Tutorial 11 - Break and Continue Statements in C++

Break Statement in C++

- **Definition**: The `break` statement is used to terminate a loop or switch statement prematurely.
- **Usage**:
  - Exits the loop immediately when encountered.
  - The program control jumps to the statement after the loop.
- **Execution Steps**:
  a. Initialize the variable(s).
  b. Check the loop condition.
  c. If the loop condition is true, execute the loop body.
  d. If a specific condition (inside the loop body) is met, execute the `break` statement and exit the loop.
  e. Update the variable(s) and repeat if the condition is still true.
- **Syntax**:

```
1  for (initialization; condition; updation) {
2      if (specific_condition) {
3          break;
4      }
5      // loop body
6  }
7
```

- **Example**:

```
1  for (int i = 0; i < 10; i++) {
2      if (i == 5) {
3          break; // Exit the loop when i equals 5
4      }
5      cout << i << " "; // Output: 0 1 2 3 4
6  }
7
```

Continue Statement in C++

- **Definition**: The `continue` statement skips the current iteration of a loop and moves to the next iteration.
- **Usage**:
  - Skips the rest of the loop body for the current iteration.
  - The program continues with the next iteration of the loop.
- **Execution Steps**:
  a. Initialize the variable(s).
  b. Check the loop condition.
  c. If the loop condition is true, execute the loop body.
  d. If a specific condition (inside the loop body) is met, execute the `continue` statement, skipping the remaining code for the current iteration.
  e. Update the variable(s) and repeat if the condition is still true.
- **Syntax**:

```
1  for (initialization; condition; updation) {
2      if (specific_condition) {
3          continue;
4      }
5      // loop body
6  }
7
```

- **Example**:

```
1  for (int i = 0; i < 10; i++) {
2      if (i == 5) {
3          continue; // Skip the current iteration when i equals 5
4      }
5      cout << i << " "; // Output: 0 1 2 3 4 6 7 8 9
6  }
7
```

Code Example

```
1   #include <iostream>
2   using namespace std;
3
4   int main() {
5       // Break Statement Example
6       for (int i = 0; i < 10; i++) {
7           if (i == 5) {
8               break; // Exit loop when i equals 5
9           }
10          cout << i << " "; // Output: 0 1 2 3 4
11      }
12      cout << endl;
13
14      // Continue Statement Example
15      for (int i = 0; i < 10; i++) {
16          if (i == 5) {
17              continue; // Skip iteration when i equals 5
18          }
19          cout << i << " "; // Output: 0 1 2 3 4 6 7 8 9
20      }
21
22      return 0;
23  }
24
```

Short Notes

Break Statement

- Terminates the loop entirely.
- Used to exit the loop when a specific condition is met.
- Example:

```
1  for (int i = 0; i < 10; i++) {
2      if (i == 5) {
```

```
3          break; // Exit loop
4      }
5      cout << i;
6  }
7
```

Continue Statement

- Skips the current iteration of the loop.
- Used to skip certain iterations based on a condition.
- Example:

```
1  for (int i = 0; i < 10; i++) {
2      if (i == 5) {
3          continue; // Skip current iteration
4      }
5      cout << i;
6  }
7
```