Introduction to Algorithms and Programming

Lecture 4

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LOOP

What is a loop?

It is a conditional iterative statement which is used to check for certain conditions and then repeatedly execute a block of code as long as those conditions are met

Iterations

There are 3 possible ways to iterate:

➢ **For loops**

➢ **While loops**

➢ **Do-while loops**

For Loops

Used when the number of iterations is known

How to use it ?

```
for (initilisation; condition; increment or decrement)
{
    statements
}
```

Example 1 – Print (hello world) ten times:

```cpp
#include<iostream>
using namespace std;
int main() {
    for (int i = 1; i <= 10; i++)
       {
        cout << "hello world \n";
       }

    system("pause");
    return 0;
 }
```

Example 2 – Print numbers between 1 and 10:

```cpp
#include<iostream>
using namespace std;
int main() {
    for (int i = 1; i <= 10; i++)
{

        cout << i << endl;
}


    system("pause");
    return 0;
}
```

Example 3 – Print an even numbers between 0 and 100:

```cpp
#include<iostream>
using namespace std;
int main() {
    for (int i = 1; i <= 10; i++)
        {
        if(i%2==0)
          cout << I << endl;
         }

    system("pause");
    return 0;
}
```

Example 4 – the sum of the numbers from 1 to 10:

```cpp
#include<iostream>
using namespace std;
int main() {
 int sum = 0;
    for (int i = 1; i <= 10; i++)
       {
       sum = sum + i;
       }
    cout << "sum = " << sum << endl;
    system("pause");
    return 0;
}
```

Assignment

➢ **Write C++ program to find the average from 1 to 100**