Covered Topics Under UNIT-3 of "PPS-PROGRAMMING FOR PROBLEM SOLVING (BCS101 / BCS201)"

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Class Notes
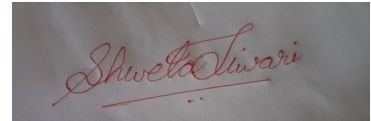
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PPS: UNIT-3

Iteration and Loop

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TOPIC On : UNIT-3: Difference between For Loop and While Loop in C

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Under On: Iteration and Loop

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For loop vs. While loop

The following comparison chart depicts the difference between for and while loops:

Basis of Difference	For Loop	While Loop
Format	In the **for** loop, the **initialization**, checking of the condition, and the iteration statement are all written atop the loop.	In the case of the **while** loop, only **initialization** and checking of the condition is carried out atop the loop.
Usage	The **'for'** loop is more appropriate for use in case the number of iterations is known in advance.	The **'while'** loop is preferably used in case the number of iterations is not specified beforehand.
No condition	In case the condition is absent in the **'for' loop**, then the loop will iterate countless times.	In case of the condition being absent in the **'while' loop**, a compilation error will be provided by the program.
Initialization	In the **'for'** loop, once the initialization is carried out, it is not repeated.	In the case of the **'while'** loop, in case the initialization is carried out during the stage of condition checking. The initialization has to be performed every time the loop iterates.
Iteration statement	In the **'for' loop**, the statement for iteration is inscribed at the top. Given this, the **iteration** statement is executed only after all the statements are running.	In the **'while' loop**, the statement for **iteration** is capable of being written at any place within the loop.

| Parts of the declaration | 1. The initialization is like an assignment statement. It is used for setting the loop control variable.
2. The condition is in the form of a relational expression. It will determine when the loop exits.
3. The increment refers to how the loop control variable is made to change every time the loop is iterated.
4. The body of the for loop may either be empty or comprise a single/ block of statements. | The condition in case of the 'while' loop may be in the form of any expression. It is true when any non-zero value is returned. The loop will iterate while the defined condition is actual. As soon as the state becomes false, the program control will pass to the line of coding that comes immediately after the loop. |