Jumps in Loops

Jumps in loops are used to control the flow of loops. There are two statements used to implement jump in loops - Continue and Break. These statements are used when we need to change the flow of the loop when some specified condition is met.

1. Continue

Continue statement is used to skip to the next iteration of that loop. This means that it stops **one iteration** of the loop. All the statements present after the continue statement in that loop are not executed.

```cpp
int i;
for (i=1; i<=20; i++) {

    if (i%3==0) {
        continue;
    }
    cout<<i<<endl;
}
```

In this for loop, whenever i is a number divisible by 3, it will not be printed as the loop will skip to the next iteration due to the continue statement. Hence, all the numbers except those which are divisible by 3 will be printed.

2. Break

Break statement is used to terminate the current loop. As soon as the break statement is encountered in a loop, **all further iterations** of the loop are stopped and control is shifted to the first statement after the end of loop.

```cpp
int i;
for (i=1; i<=20; i++) {

    if (i==11) {
        break;
    }
    cout<<i<<endl;
}
```

In this loop, when i becomes equal to 11, the for loop terminates due to break statement, Hence, the program will print numbers from 1 to 10 only.

Examples

Ques1. Write a program to print all odd numbers till n.

```cpp
#include <iostream>
using namespace std;

int main() {

    int n;
    cout<<"Enter a number: ";
    cin>>n;

    for (int i=1; i<=n; i++) {

        if (i%2==0) {                          // i is even
            continue;
        }
        cout<<i<<endl;
    }

    return 0;
}
```

Ques2. Write a program to check if a given number is prime or not.

```cpp
#include <iostream>
using namespace std;

int main() {

    int n;
    cout<<"Enter a number: "
    cin>>n;

    int i;
    for (i=2; i<n; i++) {
        if (n%i==0) {                          //found a factor
of n
            cout<<"Not a prime"<<endl;
            break;
        }
    }
    if (i==n) {                                //loop has
completed all iterations
        cout<<"Prime Number"<<endl;
    }

    return 0;
}
```

Apni Kaksha

Ques3. Write a program to print all prime numbers in a given range

```cpp
#include <iostream>
using namespace std;

int main() {

    int a,b;
    cout<<"Enter 2 numbers: ";
    cin>>a>>b;

    for (int num=a; num<=b; num++) {
        int i;
        for (i=2; i<num; i++) {
            if (num%i==0) {               //it is not prime
                break;
            }
        }
        if (i==num) {          //loop has completed all iterations
            cout<<num<<endl;
        }
    }

    return 0;
}
```