince. He loves stars. He asks you to print as many stars as he wants.*
2. *Now, little prince wants you to count up till a number so that he can go and hide on his planet. You need to print all these numbers in the window to show little prince that you are counting. For eg.*

   1…2…3…4…5…6…

   You can store the number upto which little prince wants you to count in a variable n.



Recap - 6 Step Strategy

1. ***Understand the problem*** *(ask questions and get clarity)*
2. ***Design test data/test cases*** *(input and expected output)*
3. ***Derive the solution - solve the problem*** *(write pseudo code)*
4. ***Test the solution*** *(against the test data/case - dry run)*
5. ***Write the program/code*** *(using Java here)*
6. ***Test the code*** *(syntax errors, run time errors, logical errors)*

Activity: Add all numbers from 1 to N

Given a number n. Add all the numbers from 1 to n.

Link

What will be your approach to the problem? (Step 3)

Quickly put your answers in the chat!

while and do-while Loops | Debrief

- Runs **while** a specified condition is true and stops once that condition is no longer true.

```
while (condition) {
    // do stuff
}
```

- **do...while** runs at least once before checking the condition specified for the loop.

```
do {
    // execute some statements here
} while (condition);
```

5 minute break

For loop

- **for** loops are declared with **three** optional expressions separated by semicolons (;)
- **for (a; b; c)** - where **a** is the **initialization** statement, **b** is the **condition** statement, and **c** is the **expression for updates**.
- The **initialization** statement is executed **one time** only **before the loop starts**. It is typically used to define and setup your loop variable.
- The **condition** statement is evaluated **at the beginning of every loop** iteration and will continue as long as it evaluates to true.
- The **expression** is executed **at the end of each loop iteration**, prior to the next condition check and is usually used to increment or decrement your loop counter.

Controlling the flow - break and continue | Debrief

- Like in switch case, break can be used in loops to break out of the loop.
- The **break** statement "**jumps out**" of a loop.

```
for (int i = 0; i < 10; i++) {
  if (i == 3) {
    break;
  }
  text += "The number is " + i ;
}
```

- The **continue** statement "**jumps over**" one iteration in the loop.

```
for (int i = 0; i < 10; i++) {
  if (i == 3) {
    continue;
  }
  text += "The number is " + i ;
}
```

Activity: Check if it’s a Prime Number.

You are given a number. Check if it's a prime number and return true or false accordingly.

Link

What will be your approach to the problem? (Step 3)

Quickly put your answers in the chat!

Debug: Find the sum of all integers from 1 to N

Debug a java program to find the sum of all integers from 1 to N.

Link

What will be your approach to the problem? (Step 3)

Quickly put your answers in the chat!

Curious Cats

- Can you convert a for loop to while loop and vice versa?
  - Yes, quite easily, in most cases.
- Do break and continue work for while and do...while as well?
  - Yes

Keep
Learning,
Keep
Coding.